



# Quality Assurance and Global Tertiary Education: Navigating Challenges and Embracing Innovation

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## Asia-Pacific Quality Network

### Quality Assurance and Global Tertiary Education: Navigating Challenges and Embracing Innovation

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*This anthology presents insights from the 2024 APQN Conference, Navigating the Future of Global Tertiary Education. It covers QA in cross-border education, digital innovations in QA, fostering excellence in teaching, and enhancing internal QA governance, offering a forward-looking perspective on global higher education.*

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# QA for Cross-Border Higher Education: International Standards, Challenges, and Solutions

*This section explores the complexities of quality assurance (QA) in transnational education, highlighting accreditation frameworks, qualification recognition, and cross-border collaboration. Articles explore case studies of international partnerships, the impact of accreditation on qualification recognition, and the role of double degree programs in ensuring academic excellence. Discussions address regulatory challenges, institutional cooperation, and the evolving landscape of international education, emphasizing strategies for maintaining high-quality standards across borders.*

## How accreditation impacts qualification recognition

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### **Abstract:**

*The article considers the issue of accreditation influence on qualification recognition. Accreditation and qualification recognition are seen as two inseparable processes that help to promote quality assurance of higher education, international academic mobility and cooperation in higher education on the national and international levels. The author talks about the history of qualification recognition, as well as the measures and tools that facilitate this process nowadays.*

### **1. Introduction**

Education plays a key role in the development of societies and economies. The rapid development of the modern world led to the increased demand for highly-skilled employees. According to UNESCO, in 2022 the overall number of students enrolled in higher education was 256 million people around the globe. The world leader is the Asia-Pacific region with more than 50% of the total amount of students involved in higher education. In 2021 the number of students studying abroad reached 6.4 million people worldwide. This amount has tripled in comparison with 2.1 million students in 2000. In the context of globalization and international academic mobility, recognition of foreign qualifications assumes ever greater importance. For the last decades the higher education society has developed several tools that facilitate the recognition process, and accreditation becomes one of these instruments.

### **2. What is accreditation and why do we need it?**

In terms of education quality assurance, accreditation is a review process that helps to learn whether a study programme or higher educational institution meet certain standards of quality developed by regional quality associations or quality assurance agencies. Accreditation originated from the Latin word «credo» that means «to believe, to trust in, to give credence to», and it does help to build trust in the education system for all stakeholders — students, teachers, employers, governments and the society. Besides, accreditation helps to guarantee that graduates receive knowledge, skills and competences necessary for the successful career and professional advancement. Accreditation becomes an independent mechanism that takes into account the needs and requirements of all stakeholders and serves the basis of confidence in education that graduates receive.

The key players in the field of accreditation are quality assurance agencies. Their performance in carrying out independent evaluation is essential for recognition of study programmes which contributes to global cooperation and exchange of the best practices in the sphere of higher education. They act as guides that connect higher education institutions, students, employers and the society and contribute to cooperation between all of them. However, the existence of a quality assurance agency by itself and its accreditation activities do not always provide confidence in accredited study programmes and HEIs. As a consequence, a process called «accreditation of accreditors» appeared, when the agency undergoes an external review by independent experts identical to accreditation of study programmes. Correspondingly, the registers of quality assurance agencies that were reviewed against agreed and internationally approved standards (Standards and guidelines for quality assurance in the European Higher Education Area (ESG), Chiba Principles, etc.) were established. Such registers exist on the national level — Directory of CHEA-Recognized Accrediting Organizations (USA), on the regional level — European Quality Assurance Register for Higher Education (EQAR) and Asia-Pacific Quality Register (APQR), and globally — INQAAHE Aligned Agencies Database.

There was a variety of causes that led to the development of such registers. Firstly, the increasing number of accreditors, and as a result, the matter of trust to these institutions and their performance. Secondly, availability of information for the public and knowledge where one can find information about accredited programmes and HEIs. Far from every HEI or agency publish the results of their external reviews due to different reasons whether that be the legislation of a country that makes it impossible to publish such information, confidentiality, or the performance of an agency is not transparent enough. Needless to say that the information is not always available for stakeholders who do not speak the national language of an accrediting organisation. Meanwhile, openness of an agency, publication of external review outcomes, certificates of accreditation and other documents are evidence of the agency's performance that also enhance confidence in the accrediting organisation.

### 3. Recognition of qualifications

The international academic society has been striving to mutual recognition of qualifications for quite a while now as this is a time-consuming journey. The history of qualification recognition dates back to 1970s, when the first regional convention on the recognition of studies, diplomas and degrees in higher education was adopted (Latin America and the Caribbean, 1974). Later on, five more regional conventions in the Mediterranean, the Arab States, Europe, Africa and the Asia-Pacific region were adopted. To this date, all of them except for the Mediterranean Convention have been revised, and in November, 2019 the first Global Convention on the Recognition of Qualifications concerning Higher Education was adopted. As of March 2024, 28 States have ratified it.

The concept and purposes of all these Conventions is to promote and strengthen international cooperation in higher education, facilitate mobility, give access to higher education worldwide, and to recognise higher education qualifications «in fair, transparent and non-discriminatory matter» (Global Convention, 2019). In the 2012 Bucharest Communiqué the automatic recognition of comparable academic degrees was mentioned for the first time. Nowadays, not every country recognises foreign qualifications automatically, but in Europe some states signed agreements or declarations of intent on the automatic mutual recognition of qualifications. For example, Baltic intergovernmental agreement on automatic recognition (2018), Declaration of Intent by the Baltic States and the Benelux Member States on the Automatic Mutual Recognition of Higher Education Degrees (2019), Nordic Declaration on the Recognition of Qualifications Concerning Higher Education (the Reykjavik Declaration, revised in 2022).

According to the Global Convention on the Recognition of Qualifications concerning Higher Education, «Each State Party, to the extent feasible based on its constitutional, legislative and regulatory situation and structure, shall put in place an objective and reliable system for the approval, recognition and quality assurance of its higher-education institutions in order to promote confidence and trust in its higher-education system». From this it follows that the processes of recognition and accreditation are indissolubly tied to each other, and qualifications cannot be recognized if they are not quality assured.

### 4. Tools for qualification recognition

When we talk about qualification recognition, first of all, we talk about demonstration of evidence that the study programme is quality assured, and prior learning and qualifications received in the homeland comply with the requirements of a foreign state necessary to continue studies in this country. These evidence should be transparent, fair and available to all stakeholders. For the last decades several tools have appeared that help to facilitate the process of qualification recognition and present evidence concerning quality of study programmes and higher education institutions.

Qualification frameworks serve as one of the instruments necessary for qualification recognition. It is «a system for the classification, publication and organization of quality-assured qualifications according to a set of criteria» (Global Convention, 2019). The first «prototypes» similar to these organized systems existed even in ancient times, however, the concept of the first National Qualification Framework appeared in the 1980s in the United Kingdom. Nowadays, qualification frameworks are developed on the national, regional or international levels (EQF, ASEAN RQF, etc.).

In 2013 the Committee of the Convention on the Recognition of Qualifications concerning Higher Education in the European Region (the Lisbon Recognition Convention) designed the Subsidiary Text to the Convention: «Recommendation on the Use of Qualifications Frameworks in the Recognition of Foreign Qualifications». According to this document, «qualifications frameworks should be used while considering the five key elements in recognition: level, learning outcomes, quality, workload and profile». Regarding quality, the document says that qualifications included by the competent authority in the National Qualification Framework that is self-certified or referenced are assumed quality assured. Therefore, these qualifications can be considered credible in general. However, qualifications of different educational systems are not always fully identical, even on the same level of education. Moreover, far from every country has a national qualification framework, and it raises questions about how to check quality of qualifications received in these states. It should also be noted that quality assurance practices should be harmonized with the national qualification frameworks. Given this context, in 2016 the Member States of the Asia-Pacific region adopted the Sydney Statement at the 14th Session of the Regional Committee on the Recognition of Qualifications in Higher Education in Asia and the Pacific. In this document the participants stressed the importance of interdependence between qualification recognition, quality assurance and qualification frameworks.

The establishment of qualification frameworks was followed by appearance of the national information centres (NICs). The information about qualifications, higher education systems, qualification frameworks, quality assurance, recognition and assessment is provided by NICs. The Global Convention outlines that each state party shall establish and maintain such information networks in order to facilitate access to the aforementioned information. In Europe there is the ENIC-NARIC Network of 54 national information centres established in compliance with the Lisbon Convention; in the Asia-Pacific it is the APNNIC Network of 12 national information centres established in line with the Tokyo Convention. The establishment of such centres is an ongoing process, however, the existing national information centres has already made contribution to qualification recognition by providing transparent data on higher education systems and quality assurance in different countries.

Qualification frameworks cannot exist without quality assurance systems. Today almost every country has its own quality assurance system, unique but at the same time having common aspects at the core. As a rule, QA systems are developed in compliance with the national legislation and/or international quality assurance standards, such as the Standards and guidelines for quality assurance in the European Higher Education Area (ESG), Chiba Principles, International

Standards and Guidelines (ISGs), etc. The forms of QA can be accreditation, audits, reviews, etc. The general procedure of quality assurance consists of four stages: self-evaluation, site-visit, external review report, and follow-up. If a programme or an institution are quality assured, it means that they comply with certain agreed quality assurance standards. It is one more evidence that qualification that graduates of these programmes or HEIs receive are worthy of recognition. However, to every rule there is an exception. Even in the sphere of quality assurance there are frauds that are usually called degree and accreditation mills. They mislead stakeholders about the quality of a study programme or HEI and usually just give out the certificates of accreditation and diplomas without any review. Hence, «accreditation of accreditors» and availability of open and transparent information about accredited programmes and institutions are greatly important to reduce the number of such mills and enhance confidence in quality of education.

The tools that provide this transparent information are databases of accredited study programmes and higher education institutions. Today such databases exist in different regions. In the USA there is a Database of Institutions and Programs Accredited by Recognized U.S. Accrediting Organizations maintained by the Council for Higher Education Accreditation (CHEA). As of June 2024, there are over 8,200 accredited colleges, universities, and higher education institutions and over 44,000 accredited programs. In Europe there is a Database of External Quality Assurance Results (DEQAR) maintained by the European Quality Assurance Register for Higher Education (EQAR). Today the database presents information about 99,813 external review reports on 4,069 institutions. In the Asia-Pacific region there is a Database of External Quality Assurance Results in the Asia-Pacific Region (DAQAR) maintained by the Asia-Pacific Quality Network (APQN) and the Asia-Pacific Quality Register (APQR). Nowadays, there are 4838 reports on 247 HEIs. These databases became single storage systems that provide evidence that study programmes and HEIs were accredited against an agreed set of standards by recognised quality assurance agencies, thus, adding to the process of qualification recognition. However, there are certain issues that prevent stakeholders from presenting information in the databases. Firstly, it is the legislation of some countries that does not allow HEIs and QAAs to disclose information regarding accreditation of their programmes or the institution itself. Secondly, even if the databases are considered international and are available to the whole world, the information uploaded is sometimes in the national language, which makes it difficult to read for people who do not know this language. Thirdly, lack of technical and human resources in some QAAs that hinders them in continuous maintenance of the database.

National qualification frameworks, quality assurance systems and databases of accredited study programmes and higher education institutions are independent tools, but it is important to mention that in the process of qualification recognition they cannot be considered as the only reliable source, they should be regarded together. All these tools are not completely perfect but they have a common goal — to facilitate qualification recognition and enhance international academic mobility.

## **5. Conclusion.**

Today in the rapidly growing and developing world recognition of qualifications plays an important role as it eases the access to quality education. The quality of study programmes and qualifications is critical to promote competitiveness on the labour market and enhance academic mobility. In this regard accreditation serves as an important tool of education quality assurance and qualification recognition on the national and international levels. It becomes clear that recognition of qualifications is impossible if quality of study programmes and higher education institutions is not assured. For today the higher education community has already put in great efforts on the way to facilitate the recognition process, but a lot of work still lies ahead.

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# Exploring Developmental and Diversified Evaluation of College Teachers Based on Teaching Performance

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## Abstract

*Highlighting the teaching performance stands as a pivotal aspect of the reform in evaluating college teachers in the new era. Evaluating college teachers based on their teaching performance serves dual purposes: on the one hand, this method can encourage educators to embrace their professional roles and fulfill their teaching responsibilities, thereby fostering a culture where high-quality courses drive both daily teaching and research endeavors; on the other hand, it necessitates a concerted effort to construct a robust evaluation system for educators. This system should accentuate the significance of teaching performance in assessing teachers' professional growth and diverse evaluations, while also emphasizing the utilization of methods such as peer evaluation, categorical assessment, and value-added appraisal in the overall evaluation process.*

**Keywords:** Teaching performance; Teachers' development; Diversified evaluation

## Contents

Higher-quality education can not be realized without excellent teachers. Education shoulders the significant responsibility of meeting the people's desire for higher-quality education, necessitating an urgently required cadre of highly qualified, specialized, and innovative educators. China has erected the world's largest higher education system, underpinned by its vast array of college instructors. Enhancing and refining the high-quality higher education system hinges upon the presence of a top-tier and proficient teaching cohort.

### 1. The Fundamental Aim of College Teacher Evaluation: Facilitating Teacher Development

The evaluation of college teachers aims to gauge and assess their educational quality, professional competence, and contributions within the academic community, significantly shaping the trajectory and impetus of their professional growth. A robust and refined system for teacher evaluation holds paramount importance in enabling colleges and universities to tap into the potential of their faculty, invigorate their workforce, stabilize their talent pool, and enhance faculty welfare. The inherent function of teacher evaluation lies in its capacity to provide guidance and motivation, thereby fostering the development of college educators.

The reform of teacher evaluation in Chinese higher education institutions has perennially been a focal point and challenge in the overhaul of faculty personnel systems. To adapt to the evolving landscape and improve the system for teacher evaluation, China has issued a series of pertinent directives. In August 2016, the «Guidelines on Deepening the Reform of Assessment and Evaluation Systems for College Teachers» by the Ministry of Education of People's Republic of China explicitly identified the refinement of teacher assessment and evaluation systems as an «imperative task for the ongoing and future phases of comprehensive higher education reform.» In October 2020, the CPC Central Committee and the State Council of China promulgated the «Comprehensive Plan for Deepening Educational Evaluation Reform in the New Era» (hereafter referred to as the «Comprehensive Plan»), underscoring the necessity to reform teacher evaluation and «firmly address the tendency to prioritize research over teaching and academic titles over nurturing students.» In January 2021, the Ministry of Education, along with six other departments, issued the «Guiding Opinions on Strengthening the Reform of College Teaching Team Construction in the New Era,» emphasizing that colleges and universities should prioritize a quality-oriented approach in teacher assessment and evaluation, focusing on evaluating educators based on their capabilities, actual performance, and contributions while rectifying the prevalent malpractices of overemphasis on publications, titles, educational background, and accolades to further promote and strengthen the reform of the development of the university faculty in the new era. These directives collectively underscore the urgency of teacher evaluation reform across multiple dimensions and the pivotal role of teaching performance in the evaluation of educators.

### 2. Teaching Skills and Teaching Performance: The Bedrock of Teacher Professional Development

Teaching level and quality hinge directly upon a teacher's professional knowledge, academic acumen, pedagogical finesse, and professional ethics. To advance their teaching skills and thereby achieve robust career planning and development, college educators can start from the following aspects.

#### 2.1. Role Clarification: Transitioning from «Standing at the Lectern» to «Standing Adeptly at the Lectern»

Clear and reasoned role delineation dictates the attitudes and behaviors of educators, facilitating the mitigation of professional fatigue and inertia while igniting professional vigor, thus enabling a conscientious fulfillment of teaching duties. Undoubtedly, young faculty members in colleges and universities generally possess higher levels of education. According to the «National Report on Teaching Quality of Undergraduate Education in General Colleges and Universities (2018),» 38.21% of university teachers held doctoral degrees in 2018 [2]. In Shanghai, an economically and educationally advanced city in China, the proportion of faculty members with doctoral degrees is even higher. Many universities in Shanghai require a doctoral degree for faculty positions.

Despite the high academic credentials of some university faculty, their teaching prowess may be subpar, especially among young instructors with limited tenure, who often grapple with deficiencies in teaching experience and pedagogical acumen. Unlike educators in primary and secondary education, who typically undergo specialized training and examinations to obtain teaching qualifications, college instructors in China, according to the «Regulations on Teacher Quali-

cation» of our country, can secure teaching qualification solely on the basis of their doctoral degrees, bypassing formal pedagogical training. Consequently, a significant portion of newly appointed university faculty, predominantly graduates from non-education majors, may lack comprehensive pedagogical training despite possessing strong research acumen after received comprehensive academic training during graduate studies. A survey conducted by the Shanghai Municipal Education Commission revealed that over 90% of new university faculty members had not undergone systematic training in pedagogical techniques. Many teachers step directly into the classroom without adequate preparation for teaching. Additionally, some teachers simultaneously shoulder responsibilities for scientific research and administrative tasks. This lack of preparation and the burden of multiple roles directly result in insufficient teaching concepts and curriculum awareness. Consequently, this affects their role orientation after entering the profession and is likely to cause a certain degree of professional anxiety.

## **2.2. Cultivation of Exemplary Course Awareness: Striving for Excellence in Every Lesson and Course**

Teachers need to establish a sense of excellence in their teaching, focusing not merely on delivering «a good class» but on creating «an excellent course.» They should actively strive to develop «quality courses» and «golden classrooms» at the school, provincial, municipal, and even national levels. This pursuit of excellence should drive various initiatives, including the development of teaching materials, team building, exchanges and training, project applications, and the publication of research outcomes. Such efforts will promote the dissemination of scientific research results and facilitate a feedback loop, fostering a synergistic upward spiral in both teaching and research. The multifaceted nature of teaching encompasses diverse elements such as pedagogical philosophies, instructional methodologies, curriculum design, and teaching strategies. Teachers' preparatory activities involve a gamut of tasks, including consolidating subject matter expertise, designing course content, crafting lesson plans and presentations, identifying key instructional points, and conducting trial runs. College educators must accord due importance to these endeavors, leveraging modern instructional techniques such as information technology to showcase the latest pedagogical innovations and innovate their instructional methodologies, content, and delivery, thus fashioning dynamic and high-impact classrooms. Through these efforts, educators can aspire to craft a distinctive teaching style.

## **2.3. Demonstration Effect of Master Teachers: The Return of Talent to Academic and Honorary Recognition**

The «Comprehensive Plan» emphasizes the need to «promote the return of academic and honorary titles for talents.» Individuals who are highly skilled and outstanding often become role models and benchmarks. The high prestige associated with the «excellent teacher» honor can also produce a demonstration effect. Taking Shanghai as an example, some universities organize regular teaching competitions for young teachers and other similar events. These institutions introduce appropriate incentives for participating teachers and implement reward mechanisms for award-winning teachers. In addition to monetary rewards, the participation and achievements in these competitions are considered important factors for individual title assessments, performance appraisals, and job promotions. Award-winning teachers are encouraged to develop «quality courses» and host «sharing lectures,» thereby creating a «lead goose effect» that drives the teaching atmosphere within disciplines and across schools. The externalization and reinstatement of evaluation results based on the spirit of awards ensure that the importance of teaching and respect for honor have become the guiding principles of teaching in Shanghai universities. These explicit external incentives stimulate university teachers' enthusiasm for education to a certain extent, enriching the development, performance, and reward mechanisms for university teachers. They also play a positive role in addressing the chronic issue of teacher evaluations based solely on the «five-only» criteria.

## **3. Optimization and Enhancement of the Evaluation Mechanism for College Teachers**

The evaluation of college teachers primarily revolves around job appointments, performance assessments, tenure evaluations, annual reviews, title appointments, career advancements, qualifications for supervising doctoral and master's candidates, various talent cultivation programs, and professional titles. It requires each university to scientifically design and deploy evaluations according to its practical work and developmental needs.

### **3.1. Emphasizing the Weighted Contribution of Teaching Performance in Diverse Teacher Evaluations**

Teacher evaluations aim to inspire excellence, encourage improvement, and foster professional development. A multidimensional evaluation system is crucial for balancing teaching and research. Teacher evaluation in higher education institutions should be multidimensional and diverse. Evaluations should encompass not only research and academic achievements but also return to the fundamental role and attributes of teaching. Teacher's teaching abilities, ideological and political qualities, among other aspects, should all be included in higher education evaluation.

As teaching positions in higher education vary between instructional, research-focused, and a blend of both, evaluations must consider the unique demands of each position and discipline. Different positions and disciplines have varying requirements and expectations for teachers. It's essential to comprehensively weigh evaluation factors and allocate indicator weights reasonably. For instructional faculty, emphasizing teaching performance and educational outcomes in performance distribution, title evaluations, and job assessments is vital. In essence, undertaking a certain level of undergraduate and graduate teaching responsibilities and ensuring the quality of education should be integral to teacher evaluations.

### **3.2. Comprehensive Adoption of Classification, Peer, and Value-Added Evaluations**

Classification, peer, and value-added evaluations are indispensable in modern educational evaluation frameworks. Incorporating these into teacher evaluations facilitates teacher development and fosters a diversified, scientific evaluation mechanism. This approach guides and motivates teachers to continually enhance their skills and knowledge. It is the optimal method for achieving objective teacher evaluations.

### **3.2.1. Classified Evaluation: Focusing on Specialization and Uniqueness**

Classified evaluation emphasizes the uniqueness of the evaluated individuals and achieves a balance between value and utility. When assessing teachers for performance appraisals, title appointments, and commendations, disciplinary differences should be fully considered. Evaluations should be tailored based on various disciplinary fields, research types, and professional categories. This kind of evaluation strives to refine, specialize, and differentiate the evaluation criteria, setting diverse indicators that balance overall considerations with individual uniqueness. This ensures targeted evaluation of the performance, contributions, and capabilities of different categories of teachers, avoiding a «one-size-fits-all» approach.

### **3.2.2. Peer Evaluation: Transitioning from «Major Peers» to «Minor Peers»**

Peer experts, sharing consistent disciplinary backgrounds, professional judgment of knowledge in a specialized field and accurate evaluation criteria mastery, effectively assess teachers' professional skills. However, with the deepening specialization and cross-disciplinary nature of modern science and technology, the transition from «major peers» to «minor peers» becomes imperative in peer evaluations. It necessitates unbiased participation from experts without conflicts of interest, ensuring objective and fair evaluations. Background screenings, commitment and avoidance protocols, and accessible reporting and appeal channels are essential for maintaining the integrity of the evaluation process.

### **3.2.3. Value-Added Evaluation: Emphasizing Teacher Development**

Value-added evaluation focuses on development and improvement, examining teachers' progress compared to past performance, current efforts against existing achievements, and enhancements relative to their original foundation. For instance, using teachers' initial performance upon entering the institution as a baseline, a comprehensive evaluation cycle and multidimensional index system assess teachers' advancements in knowledge dissemination, skill cultivation, character development, and ethical conduct.

Focusing on teaching performance, the refinement and reform of a diversified, high-quality teacher evaluation system in the new era, based on classified evaluation, peer evaluation, and value-added evaluation, is a complex systematic project. It not only requires top-level planning and guidance from the state, but also requires each university to deploy and develop it according to its actual situation and development needs.



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# World population trends and quality higher education

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## **Abstract**

*This paper examines global demographic trends, international student enrolment patterns, projections by educational attainment and the need for quality education. While global population growth may be gradually slowing, its regional distribution and age and household composition are changing significantly, with implications for education. In this context, ensuring access to quality higher education and promoting international student mobility will be critical to sustainable development and overall improvements in quality of life and human capital.*

**Keywords:** *World population, quality education, projections, household projections*

## **Introduction**

In an era marked by profound demographic changes and the globalization of education, understanding the relationship between global population trends and the quality of higher education has never been more important. This paper offers a comprehensive examination of this dynamic intersection. Our investigation sketches the contours of global demographic shifts, examines patterns of international student enrollment, forecasts educational attainment, and underscores the indispensable role of quality education in promoting sustainable development and enhancing human capital.

As the fabric of global demography evolves, marked by slowing population growth, shifts in regional distribution, and transformative changes in age and household composition, the implications for higher education systems worldwide are profound and multifaceted. This paper argues that in the face of these demographic shifts, improving access to quality higher education and facilitating international student mobility are not only educational imperatives, but also essential for catalyzing sustainable development and improving quality of life on a global scale.

### **1. World Population Growth and Distribution**

According to the 2022 revision of the UN World Population Prospects (UN DESA/Population Division., 2022), the world population is projected to reach 9.7 billion by 2050, with significant growth in Africa and Asia (Table 1). These regions are expected to account for 94 percent of global population growth between 2022 and 2050. This shift will have an impact on global education needs, as younger populations in these regions will seek educational opportunities.

Against this backdrop, Europe's population is expected to shrink, and the population decline will be concentrated in Eastern, Central and Southern European countries, including Russia, due to an unfavourable combination of low fertility and migration (Ediev, Coleman and Scherbov, 2013). The same is true for China, suggesting that population growth in Asia beyond China will be even greater (Pakistan, Bangladesh, India and Indonesia together will account for 26.5 per cent of world population growth). It should be noted, however, that UN projections have traditionally been too modest in terms of international migration, which could support the population size of economically more developed countries against expectations.

In any case, the results presented above point to a remarkable reshaping of the world's population, which will have an impact on education, inflating domestic enrolments in Asia and Africa and suppressing them in some European countries, especially in Eastern Europe. Population change may therefore put pressure on already strained education systems in some countries, while creating opportunities for international education in others.

Changing age composition of populations worldwide seem to push the educational system in the same direction. While Africa and Asia experience population growth and younger populations, other regions, such as Europe and North America, face aging populations. This demographic shift necessitates policies to balance educational investments across age groups and regions.

Region/country	Population change (mln.)	Percent population change	Percent of world population growth
World	1 734	22%	
Africa	1 059	74%	61%
Asia	570	12%	33%
Europe	-41	-5%	-2%
Latin America & Caribbean	89	13%	5%
Northern America	45	12%	3%
Oceania	13	28%	1%
Bangladesh	33	19%	2%
Brazil	16	7%	1%
China	-113	-8%	-7%
India	253	18%	15%
Indonesia	42	15%	2%
Mexico	16	13%	1%
Nigeria	159	73%	9%
Pakistan	132	56%	8%
Russia	-12	-8%	-1%
United States	37	11%	2%

Table 1: Population change in 2022–2050 by world region. Source: UN WPP 2022.

2. Projections by Educational Attainment

Population change has a direct impact on the education system through student enrolment, which depends on both population change and the changing age composition. Projections show that by 2050, the proportion of the world’s population with upper-secondary and tertiary education will increase significantly (Tables 2–4) (Lutz et al., 2018; Wittgenstein Centre for Demography and Global Human Capital, 2018). However, disparities are projected to persist, both between regions and between men and women. Women, particularly in developing regions, have lower access to higher education due to socio-economic and cultural barriers. Addressing these disparities is critical for achieving gender equality and empowering women as part of the SDGs. Investment in higher education infrastructure and quality, as well as the development of international student mobility, will be essential to bridge these gaps.

At the country level, it is worth noting that while China’s population is expected to decline, its student population will continue to grow. Many Asian and African countries will see their enrolment and population in higher education multiply. Clearly, this will create new opportunities for international education, but it could also put increasing pressure on international education links and the quality of education worldwide.

Region/country	Population change (mln.)	Percent population change	Percent of world population growth
World	1083	66%	
Africa	327	244%	30%
Asia	668	72%	62%
Europe	-17	-6%	-2%
Latin America & Caribbean	100	70%	9%
Northern America	2	2%	0%
Oceania	4	28%	0%
Bangladesh	34	153%	3%
Brazil	34	63%	3%
China	119	49%	11%
India	253	91%	23%
Indonesia	51	86%	5%
Mexico	19	87%	2%
Nigeria	69	240%	6%
Pakistan	69	223%	6%
Russia	-11	-15%	-1%
United States	2	2%	0%

Table 2: Population with upper-secondary educational attainment in 2020–2050 by world region. Source: Wittgenstein Centre Data Explorer.

Region/country	Population change (mln.)	Percent population change	Percent of world population growth
World	1085	115%	
Africa	172	295%	16%
Asia	677	132%	62%
Europe	87	51%	8%
Latin America & Caribbean	84	110%	8%
Northern America	56	49%	5%
Oceania	8	81%	1%
Bangladesh	15	267%	1%
Brazil	22	114%	2%
China	189	112%	17%
India	215	174%	20%
Indonesia	39	208%	4%
Mexico	18	122%	2%
Nigeria	34	273%	3%
Pakistan	31	324%	3%
Russia	15	44%	1%
United States	50	52%	5%

Table 3: Population with post-secondary educational attainment in 2020–2050 by world region. Source: Wittgenstein Centre Data Explorer.

Region/country	No Education	Incomplete Primary	Primary	Lower Secondary	Upper Secondary	Post Secondary
World	-4.8	0.4	1	0.7	1.7	1
Africa	-10.6	0.6	1.9	2.4	3.7	2.1
Asia	-5.4	0.8	1.6	0.4	1.6	1
Europe	-0.2	-0.4	-1.3	-0.6	2.8	-0.4
Latin Am. & Carib.	-1.5	-1.4	-1.1	0.8	1.9	1.3
Northern America	-0.1	-0.2	-0.6	-0.8	-1.7	3.4
Oceania	-1.4	0.6	-0.1	0.2	5.1	-4.5
Bangladesh	-6.3	1.1	0	-1.9	4	3.1
Brazil	-1.5	-2.5	-2.4	0.2	3.1	3.1
China	2.2	1.7	2	-3.2	-1.5	-1.2
India	-15.6	0.4	1.3	3.8	6.1	4
Indonesia	1.8	0.2	1	0.3	-4	0.7
Mexico	-1.2	-0.2	0.3	0.4	0.4	0.2
Nigeria	-14.7	-0.6	0	1.7	8.6	5
Pakistan	-19.7	1.4	2.4	6.7	7.2	2
Russia	0	0	-1.5	-2.9	-2.2	6.7
United States	-0.2	-0.2	-0.8	-1	-1.9	4

Table 4: Gender gap in percentage points at ages 15+, by educational attainment in 2020 by world region. Source: Wittgenstein Centre Data Explorer.

3. Trends in International Student Enrollment

International student mobility has already grown significantly, with students from China, India, Indonesia, Pakistan and Brazil leading in outbound mobility (OECD, 2024). In terms of change, India is by far the leader, accounting for 41 per cent of global growth in international student mobility between 2013 and 2021 (Table 5). These trends also highlight the demand for quality education and the capacity of host countries to provide it. Compared to the population and educational attainment projections presented above, current enrolment trends also suggest a profound change in international student flows in the coming decades, with new leaders emerging and new demands on the international education system.

Region/country	Enrollment change	Percent enrollment change	Percent of world enrollment growth
World	128 571	51%	
Africa	1 576	22%	1%
Asia	103 355	49%	80%
Europe	1 552	14%	1%
Latin America & Caribbean	14 775	293%	11%
Northern America	-1 715	-26%	-1%
Oceania	-2 195	-43%	-2%
Bangladesh	1 384	38%	1%
Brazil	7 561	817%	6%
China	5 457	6%	4%
India	52 575	326%	41%
Indonesia	2 230	24%	2%
Mexico	191	33%	0%
Nigeria	1 138	186%	1%
Pakistan	4 721	99%	4%
Russia	-495	-51%	0%
United States	-381	-13%	0%

Table 5: International enrollment change by region of origin in 2013–2021. Source: OECD database.

4. Demand for quality higher education in the context of household change and sustainable development

Last but not least, the development of the international education system will also be demanded by societies where demographic change on the one hand and the increasing need for sustainable development on the other will put pressure on the development of human capital.

Indeed, quality education is at the heart of SDG 4 Quality Education (UN DESA/Sustainable Development, 2024), which aims to ensure inclusive and equitable quality education and promote lifelong learning opportunities for all. Quality education equips individuals with the skills and knowledge needed to address global challenges, innovate and drive economic growth. Countries that are currently underrepresented in terms of human capital, such as those in sub-Saharan Africa and parts of Asia, need targeted investment in higher education and greater participation in international higher education. High quality education fosters critical thinking, problem solving and innovation, which are essential for sustainable development and competitiveness in the global economy.

Here too, demographic trends will increase the need to nurture human capital worldwide. In addition to the sheer population change outlined above, the composition of the population will also change in ways that increase the need for higher quality human capital. One aspect of this structural change is well-known and widely covered — the population ageing (Sanderson and Scherbov, 2008; Bloom and Zucker, 2023). Indeed, a growing elderly population will create a need to maintain healthy economic support on the one hand and a demand for lifelong learning on the other. Developing countries in the early stages of population ageing will need to support their economies with a high-quality labour force, i.e. human capital, in order to reap the potential benefits of the ‘demographic dividend’ (Lutz *et al.*, 2019).

Another, less recognized, aspect of population change is that it will lead to profound changes in household composition, particularly in developing countries. Households are key to the economy because of their immense role in consumption and saving. The larger number of smaller and smaller households that are projected to prevail in the future (see the results of the author’s illustrative projections in Tables 6–7) will boost consumption

even beyond what sheer population growth would imply. This has clear implications for sustainable development and hence for the need for better human capital.

However, smaller households will also have a significant impact on the demand for higher quality education, as smaller families have more resources and demand for higher quality schooling and consequently higher aspirations for tertiary education for their children. Also at older ages, where we project more smaller and especially single-person households, the projected trends imply a higher demand for lifelong quality education. The number of larger households is expected to increase only in a number of countries in Africa and Asia. But even in these countries, the growth in the number of smaller households will outstrip the growth in the number of larger households. Worldwide, the number of one- to three-person households will grow by 52 per cent, outstripping population growth (which, as shown above, is only 22 per cent). In Africa, this figure could triple. This clearly indicates a growing demand from families and societies for higher quality education in the near future.

Region/country	Households change (mln.)	Percent households change	Percent of world households growth
World	982	37%	
Africa	364	114%	37%
Asia	502	31%	51%
Europe	-0.3	-0.1%	0%
Latin America & Caribbean	80	36%	8%
Northern America	30	20%	3%
Oceania	7	42%	1%
Bangladesh	28	53%	3%
Brazil	20	26%	2%
China	42	7%	4%
India	205	46%	21%
Indonesia	30	34%	3%
Mexico	17	41%	2%
Nigeria	52	117%	5%
Pakistan	56	99%	6%
Russia	-2	-3%	0%
United States	26	20%	3%

Table 6: Private households change in 2022–2050 by world region. Source: own projections based on UN WPP 2022.



Region/country	Percent change of mean household size	Percent change of 1–3 persons households	Percent change of five or more persons households
World	-11%	52%	-2%
Africa	-19%	215%	33%
Asia	-15%	49%	-18%
Europe	-5%	3%	-17%
Latin America & Caribbean	-17%	58%	-21%
Northern America	-7%	26%	-4%
Oceania	-10%	55%	4%
Bangladesh	-22%	95%	-26%
Brazil	-15%	42%	-24%
China	-14%	17%	-35%
India	-19%	79%	-22%
Indonesia	-14%	54%	-14%
Mexico	-20%	69%	-27%
Nigeria	-20%	253%	33%
Pakistan	-22%	194%	9%
Russia	-5%	0%	-18%
United States	-7%	25%	-5%

Table 7: Private households change by size of household in 2022–2050 by world region. Source: own projections based on UN WPP 2022.

### Conclusion. Implication for the Russian higher education system

The interplay between demographic trends and higher education highlights the need for strategic investments in education systems worldwide. Ensuring high-quality higher education, particularly in underrepresented regions, is crucial for sustainable development and building a skilled global workforce. Policymakers and educational institutions must collaborate to address disparities, enhance educational quality,

Russia could play its due role in these processes because, in addition to the country’s international role, (a) demographic trends imply a shrinking domestic student population, thus freeing up resources for international students; (b) the country’s demographic trends also imply an increasing or at least sustained role for migrant workers, who could be best trained in the Russian education system; (c) disparities between emerging global population and education trends and the status quo of Russian education exports point to the need for appropriate adjustments in the country’s international education policies. On the latter point, see our summary in Table 8. As these data suggest, Russia does very well in attracting students from Africa, which can be seen as an advantage given the growth prospects in that region. However, even by 2050, Africa is expected to account for only 11 per cent of the world’s population with post-secondary education, while Russia already attracts a quarter of international enrolments from this region. Russia is also doing well in attracting students from Asia - another prospective source of international enrolment growth. At the same time, Russia is underrepresented in international enrolments from Europe, the Americas and Oceania. Of particular note is the modest presence of Brazil among students in Russia, despite cooperation within BRICS.

In conclusion, demographic trends appear to be a key driver of growth and redistribution of the world’s population and international education, increasing the demand for high quality tertiary education. They will also lead to growing disparities between existing and emerging educational landscapes - both globally and particularly in countries actively engaged in international education. Because of the inherent inertia of demographic processes, these trends seem almost a given, making it imperative to implement appropriate policies to ensure quality education worldwide.

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# Internal system for assessment of quality of educational activities: content, structure, key tools (case unecon)

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## **Abstract**

*The article considers procedure organization of internal monitoring in terms of internal system of education quality control, formation of self-analyses report, formation of indicators, organization of questionnaire survey of educational process participants, establishment of the final ratio of educational programs.*

**Key words:** *internal quality system, internal monitoring, indicators of quality control system.*

## **Introduction**

In accordance with the regulatory documents regulating the procedure for organizing educational activities in the Russian Federation, the quality of educational activities and training of students in educational programs is determined within the framework of the internal quality assessment system, as well as the external assessment system, in which the educational organization participates on a voluntary basis.

### **1. The main characteristics of assessing the quality of educational activities**

The main goals of the internal system for assessing the quality of educational activities are:

- formation of an objective assessment of the quality of student training in accordance with the requirements of federal state educational standards, professional standards (if any) and the needs of the labor market;
- identifying best practices in the field of ensuring the quality of implementation of educational programs and taking them into account in the strategic planning of educational activities;
- increasing the competitiveness of educational programs implemented by an educational organization;
- improving the structure and content of educational programs;
- improvement of resource support for educational activities.

The internal system for assessing the quality of educational activities can be a set of control methods, as well as assessing the conditions and procedure for implementing the educational program, assessing the activities of scientific and pedagogical workers, student satisfaction with the conditions and learning outcomes, which includes taking into account the results of control and assessment in the system of indicators of educational compliance activity requirements of federal state educational standards, professional standards (if any) and labor market requirements.

The following procedures are used as the main elements of the internal quality assessment system at St. Petersburg State University of Economics:

- checking the compliance of educational programs with indicators established in the educational organization and reflecting the compliance of the quality of implementation of the educational program with professional standards (if any), labor market requirements and the needs of students (internal monitoring);
- internal independent quality assessment, used when identifying risk objects within the framework of the implementation of the educational program and used for additional control of the quality of graduate training (independent assessment of the quality of educational activities);
- checking the quality of educational and methodological support for educational activities and learning conditions in accordance with established requirements (internal audit of educational activities).

The presented set of measures can ensure the implementation of a multilateral assessment of the quality of educational programs, as well as ensure the coupling of the criteria of federal state educational standards, professional standards and labor market requirements for the professional competencies of graduates with strategic indicators of the effectiveness of the educational organization.

### **2. The internal monitoring procedure**

Due to the need to ensure compliance of the quality characteristics of educational programs with the requirements of the labor market and the needs of students, special attention should be paid to the internal monitoring procedure.

The use of a systematic approach within the framework of internal monitoring consists of conducting analysis both at the program level (conditions for the implementation of the educational program, the achievements of students in the educational program, the satisfaction of participants in the educational process within the educational program, etc.) and at the institutional level (organization of the educational process in an educational organization as a whole, the level of openness and accessibility of information, etc.).

At the process level, the following processes may be subject to comprehensive analysis:

- formation of a competency model of a graduate;
- project activities of students;
- participation of labor market representatives in the educational process;
- research activities of students, etc.

Individual subjects involved in assessing the quality of educational activities at the program level should include teaching staff, representatives of the labor market, graduates, collegial advisory bodies (for example, councils of educational programs), etc.

The role of individual subjects involved in assessing the quality of educational activities at the institutional level may include: representatives of administrative and managerial personnel, advisory bodies (councils, subcommittees, working groups).

Internal monitoring is recommended to be carried out at least once a calendar year. Educational programs implemented at the time of the relevant procedure are subject to internal monitoring.

The main source of information when conducting internal monitoring may be a self-examination report of the educational program, which contains up-to-date information on material, technical, personnel, educational, methodological, information, scientific and other conditions for the implementation of the educational program, the results of extracurricular achievements of students and other information necessary to establish compliance with the criteria used in internal monitoring.

The indicators reflected in the strategic development program of an educational organization can be used as basic ones when forming a set of indicators for internal monitoring of an educational program. It is advisable to identify a number of the most significant indicators from the total set of indicators proposed by experts or the advisory body of an educational organization using elements of cluster analysis. Combining indicators into «clusters» helps eliminate duplication, remove indicators that are not essential for a given analysis, and also formulate the most complete and succinct formulation of indicators.

When assessing the quality of an educational program, indicators are used that reflect the results achieved as part of its implementation over the previous period, as well as indicators characterizing the current state and potential development opportunities of the educational program.

Distributing indicators reflecting the quality of implementation of an educational program into groups depending on the degree of their influence on the overall assessment of the quality of its implementation is advisable. For each group, a range of values is determined, and the maximum possible number of points assigned is set. It is important to note that it is advisable to differentiate the maximum number of points for different groups of indicators, considering their degree of significance as the educational organization achieves the established strategic indicators.

At the next stage, establishing minimum acceptable values for each indicator is possible. As the lower limit of the interval or the minimum acceptable value, values can be used, which may be based on the principle of compliance with the established requirements of the legislation of the Russian Federation in the field of education and (or) the requirements established during public/professional/public/international accreditation of educational programs (if available), as well as professional standard (if available). For indicators whose value is fixed by the federal state educational standard, it is advisable to set the minimum value not lower than the value fixed in the Federal State Educational Standard.

The procedure for internal monitoring of an educational program may include the following types of surveys:

- surveying students on issues of assessing the conditions, content, organization and quality of the educational process;
- survey of teaching staff on questions of satisfaction with the conditions of organization of the educational process;
- surveying employer representatives on satisfaction with the quality of training of graduates of the educational program;
- survey of graduates on satisfaction with learning outcomes. The questionnaire may address issues of the existing employment system in the educational organization, career building, as well as questions aimed at assessing the capabilities of the educational organization for the continuous education of graduates.

The results of the survey can be generated in the form of a survey protocol.

Formulating the final indicator of the educational program considering the following elements presented in the figure is recommended.

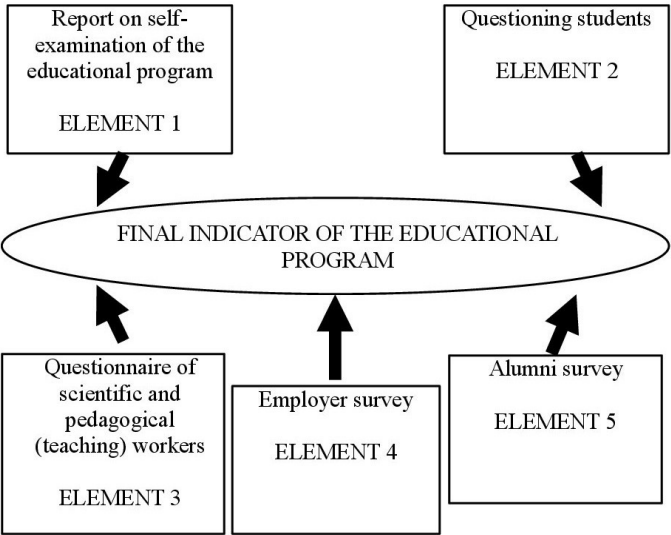


Figure 1: Elements forming the final indicator of the educational program

In this case, each element can be assigned its own coefficient — a parameter reflecting the significance of this element in the total volume of elements that influence the rating.

The total number of points scored by an educational program as part of the internal monitoring procedure can be calculated using the formula:

$$I(Epi) = K \times E_{1i} + K_2 \times E_{2i} \dots \dots \dots K_m \times E_{mi}, i = 1, \dots \dots n,$$
  
where I (Epi) — final indicator of the i-th EP;  
K1, K2, Km — coefficients (weights) assigned to the elements of the system of internal monitoring indicators;  
E1, E2, Em — the total number of points scored by the EP on the elements of the internal monitoring indicator system;  
m — number of elements of the internal monitoring indicator system;  
n — number of educational programs.

Due to the fact that the internal monitoring procedure is based on a number of fundamental principles, it can be considered as a procedure that allows one to systematically determine the advantageous characteristics of an educational program, its shortcomings, as well as the potential to achieve the strategic goals of an educational organization.

Principle	Characteristic
Optimal formation of a package of supporting documents	The requested list of supporting documents must be formed in a minimum volume and be sufficient to identify the compliance of the qualitative and quantitative characteristics of the educational program with the established indicators
Objectivity of assessment	When analyzing data, only information confirmed by relevant information is considered
Independence of the evaluation	As part of the formation of the rating of implemented educational programs, the results of regular independent surveys of students, teaching staff, employers, and graduates are used
Transparency of the procedure	Each stage of the internal monitoring procedure must be provided with detailed documentary support
Openness	The approved rating of educational programs is subject to publication on the official website

Table 1: Basic principles of carrying out the procedure for internal monitoring of educational programs.

Based on the results of the internal monitoring procedure of the educational program, it is advisable to formulate a final conclusion, which may include:

- the results of assessing the completeness and reliability of the information provided by responsible persons as part of the self-examination report of the educational program;
- specific indicator values achieved as part of the implementation of the educational program;
- protocols for assessing survey results;
- results of SWOT analysis (identifying the strengths and advantages of the educational program and weaknesses that require analysis and additional elaboration);
- recommendations for the development of an appropriate educational program;
- analytical data based on the results of the survey.

Thus, regular internal monitoring is a necessary and significant procedure that facilitates management decision-making in relation to:

- opening educational programs with similar profiles at successive levels of education;
- closure of the educational program due to its lack of demand and insufficient quality of implementation;
- distribution of reception check digits;
- minimizing risks and eliminating systemic deficiencies that reduce the quality of educational activities;
- carrying out additional control procedures in relation to a specific educational program in the form of an internal audit of educational and methodological support of educational activities, an internal independent assessment of the quality of intermediate certification of students, an internal independent assessment of the quality of students' training as part of monitoring the availability of students' completed learning outcomes in previously studied disciplines, etc.

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# Expansion and Focus: Reshaping Educational Quality Assurance System Through Evaluation — Insights from the Research Report on Global Education Evaluation

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### Abstract

Based on 3847 English journal articles from the Web of Science and 1507 core Chinese journal articles from the China National Knowledge Infrastructure (CNKI) from 2019 to 2023, research shows that evaluation has driven the continuous restructuring of the educational quality assurance system. The expansion of evaluative power contributed to a research landscape characterized by «comprehensive expansion and localized balance» in educational evaluation. The focus of evaluative power has highlighted key areas such as student growth, teachers' career development, school outcomes, and empowerment through evaluation. The global educational quality assurance system is continuously reshaped by the expansion and focus of evaluative power.

**Keywords:** Educational Evaluation, Educational Quality Assurance System, Global Education Evaluation.

### Introduction

In May 2024, drawing on 3847 English journal articles from the Web of Science and 1507 Chinese core journal articles from CNKI from 2019 to 2023, the series of educational reform reports released approximately every 25 years by UNESCO and Global Education Monitoring Reports, OECD's Synergies for Better Learning: An International Perspective on Evaluation and Assessment (OECD, 2019), and the PISA 2022 results, we published the Research Report on Global Education Evaluation (Liu, 2024). In this report, there is a clear message: the educational quality assurance system is being constantly reshaped, with evaluation as the key driving force. The expansion and focus of evaluative power portray a vivid picture of the development and changes in the educational quality assurance system.

### Findings

#### 1. The Global Landscape of Educational Evaluation Research: The Expansion of Evaluative Power.

Research shows that global educational evaluation research presents an overall picture of «comprehensive expansion and localized balance». «Comprehensive expansion» refers to the spread of modern educational evaluation concepts, functions, systems, and practices from developed countries and regions to all corners of the world and all elements of education. «Localized balance» means that various countries and regions continuously digest the impacts brought by the comprehensive expansion of educational evaluation ideas and theories, seeking a balance with local traditions, fields, and contexts, and building their own educational evaluation knowledge systems, disciplinary systems, and discourse systems.

##### 1.1. Educational evaluation research has developed significantly across all continents except Antarctica, with clear stratification in global development.

Many countries on the six continents conduct educational evaluation research, but there are significant differences in publication volume and international cooperation. Among English publications, the top 30 in terms of publication volume are mainly developed countries and regions, but some developing countries and regions are also included. As shown in Figure 1, global educational evaluation covers all seven continents except Antarctica, with clear stratification.

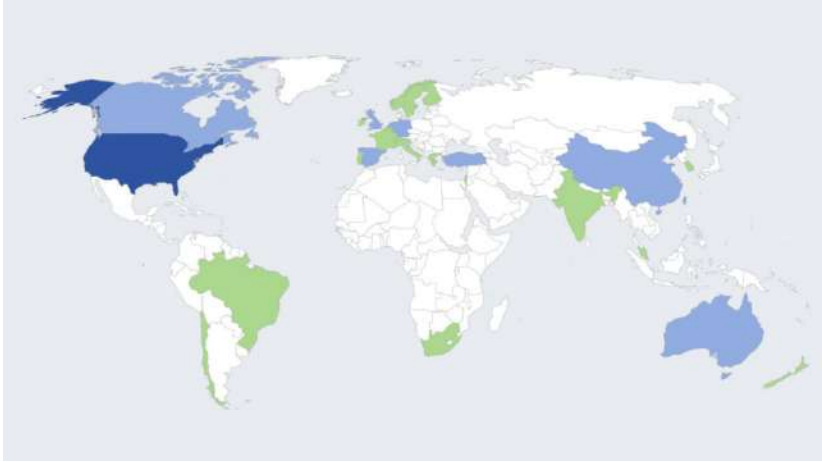


Figure 1: Global Distribution of the Top 30 Countries and Regions by Publication Volume.

Among these countries and regions, as shown in Figure 2, there are roughly three tiers based on publication volume: over 1000 articles, over 100 articles, and under 100 articles. In terms of international cooperation (betweenness centrality), as shown in Figure 3, the United States, China, the United Kingdom, Spain, and Germany have close cooperation with other countries and regions (betweenness centrality greater than 0.1), while some countries have almost no cooperation with others (betweenness centrality of 0).



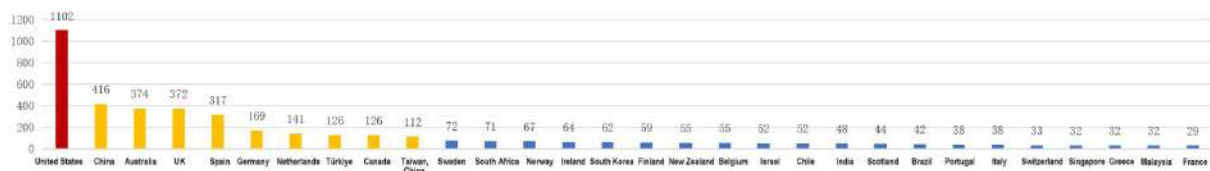


Figure 2: Top 30 Countries and Regions in English Publication Volume.

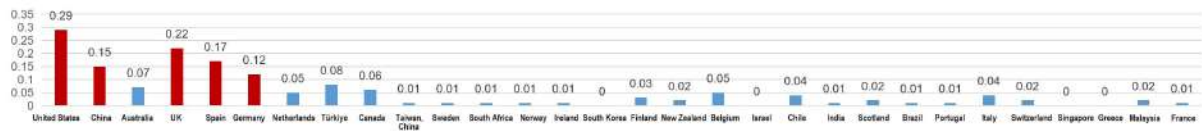


Figure 3: Top 30 Countries and Regions in English Publication Volume and Distribution of Betweenness Centrality.

## 1.2. In global educational evaluation research, there are now five major cross-regional segments with distinct yet overlapping focuses.

Based on the countries/regions of researchers, the keywords in English educational evaluation literature have formed five significant clusters as shown in Figure 4, mainly including China, Spain, the United Kingdom, the United States, Australia, and Türkiye.

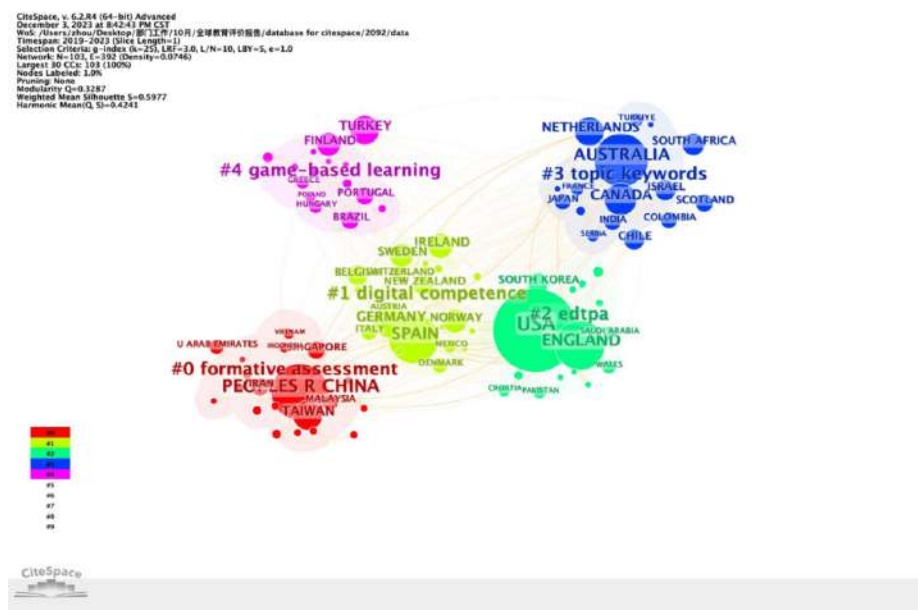


Figure 4: Cluster Analysis of Keywords and Author Countries/Regions in English Educational Evaluation Literature.

Based on this, cross-regional segments with overlapping aspects are presented in Figure 5:

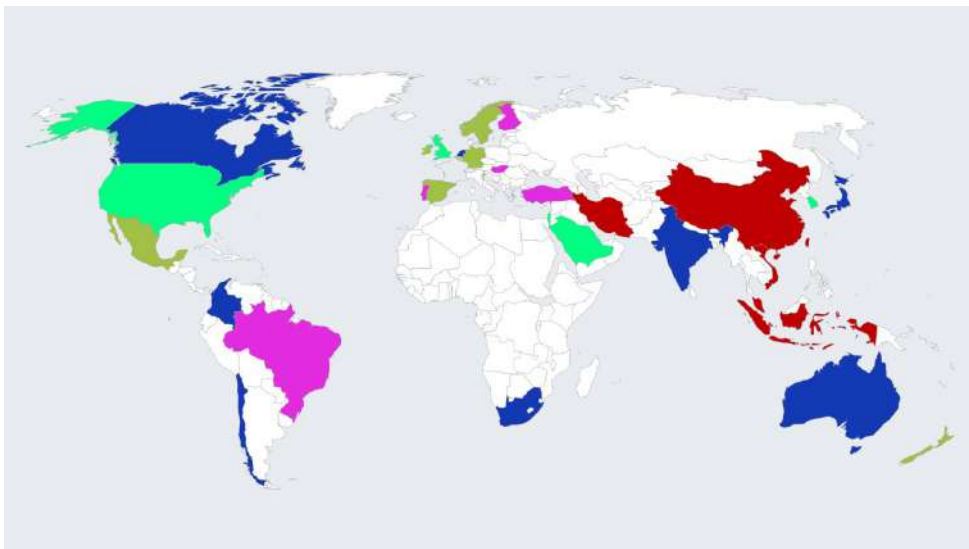


Figure 5: Global Distribution of Countries and Regions Involved in Different Clusters of English Educational Evaluation Research.

As shown in Table 1, each of the five cross-regional segments focuses on different aspects of educational evaluation, including systemic application, content reform, strategy research, teacher development, and technological innovation. Meanwhile, there are also overlaps among these segments, indicating that they are not entirely separate from one another.

Cluster No.	Countries/Regions involved	Keywords	Emphasis
0	Mainly China, also including Singapore, Iran, Malaysia, Indonesia and Vietnam	Formative assessment, feedback, application in subject fields, intelligent teaching system	Systemic application
1	Mainly Spain, also including European countries such as Germany, Sweden, Norway, Ireland, as well as Mexico and New Zealand	Digital competency, vocational education, effectiveness, heritage education, flipped classroom	Content reform
2	Mainly the United States and the United Kingdom, also including South Korea, Saudi Arabia, Wales and Croatia	edTPA, performance evaluation, educational policy, teaching strategy and qualitative research	Strategy research
3	Mainly Australia and Canada, also including the Netherlands, South Africa, Chile, Colombia, Japan and India	Topic keywords, initial teacher education, teacher performance evaluation, professional development, assessment tools	Teacher development
4	Mainly Türkiye, also including Finland, Portugal, Brazil and Hungary	Game-based learning, summative assessment, teachers, teaching technology, web	Technological innovation

Table 1: Cluster Analysis List of Keywords and Author Countries/Regions in English Educational Evaluation Literature.

**1.3. Educational standards and global educational evaluation projects led by international organizations have reached more countries and regions, with targeted studies and adjustments made under specific circumstances.**

The comprehensive expansion of educational evaluation led by international organizations covers theories, systems, technologies, and practices, but the most influential aspects are the dissemination of standards and the promotion of evaluation projects. Initially, international educational evaluation projects were conducted only among developed countries and regions. Since the 1990s, they have expanded to developing countries and regions, exerting an increasingly widespread influence. For example, as shown in Figure 6, the OECD PISA has now expanded to 81 countries and regions.



Figure 6: Countries and Regions Participating in PISA 2022.

Why has global educational evaluation formed a picture of «comprehensive expansion and localized balance»? This is mainly due to the interaction between globalization and localization. Educational evaluation research extends «comprehensively» due to economic globalization, educational universalization, and social modernization, while it maintains «localized balance» due to differences in regional cultures, educational traditions, and development stages.

## 2. Focal Points of Educational Evaluation Research: The Gathering of Evaluative Power

Bibliometric analysis reveals that global educational evaluation research has multiple focus areas, involving several key fields and topics:

- As shown in Figure 7, English research focuses on learning analytics, testing/assessment, student evaluation of teaching, computational thinking, peer assessment, teacher education, and educational policy.

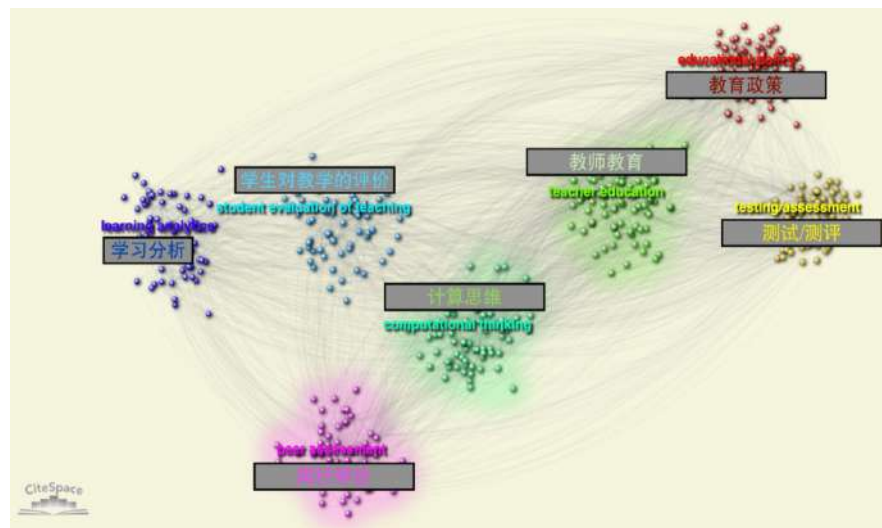


Figure 7: Cluster Analysis of Keywords in English Educational Evaluation Literature.

- As shown in Figure 8, Chinese research focuses on educational evaluation, value-added evaluation, labor education, core competencies, vocational college, and the United States.

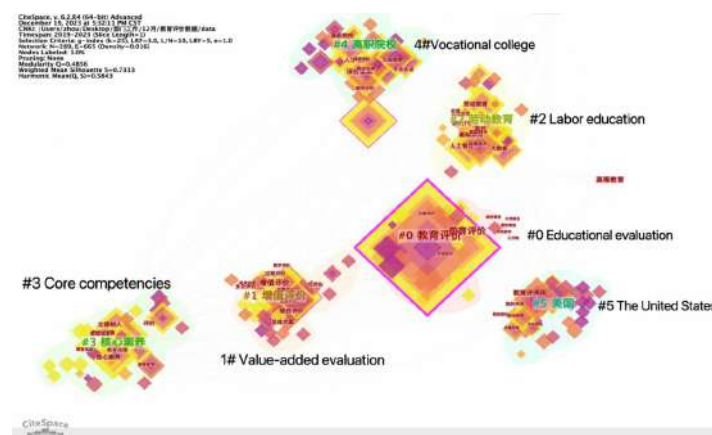


Figure 8: Cluster Analysis of Keywords in Chinese Educational Evaluation Literature.

- As shown in Figures 9 and 10, the high-frequency keywords in both Chinese and English literature cover major aspects of educational evaluation, with Chinese literature emphasizing grand narratives and English literature focusing more on microscopic matters.

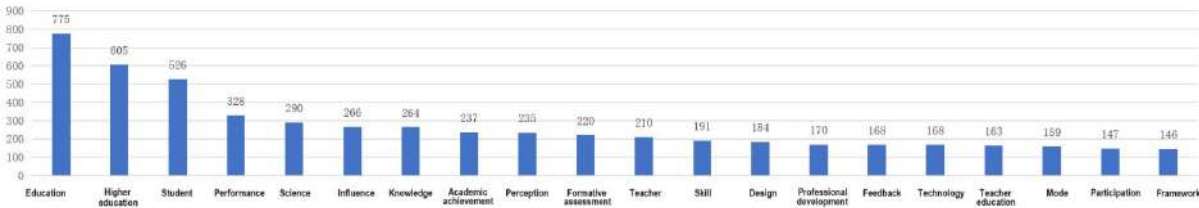


Figure 9: Top 20 Keywords in English Educational Evaluation Literature.

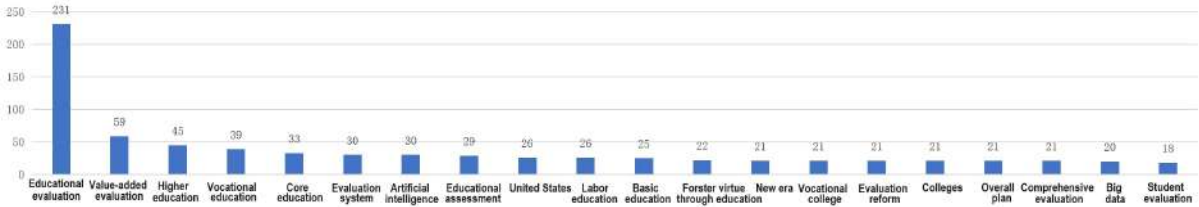


Figure 10: Top 20 Keywords in Chinese Educational Evaluation Literature.

Based on these research focuses, we find that global educational evaluation is undergoing profound changes.

**2.1. The focus of student evaluation is shifting from «increase» to «development».**

Student evaluation is a central focus of global educational evaluation. The clusters of «testing/assessment» and «learning analytics» in English literature, and the clusters of «value-added evaluation» and «core competencies» in Chinese literature, are all primarily focused on students. The keyword «student» appears 526 times in English literature, while related keywords like «value-added evaluation», «core competencies», «Forster virtue through education», and «student evaluation» appear 132 times in Chinese literature. A detailed analysis of these studies reveals that student evaluation is shifting its focus from the «increase» in students’ knowledge and abilities to their «growth». This shift is evident in several dimensions. In the subject dimension, greater emphasis is placed on students’ developmental rights such as evaluation of teaching. In the process dimension, greater emphasis is placed on the developmental process of students’ learning. In the dimension of outcomes, greater emphasis is placed on the developmental achievements of students’ learning. In the dimension of time and space, greater emphasis is placed on the developmental systems for students’ learning.

**2.2. The focus of teacher evaluation is changing from «professional development» to «comprehensive development».**

Teacher evaluation is another key focus of global educational evaluation. Clusters like «teacher education» and «student evaluation of teaching» in English literature target teachers, while «peer review/peer assessment» clusters include both teachers and students but predominantly focus on teachers. Teacher evaluation has undergone two significant shifts, as shown in Figure 11:

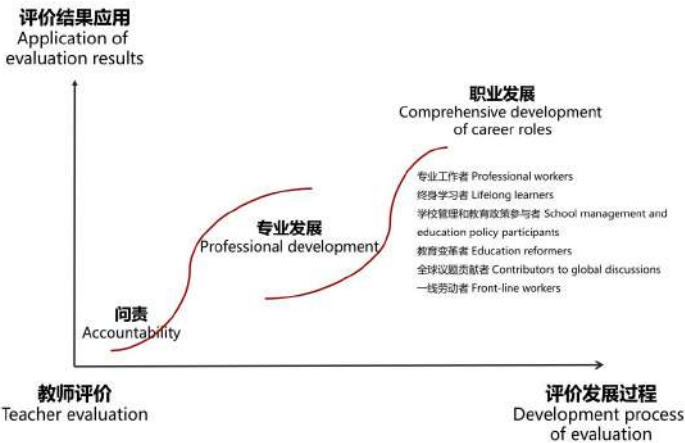


Figure 11: Shifts in the Application of Teacher Evaluation Results.

**2.3. The focus of school evaluation is shifting from «input» to «output».**

School evaluation varies from place to place, but a common trend is the shift from input elements like facilities, funding, and faculty to output elements such as disciplines, courses, programs, and teaching. This shift is evident in three aspects. First, more attention is paid to educational institutions at the output end. The keyword «higher education» appears 605 times (15.7%) in English literature, and «higher education», «vocational college», and «colleges and universities» appear 87 times in Chinese literature, accounting for 5.8% of the total. Moreover, «vocational colleges» have become a new cluster, demonstrating an emphasis on educational institutions at the output end. Second, more attention is paid to the «last mile» of educational practice. Sections including disciplines, courses, programs, and teaching have received substantial attention. For example, the continuously updated Teaching Excellence Framework (TEF) in the UK assesses student experiences and student outcomes. Third, more attention is paid to multi-layered, outcome-oriented accreditation. With the widespread promotion and recognition of the outcome-based education (OBE) concept, a multi-level accreditation system for student outcomes, courses, programs, disciplines, and institutions has taken shape.

**2.4. The focus of evaluation systems has changed from «disciplining» to «empowerment».**

The educational evaluation system comprises standards, tools, methods, technologies, systems, and policies. Macroscopically, the educational evaluation system is the basic framework of educational governance, generally following the logic of governance. Governance has two basic logics: one is discipline, which sets requirements («what you should do»), and the other is empowerment, which gives space for actions («what you want to do»). Global educational evaluation is shifting from a discipline-oriented approach to an empowerment-oriented approach, with a reduction in rigid elements and an increase in flexible elements. As shown in Figure 12, evaluation has various empowering methods.

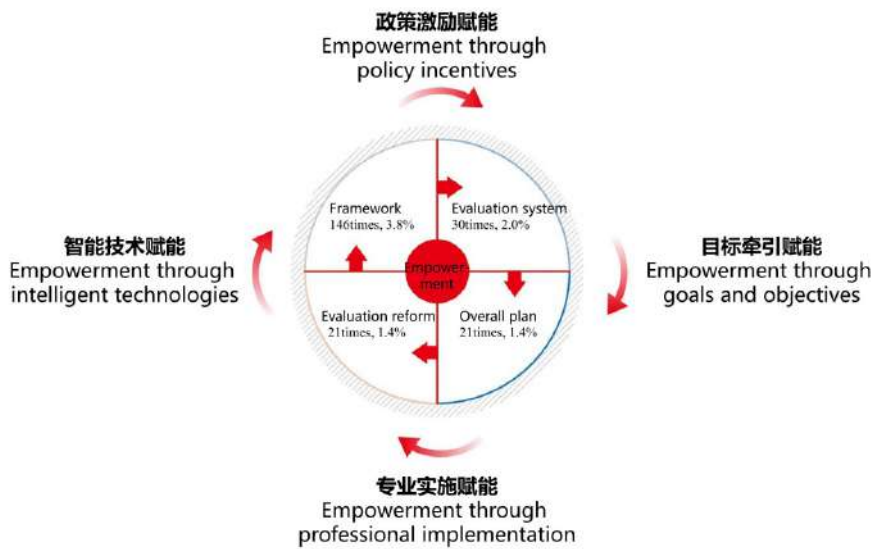


Figure 12: Empowerment System of Education Evaluation.

**Conclusions**

In summary, the global expansion and focus of evaluative power have created a pattern of «comprehensive expansion and localized balance» with several focal points. From the overall picture, the educational quality assurance system is weaving its global landscape. In terms of the focal points, the system increasingly emphasizes student development, teachers’ career development, schools’ output, and the empowering role of the entire system.

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## Understanding academic integrity: stakeholders' perspective

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### **Abstract**

*The paper addresses the academic integrity as the key pillar of quality in higher education and the threats it currently faces. The authors analyse academic integrity from the perspective of higher education institutions, students, authorities and quality assurance agencies. The examples from the national and international practice are used as evidence. The authors conclude by suggesting measures to counter contract cheating.*

### **Introduction.**

Rapid development of mass open online courses (MOOCs) that started a decade ago as a result of the advancement of information technologies skyrocketed worldwide during the global pandemic thanks to massive financial contributions and the necessity to meet the ever-increasing demand in education. It was additionally supported by the growing use of artificial intelligence (AI) that has invisibly penetrated all the spheres of our lives and transformed them irreversibly. In many spheres these transformations are regarded as purely positive. However, the system of education seems to stand out from the list and suffer rather than benefit from these advancements. There is currently a lot of debate around the «moral code of academia» [Student Academic Integrity Policy, 2020; 4] more commonly defined as academic integrity and the challenges it faces.

The International Center for Academic Integrity defines it as «a commitment, even in the face of adversity, to six fundamental values: honesty, trust, fairness, respect, responsibility, and courage» [International Center for Academic Integrity]. In the most general sense, academic integrity «complies with ethical and professional principles and standards» [Tauginienė, L., et al. 2018; 8]. It is fundamental to ensure high standards and credibility of higher education at all levels and in all jurisdictions.

Even though academic misconduct has had a long history and has taken a wide variety of forms (academic fraud, contract cheating, ghostwriting, etc.), the notion of academic integrity nowadays is under more serious threat than ever before. In the nearest past, the instances of academic misconduct were mainly local and took place at some physical and usually well-known educational institutions with the relevant reputation. Modern contract cheating providers are greatly flexible virtual entities without any national identification, able, if trapped, to resume their activity almost immediately.

This threat is already in place. According to Newton (2018) in samples from 2014 to 2018 the number of students admitting to paying someone else to undertake their work was 16%, which amounts to 31 million students around the world. However, even this impressive number may be underestimated. Not all instances of cheating are revealed in the first place due to a lack of the relevant tools and competencies, and a very small share of students are ready to confess cheating even after graduation. The severity of the consequences of academic integrity breaches is even harder to evaluate. The challenged quality of education and consequent employment on the labour market without properly developed skills or qualifications may cause significant damage to all the stakeholders involved.

In order to address threats to academic integrity, the joint efforts of all the stakeholders are needed: students, higher education institutions (HEIs), authorities, and quality assurance agencies (QAAs).

### **1. Students/HEIs' perspective**

The incongruity of the academic integrity problem lies in the fact that the most interested stakeholders are, actually, the worst violators. This is partly because many students do not consider contract cheating to be illegal in chase of a fast and effortless outcome. According to Turnitin's survey [Turnitin.n.d.], 20% of students do not understand that contract cheating is wrong, and 25% of the respondents claim that their educational institutions do not have contract cheating policies at hand. Among other drivers that push students towards breaching the academic integrity standards are numerous external pressures that make students vulnerable to contract cheating. These may include financial, time, language, family, and peer pressures or else dissatisfaction with the quality of teaching and learning [INQAAHE Toolkit..., 2020; 19] on the one hand and powerful marketing and persuasive methods applied by contract cheating service providers on the other.

Even though students should be responsible for their education and should be interested in its quality, these are HEIs that must ensure that the principles of academic integrity are communicated to and upheld by their entire academic community. [INQAAHE Toolkit, 2020;5]

The reasons why it does not happen are varied in nature. The tools that counter contract cheating have restricted functional capacity. For example, the Antiplagiat service in Russia identifies plagiarism and AI input in the work but cannot identify the involvement of contract cheating service providers. At the same time, the academic staff of the university may lack relevant knowledge to identify the instances of contract cheating. If a contract cheating instance is identified, they often do not know how to proceed with it. Legislation does not have proper punishment, reprimands, or reporting mechanisms to deal with violators. Moreover, the HEI itself does not want any negative publicity, thus trying to conceal the fact that cheating has occurred. [INQAAHE Toolkit, 2020;16]. Contract cheating service providers, on the contrary, promptly adjust their strategies to the changing circumstances. Some even promise «to mimic a student's unique writing style to ensure a 100% quality outcome.» [Gorenko, 2020] or offer some form of plagiarism — free guarantee



## 2. Perspective of authorities

Even though education authorities in some countries do not provide guidance or oversight for policies relating to academic integrity, mainly because people responsible for drafting the legislation are not familiar with or do not take seriously the problem of contract cheating, assuming that it is the responsibility of HEIs or QAAs, there are good practices in some countries that should be taken as a benchmark by other countries. For example, a person or a company providing or advertising cheating services in New Zealand «is liable on conviction to a fine up to 10 000 NZD (about 6000 USD or 500 000 RUB) (NZ official legislation website. 2020; 292E). We believe, the amount of the fine should be considerable, as low fines for academic integrity breaches may be considered as service costs by contract cheating providers. The rough estimates of revenue gained by one contract cheating provider on one micro-outsourcing site amount to \$92,001 USD, while the actual industry income is likely to be substantially higher.» [Lancaster, T. 2020]. There are currently no laws that would impose fines on cross-border contract cheating service providers. Therefore, cross-country cooperation is an essential component of protecting academic integrity.

## 3. Perspective of quality assurance agencies

Quality assurance agencies play a central role in ensuring academic integrity by assessing the provider and documenting its compliance with the predetermined standards and criteria. The certificate of accreditation serves as evidence of the relevant quality of the accredited study programmes or educational institutions that meet stakeholders' expectations. The certificate is issued by a credible accreditation agency based on careful evaluation, transparent procedure, and published documents, which altogether serve as an indicator that the educational institution can be trusted.

The National Centre for Public Accreditation (NCPA) has been a strong advocate of academic integrity in its activities since its establishment. Forming a quality culture in educational institutions is part of NCPA's mission [ncpa.ru. (n.d.) Mission]. NCPA is recognised at the national level by being registered in the list of accrediting bodies of the Ministry of Science and Higher Education of the Russian Federation. It voluntarily subjected itself to several external reviews carried out by ENQA (2014, 2019), EQAR (2014, 2019), and APQR (2017, 2023) thus proving its procedures are compliant at the international level. NSPA's standards and criteria used to evaluate HE programmes address academic integrity in its documents (Regulations of public accreditation and Standards and criteria for public accreditation) [ncpa.ru. (n.d.). Documents]. The main goal of the credible accreditation agency is to protect accreditation integrity and provide expert advice and guidance to the sector.

Credible accreditation agencies also face unfair competition as diploma mills have stimulated the emergence of accreditation mills offering fake quality assurance documents. The increasing demand in education requires more sophisticated systems of quality assurance to meet the needs and expectations of students and keep the reputation of educational institutions.

Knowledge sharing on the measures that are taken by QAAs to encourage HEIs to adhere to the academic integrity, on how the academic integrity is reflected in the standards and criteria of accreditation is essential to ensuring the adherence to the values. It might also help prevent the academic misconduct when the accreditation agency publishes the identified instances and maintains a database of academic cheating service providers and users.

## 4. Countering contract cheating

HEIs, authorities and QAAs should join their efforts to develop a collective approach to disrupt the activity of contract cheating service providers. In order to develop measures against contract cheating, institutions should first and foremost develop and publicize clear academic integrity policy that can be effectively and consistently implemented. Ongoing training should be in place for students and staff about the value of academic integrity, the risks of academic misconduct and how it can be avoided. There should be serious punishment for academic misconduct, but at and support of those who follow the policy. Checking the rough drafts of students' works along with early detection of students who need extra support might reduce the risk of contract cheating HEIs should understand what type of students are targeted and what methods cheating service providers use to address these students.

Authorities' responsibility is to develop and implement systemic policies and legislation in order to promote academic integrity in education.

QAAs ensure the quality of education therefore it is their primary responsibility to safeguard the reputation of HEIs by introducing the academic integrity component in their standards and criteria. Moreover, QAAs recommendations for HEIs to counteract these actions. QAA's fair share is to develop more sophisticated systems of quality assurance that could provide guidance and support for HEIs, students, and authorities for a better future.

## Conclusion

It was digitalization that boosted the breach of academic integrity, and it is digitalization that should prevent academic misconduct. «When used responsibly, AI has the potential to support and enhance the learning process» [Turnitin]. The continuous development of new powerful IT tools is bound to prevent education fraud. However, digitalization advancements are purely instrumental. A clear education quality assurance and ethical strategy always come first. In order to work that way, it should be backed with the properly established «moral code of academia» being an integral part of the internal quality assurance system of HEIs, guiding principle of the work of authorities and the foundation of QAAs' standards and criteria. Only joined efforts will help to bring up a new generation of ethically responsible professionals. Authorities' responsibility is to develop and implement systemic policies and legislation in order to promote academic integrity in education.

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## Joint accreditation as an instrument of enhancement of Quality Assurance policies

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### **Abstract:**

*The paper explores the importance and benefits of external quality assurance (QA) of teaching and learning in higher education institutions (HEIs) carried out jointly by domestic and foreign QA agencies. It outlines the primary challenges that QA agencies encounter while carrying out joint accreditation procedures. This paper particularly focuses on the cases of joint accreditation. It also examines policies and perspectives of joint accreditation and explores good international practices.*

*The National Centre for Public Accreditation (NCPA, Russia) shares its experience of carrying out accreditation procedures jointly with foreign QA agencies and focuses on the main challenges and opportunities that this procedure may have for different stakeholders (governing bodies, universities, QA agencies, students, scholars, etc.). By analysing the methodology of joint accreditation as a QA phenomenon, the author focuses on its specific features, stages, benefits, and challenges and outlines the prospects of quality assurance in higher education for international cooperation.*

### **Introduction**

Joint accreditation is not a new notion in QA terminology. In order to understand the meaning of a term and its importance for the national context, it is helpful to explore the terminology.

First of all, users and the public associate joint accreditation with the evaluation of network educational programmes, or double degree educational programmes that ensure collaboration by connecting learners from different locations and offering flexibility of time and location, thus enabling students to access educational resources offered by several educational institutions and participate in activities at their convenience.

Joint or double degree programmes and network educational programmes involve collaboration between two or more organisations in different countries, joining their resources and expertise to offer students a comprehensive and globally-oriented educational experience. Such programmes are recognized through external evaluation, which means that they meet the established standards of quality and academic rigour, validating the collaborative efforts of participating universities and QA agencies and safeguarding the interests of students in the long run.

Accreditation of joint programmes generally implies global recognition. Accreditation through joint bodies enhances the credibility and recognition of double degree programmes and network educational programmes on a global scale, signaling to stakeholders that the qualifications obtained are of high quality and meet international standards. As the mobility of students and the development of joint programmes increases, there is an even greater need for international recognition of the quality education being provided.

Accreditation in higher education is a process through which educational institutions and programmes are evaluated by QA agencies to ensure they meet certain standards of quality and excellence. Accreditation helps to maintain and improve the quality of education by holding institutions accountable for their performance and encouraging continuous improvement.

There are different types of accreditation, such as national accreditation, which often involves only local experts; international accreditation, which typically applies to reviews based on international standards and involving international experts; and joint accreditation, when the review is conducted by a domestic and a foreign agency and, as a result, two independent decisions are made.

### **Global studies and overview of joint accreditation cases**

#### **US case**

The first and only procedure of joint accreditation for interprofessional continuing education in the health professions is represented by IPCE which includes 10 accrediting bodies as of now. Using a single, uniform application process, fee payment guidelines, and accreditation standards, they make it possible for the educational institutions to be accredited concurrently to deliver a range of job-specific continuing education programmes.

It allows to award interprofessional continuing education credit (IPCE) to athletic trainers, dentists, dietitians, nurses, optometrists, physician associates/physician assistants, pharmacists, physicians, psychologists, and social workers without the need for additional accreditations (<https://jointaccreditation.org/>).

Twelve core joint accreditation criteria cover the requirements for providers of continuing education for the health-care team in such areas as mission and overall programme improvement, activity planning and evaluation, integrity and independence. The standards have been adopted by Joint Accreditation and the co-founders of Joint Accreditation (the Accreditation Council for Continuing Medical Education (ACCME); Accreditation Council for Pharmacy Education (ACPE), and the American Nurses Credentialing Center (ANCC)), as well as other accrediting bodies in healthcare. As a result, medical professionals are provided with a special Joint Accreditation Provider Mark and are listed in JAPARS database.

#### **European case**

Joint accreditation of study programmes represents a contemporary trend in enhancing quality assurance within the European Higher Education Area (EHEA). During the Erevan conference in May 2015, the European Ministers responsible

for higher education endorsed the European Approach for Quality Assurance of Joint Programmes, setting guidelines and protocols for joint accreditation. They approved the document «European Approach for Quality Assurance of Joint Programmes», which laid out standards and procedures, based on the agreed tools of the EHEA, without applying additional national criteria.

The European approach for quality assurance of joint programmes is expected to facilitate integrated approaches to quality assurance of joint programmes that genuinely reflect and mirror their joint character (<https://www.eqar.eu/kb/joint-programmes/agreed-standards>).

The institutions that offer joint programmes should also be recognised by relevant authorities of their countries. Their respective national legal frameworks should enable them to participate in the joint programme and, if applicable, to award a joint degree. The institutions awarding such a degree should ensure that the degree belongs to the higher education degree system of the countries in which they are based.

European QA agency (EQAA) uses 9 specific standards for Joint Degrees: 1) Eligibility; 2) Learning Outcomes; 3) Study Programme; 4) Admission and Recognition; 5) Learning, Teaching and Assessment; 6) Student Support; 7) Resources; 8) Transparency and Documentation; 9) Quality Assurance (<https://eqaa.eu/en/accreditation/standards/>).

**Taiwan, Japanese, Thailand, Australian, and Mongolian case**

Taiwan Assessment and Evaluation Association (TWAEA), Japan (Japan University Accreditation Association (JUAA), and Thailand (Office for National Education Standards and Quality Assessment (ONESQA) collectively developed the Handbook for joint accreditation among Taiwan, Japan, and Thailand, and also designed TWAEA International Pilot Platform ([pp.twaea.org.tw/en](http://pp.twaea.org.tw/en)) to lead Taiwan’s higher education to be more internationalized.

JUAA and TWAEA initiated joint accreditation in 2018 and were consequently joined by the Office for National Education Standards and Quality Assessment (ONESQA, Thailand) in 2021 and the Mongolian National Council for Education Accreditation (MNCEA, Mongolia) in 2024. Thus, this project is currently being operated by these four agencies. The framework and standards were integrated to create synergies within each region through the knowledge exchange on international evaluation practice. In 2022, the Higher Education Accreditation & Evaluation Council of Taiwan (HEE-ACT, Taiwan) and the International Centre of Excellence in Tourism and Hospitality Education (THE-ICE, Australia) also developed the joint accreditation model for cross-border higher education between Taiwan and Australia.

THE-ICE (Australia) has expanded into a global organisation with a network of 44 members in 19 countries across 4 continents and sees this project as an opportunity to investigate the feasibility of developing a cross-border joint review model by examining their respective accreditation mechanisms at the programme level, understanding the operational pattern and accreditation mechanisms and standards of two countries.

**NCPA case**

Since 2015 NCPA has implemented several joint accreditation projects together with 8 QAA partners from 6 countries. They are summarised in the table below.

Country	QAA partner
Belgium	Association Européenne des Conservatoires, Académies de Musique et Musikhochschulen (AEC)
Belgium	Music Quality Enhancement: Foundation for Quality Enhancement and Accreditation in Higher Music Education (MusiQuE)
China	Education Quality Evaluation Agency of the Ministry of Education, P.R. China (EQEA)
Germany	Accreditation, Certification and Quality Assurance Institute (ACQUIN)
Germany	Evaluationsagentur Baden-Württemberg (EVALAG)
Kazakhstan	Independent Agency for Accreditation and Rating of the Republic of Kazakhstan (IAAR)
Kyrgyz Republic	Independent Accreditation Agency «Bilim-Standart»
Taiwan	Higher Education Evaluation and Accreditation Council of Taiwan (HEEACT)

Table 1

The participating agencies viewed joint accreditation as a very positive experience, beneficial to both HEIs and the agencies involved. Joint accreditation emerged as a valuable tool for fostering confidence in the quality of international education, potentially streamlining bureaucratic processes, and easing the burden on universities during programme evaluations. It serves to instill trust and recognition in the educational quality provided.

NCPA has been closely cooperating with EQEA (China) for 8 years. 68 educational programmes delivered by 7 Russian universities and 9 educational programmes delivered by 5 Chinese universities were accredited by NCPA and EQEA.



The key steps of joint accreditation will be clarified using the example of evaluation that is jointly carried out by EQEA and NCPA. The procedure starts with a bilateral agreement between the partner agencies, meticulous preparatory work, and a detailed account of all procedural issues: agreement and coordination of standards, methodological consulting and support of representatives of HEIs undergoing joint accreditation, a self-evaluation report prepared by the HEI undergoing accreditation, followed by a three-day site visit, after which the external review panel prepares an external review report based on the provided materials and the evidences observed onsite. The success of the evaluation exercise, its effectiveness and efficiency depend on the concerted effort and rapport of the external review panel.

However, there are a lot of challenges arising on the way. In the first place, it is the reluctance of the national education authorities to take into consideration the results of joint accreditation. They identify a threat to their influence on a HEI and try to rationalise their inaction by the argument that the standards of joint accreditation do not take into consideration national requirements and context.

Accreditation can be both mandatory and voluntary, but many institutions choose to seek accreditation as a way to demonstrate their commitment to quality education. It is important for students and parents to verify the accreditation status of any institution they consider entering in order to ensure the quality of education that students will receive there.

### **Benefits of Joint accreditation**

1. Joint accreditation can gain wider recognition by boosting credibility, facilitating credit transfer, enhancing employability, creating networking opportunities, and ensuring quality assurance:

- Global Credibility: Accreditation from multiple international bodies adds credibility to the institution or programmes, making it more reputable on a global scale.
- Transferability of Credits: Accreditation by international bodies can facilitate easier transfer of credits between institutions worldwide, making it easier for students to continue their education in different countries.
- Employability: Graduates from accredited programmes are often more attractive to employers, both locally and internationally, as accreditation signifies that they have received education of good quality.
- Networking Opportunities: Through joint accreditation, institutions can establish partnerships with other accredited institutions globally, leading to collaborations, research opportunities, and exchange programmes that can further enhance their reputation.

- Quality Assurance: Joint accreditation ensures that universities and educational programmes meet certain quality standards that are recognised globally, reassuring stakeholders about the quality of education being provided.

- Cross-Border Collaboration: Joint accreditation bridges geographical boundaries and fosters collaboration between local and foreign QA agencies, promoting cultural exchange, diversity, and the sharing of best practices in education.

2. Joint accreditation can ease external quality assurance of joint degree programmes. In particular, it can:

- dismantle an important obstacle to the development of joint programmes by setting standards for these programmes that are based on the agreed tools, without applying additional national criteria, and
- facilitate integrated approaches to quality assurance of joint programmes that genuinely reflect and mirror their joint character.

3. Joint accreditation can streamline the accreditation process, reducing the time and resources that QA team members spend.

4. Joint accreditation can help promoting quality culture by building knowledge and sharing experience when QA agencies learn with, from, and about each other to enable effective collaboration and improve QA in the local country.

- Sharing experiences allows institutions to learn from each other's successes and challenges, enabling them to adopt best practices in accreditation processes and standards; allows QAA agencies to learn from each other's successes and challenges, enabling them to adopt best practices in accreditation processes and standards, promoting continuous improvement, innovation, and the adoption of quality assurance measures that are relevant and effective in the context of cross-border educational collaborations.

- Harmonization of Standards: Collaborating on accreditation processes promotes the harmonization of standards across different countries, ensuring consistency and comparability in evaluating educational quality.

- Enhanced Transparency: Sharing experiences and knowledge promotes transparency in accreditation processes, helping to build trust among stakeholders and ensuring accountability in the evaluation of universities and study programmes.

- Cross-Cultural Understanding: Exchanging ideas and experiences enhances cross-cultural understanding among institutions, fostering a more inclusive and diverse approach to accreditation that considers various perspectives and contexts.

- Global Perspective: By building knowledge and sharing experiences internationally, universities can gain a global perspective on accreditation practices, enabling them to better adapt to the evolving landscape of higher education on a worldwide scale.

### **Conclusions**

The paper may be of interest to universities that deliver joint programmes, national QA agencies, government bodies, and experts responsible for QA. Though joint accreditation is a relatively recent tool in the realm of higher education, it plays a crucial role in higher education by promoting collaboration between institutions and accrediting bodies to uphold the quality and standards of educational programmes. It facilitates the recognition and validation of joint degree programmes, encourages international cooperation, boosts student mobility, and instills confidence in the quality of education provided through global partnerships. Moreover, joint accreditation simplifies evaluation procedures, alleviates administrative complexities for institutions, and supports the ongoing enhancement of educational benchmarks.

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# The role of information technology in the internal quality assessment system of universities

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## **Abstract:**

*This article presents the results of the study of internal quality assessment systems in higher education institutions in various countries. Particular attention is paid to the digital tools used for conducting quality assessment procedures. The paper proposes options for creating a specialized information technology system.*

## **Contents**

### **1. Relevance**

The relevance of this research arises from the necessity to enhance the quality of higher education in the current environment. Quality assessment systems in universities are crucial tools for determining the level of student preparedness and the overall effectiveness of an educational institution. Internal university assessment is a crucial element of the quality assessment system.

Legal regulation of internal quality assessment systems (IQAS) in foreign universities occurs at various levels: national, regional, and institutional. Different countries have their own approaches and standards that govern this process.

Universities in Australia are required to conduct internal audits and submit reports to TEQSA to confirm their compliance with the established standards.

There is no single federal body in the U.S. that fully oversees the quality of education in universities. However, the U.S. Department of Education, through accreditation agencies (e.g., the Higher Learning Commission), sets standards that universities must meet to obtain accreditation.

Universities in Japan are required to have internal quality control systems that meet the requirements of MEXT and accreditation agencies. According to the Education Law, universities must conduct their own inspections and assessments of the overall status of education and research, organizational management, and facility equipment, as well as publish the results to contribute to the enhancement in the standards of education and research.

Every university in Kazakhstan is obligated to have its own internal quality assessment system that meets national standards and requirements. Universities conduct internal audits and self-assessments of their educational programs and processes. They collect and analyze feedback from students to identify strengths and weaknesses in the learning process and make necessary improvements.

The NQASE is a state control system in Kazakhstan aimed at maintaining and improving the quality of educational services in the country. This system plays a significant role in monitoring and assessing the quality of education, ensuring that educational institutions comply with established standards and regulations.

According to the Law «On Education» of Kazakhstan, the independent quality assessment system of education is defined as «a set of institutional structures, procedures, forms and methods for establishing the conformity of the quality of education with state mandatory educational standards, the needs of the individual, society and the state» [1]. According to Article 55, educational monitoring is carried out through external and internal quality assessment of education. According to Article 59, educational organizations annually conduct self-assessment of their educational activities and submit self-assessment materials to the agency of the authorized body in the field of education, its territorial subdivisions, the agency of the authorized body in the field of science and higher education, the authorized body in the field of healthcare and the Supreme Court of the Republic of Kazakhstan [1]. Within the framework of the legislation, Methodical Recommendations on the Organization and Conduct of Self-Assessment of Educational Organizations are provided.

In Russia, the Federal State Educational Standards of Higher Education, which began to be approved by the Ministry of Education and Science of the Russian Federation in 2017, introduced a new item in Section 4 «Requirements for the Conditions for Implementing the Bachelor's Program» — «4.6. Requirements for the Mechanisms Used to Assess the Quality of Educational Activities and Training of Students under the Bachelor's Program.» Subparagraph 4.6.2 states: «In order to improve the Bachelor's program, the Organization, when conducting regular internal assessments of the quality of educational activities and student training under the Bachelor's program, shall involve

employers and/or their associations, other legal and/or natural persons, including the faculty of the Organization. Within the framework of the internal system for assessing the quality of educational activities under the Bachelor's program, students are provided with the opportunity to evaluate the conditions, content, organization, and quality of the educational process as a whole and of individual disciplines (modules) and practices» [2].

Educational institutions are required to conduct internal quality assessment procedures to ensure a high standard of education and compliance with educational standards. The IQAS (Internal Quality Assessment System) is based on local regulations that govern educational programs and processes within the educational organization. It includes an assessment of the educational environment, teaching materials, student learning activities and their outcomes, as well as an assessment of the quality of the faculty.

To assess the educational environment and teaching materials, the academic plans and programs of academic disciplines are analyzed to ensure their compliance with the educational standards. Student learning activities are evaluated through ongoing monitoring, midterm assessments, portfolios of academic and extracurricular achievements, academic performance trends, and so on. Feedback from students and faculty is gathered through surveys and questionnaires, providing an opportunity to adjust the educational process.

The evaluation of the quality of the faculty includes analyzing the professional level of the academic staff. The results of the IQAS can be used to improve educational programs and create conditions to prevent violations of educational standards.

Internal quality assessment systems are an important part of university management worldwide. These systems ensure continuous monitoring and improvement of educational programs, allowing universities to maintain high standards of education and meet the needs of students.

These systems, which include student surveys, internal and external audits, self-assessments, and accreditations, help to create an effective and high-quality learning environment.

To conduct a comprehensive internal quality assessment, it is necessary to collect and process a large amount of diverse information, which is typically stored in various databases. The application of information technology allows for the automation of data collection, processing, and analysis processes necessary for evaluating the quality of educational services. Modern technologies can ensure the processing of large volumes of data, the evaluation and monitoring of the effectiveness of educational processes, as well as the analysis of customer satisfaction with educational services. The application of information technology can contribute to increasing the objectivity and transparency of quality assessment of education, enabling timely responses to changes and informed management decisions.

The aim of this work is to study and analyze existing internal quality assessment systems in universities in terms of the application of information technology to organize the process.

## **2. An Overview of Educational Institution Solutions**

Stanford University utilizes the Teaching Evaluation Program, which incorporates regular student surveys on the quality of teaching. These surveys are conducted at the end of each course. Student feedback is analyzed and used to improve academic programs. Evaluation of teaching and learning extends beyond collecting feedback at the end of a course and includes midterm feedback and other methods for assessing the quality of faculty work, including peer review and faculty self-reflection [3].

The creation of the Teaching Evaluation Program is based on compliance with Accreditation Standard 4, «Creating an Organization Committed to Quality Assurance, Institutional Learning, and Improvement,» Section 4.4 of which states: «The institution, with significant faculty involvement, engages in ongoing study of teaching and learning processes, as well as the conditions and practices that ensure achievement of the institution's established effectiveness standards. Faculty assume responsibility for assessing the effectiveness of teaching and learning processes and use the results to improve instruction and student achievement. The results of such studies are used to develop and improve academic programs, pedagogy, and assessment methodologies.» [4]

In 2021, Stanford University implemented a new platform for online end-of-course evaluations. This included replacing the third-party provider and the basic technology used to deliver and analyze evaluations. The new system replaces the previous What Do You Think? system, which had been used for online end-of-course evaluations since 2006. The new system also replaces the system previously used for supporting CourseLeaf user questions, bringing the entire course evaluation process into a single, modern system [5]. One of the most helpful features of Stanford's course feedback form is the ability to add user's questions to the standard form, which can generate more specific and efficient feedback [6].

LTS Evaluation and Research manages the collection and maintenance of all course evaluation data as a part of Stanford's mission of teaching and learning and in accordance with the directives of the Course Evaluation Committee. This course evaluation data contains valuable feedback regarding the teaching and learning process at Stanford and is primarily intended to help the faculty improve their teaching. LTS Evaluation and Research facilitates the sharing and provision of data based on the demonstrated need by campus stakeholders and in compliance with governance policies established by Institutional Research & Decision Support, Stanford Information Security Office, and Stanford Privacy Office [7].

Kyoto University utilizes an Internal Quality Assurance System that embodies regular self-assessments and internal reviews of academic programs in accordance with national law. Continuous control of education, research, social collaboration, organizational management, and other areas is conducted to promote the development and improvement of academic activities. Units subject to self-inspection and assessment include postgraduate studies, faculties, affiliated research institutes, libraries, and affiliated institutions. The deadlines for the summarizing are determined by the committee on an individual basis, taking into consideration the timing of the corporate evaluation and accreditation evaluation. [8]

According to Kyoto University's Basic Policy for Self-Inspection and Evaluation, the following points are considered in conducting self-inspections and evaluations to enhance the quality of assessments:

- Target departments are selected based on the characteristics of subordinate organizations responsible for educational and research activities, such as specialties, departments, affiliated institutions, etc., as needed.
- To justify self-inspection and evaluation, ensuring the possibility of verifying their content, evidence and data are provided.
- When conducting self-inspection and evaluation, the characteristics of the academic field, as well as the educational and research activities of students and society, are considered.
- Based on past achievements, future plans include the response to changes in the university environment and academic fields. [9]

During the data collection procedures for internal quality assessment, digital services and programs such as OpenAI Forms, Excel spreadsheets, web questionnaires, and web-sites are utilized.

The University of Sydney (UTS) conducts student and graduate surveys that are used to evaluate and improve its academic programs. Nearly every subject taught at the university is thoroughly assessed by students at the end of each semester. Over 100,000 survey responses are collected. Since 2015, Unit of Study Surveys (USS) have been conducted online with automated processing, increasing the coverage rate for all modules offered at the university by several times. Among the data visualization tools for the conducted surveys, the University uses Tableau to track trends. This provides insights into the feedback across the faculty [10].

A review of the Regulations on the Internal Quality Assurance System of Education in various Russian universities has revealed that educational institutions predominantly employ manual or semi-automated systems for analyzing survey results. As a result, the process of data processing and analysis becomes more time-consuming and labor-intensive. This study has analyzed the regulations of 30 universities in the Russian Federation, including: Volgograd State Technical University, Peter the Great St. Petersburg Polytechnic University, Russian Academy of National Economy and Public Administration under the President of the Russian Federation, All-Russian Academy of Foreign Trade of the Ministry of Economic Development of the Russian Federation, Moscow University named after S.Yu. Witte, and others.

The study has revealed that, for example, Volgograd State Technical University, like most universities, conducts internal quality assessment in the following areas: internal testing of students, including entry-level knowledge assessment; expert evaluation of achievements and results of scientific-pedagogical (pedagogical) staff and students; monitoring of current knowledge (inter-sessional certification) and intermediate certification of students; state final certification of students; analysis of employer feedback on the quality of graduate preparation; surveys and questionnaires of stakeholders; conducting regular self-assessment of the University's activities; monitoring the quality of education, periodic audits (planned or unscheduled) of the University's structural units, educational programs, etc. [11]

Most universities conduct internal quality assessment of educational activities through surveys in the form of electronic and paper questionnaires, oral and written surveys, interviews, and structured conversations. These formats do not allow for an objective assessment of the quality of educational activities, as they provide an insight into the subjective perception of the quality of educational activities by survey participants at a specific point in time, but they do not allow for comparative analysis or identification of trends in quality changes over several years or during the academic year. Digital tools, at best, exploit the capabilities of the universities' electronic information systems (EIS), and more often paper questionnaires or Google Forms.

Advanced universities, such as Peter the Great St. Petersburg Polytechnic University, utilize question pools for disciplines (modules) developed by university faculty and posted on open educational platforms, namely: the National Portal «Open Education,» Coursera, Lektorium, and the portals of St. Petersburg Polytechnic University's distributed distance learning system [12], for conducting internal independent quality of education assessments. This not only allows for evaluating students' mastery of educational programs at a specific time but also for comparing student performance within groups, programs, enrollment years, assessing the quality of teaching a discipline over a long period, and making changes in the educational process and personnel decisions.

### **3. The proposed solution to the problem**

Currently, Russia lacks standardized requirements and criteria for internal quality assessment of education. All universities have policies on their websites regarding their quality assurance systems, and their self-assessment reports reflect the results of internal evaluation. However, the content and outcomes of these evaluations vary significantly. The common element is the conducting of surveys for students, faculty, and employers. Only a few universities in Russia conduct a full-fledged, independent internal quality assessment on third-party platforms.

The higher education system needs standardized internal quality assessment procedures through the development of unified, clear criteria and the definition of the assessment system structure. To conduct surveys of students, faculty, and employers, it is essential to develop standardized questionnaires with the minimum necessary questions for each category. The university's electronic information and educational environment (EIOS) serves as a convenient tool for conducting surveys and analyzing their results.

For internal independent quality assessment of student knowledge, universities can utilize both their own EIOS and third-party educational platforms, including those of corporate universities of employers.

The optimal solution involves employing information systems that facilitate the collection, analysis, and application of data required for efficient management of educational programs and the university as a whole. Such a system can

be developed based on 1C solutions, which already offer a ready-made solution for schools called «1C: Quality of Education Assessment. School» Another option is to develop custom solutions based on the university's EIOS, for instance, by creating specialized plugins for the LMS Moodle. The third option is to create a unified federal information system.

Universities currently possess, on average, one to two information systems: one for student management (1C. University, SPROUT, etc.) and another for EIOS (LMS Moodle, Russian Moodle 3KL, 1C: E-Learning, etc.). More advanced universities establish connections between these systems, ensuring the movement of student data is reflected within a short period in both systems. This allows access to data on student performance, faculty activity, curriculum, etc., as a unified database. This approach allows universities to create their own internal quality assessment system and promptly obtain information on student performance levels, learning progress, teaching effectiveness, and the satisfaction of students, faculty, and employers with learning conditions and quality. Uniform requirements for internal quality assessment would enable universities to compare their indicators with those of other institutions and adopt best practices.

The application of information technology within the internal quality assessment system significantly expands the capabilities for data collection, analysis, and interpretation of the educational process. Consequently, it enables more precise and objective evaluation of educational quality, identification of weaknesses, and the development of measures to address them. Technology also simplifies communication between all participants in the educational process, fostering a deeper understanding of the needs and capabilities of each learner.

#### **4. Application of Internal Quality Assessment Results in Higher Education Institutions**

Currently, most Russian universities conduct internal quality assessment (IQA) formally without incorporating its findings. Some universities, such as the Institute of International Economic Relations, utilize student satisfaction surveys to inform personnel decisions regarding the faculty. ITMO University implements the 360 System, which comprises four key elements: student surveys, classroom observations of the faculty, self-assessment of the academic staff (AS), and evaluations from supervisors and colleagues of the academic staff (AS). Winners in specific tracks receive awards for their achievements in educational activities [13].

Analyzing the information collected by universities about their performance, personnel, and students can drive the modernization of educational programs, enhance the quality of education, and increase the satisfaction of all stakeholders. Developing rankings based on the effectiveness of internal quality assessment systems at universities might encourage their advancement and standardization. Automating the information collection and processing can streamline workflows, improve the quality and accuracy of analysis, reduce time spent on report preparation and trend identification, and facilitate better management decisions based on timely and reliable data.

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## Innovative activities of HEIs as the basis for the developing a new APQN Quality Label (APQL)

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### Abstract

This article explores the role of innovations in Higher Education Institutions (HEIs) and proposes a framework for the new APQN Quality Label to assess and develop these efforts. The authors emphasize the importance of integrating innovation into the traditional functions of teaching, research, service to society, and internationalization. Key metrics such as the number of innovation projects, publication and patent counts, and stakeholder engagement, etc. are proposed for evaluating innovation. The development of a structured assessment framework based on established guidelines, including the Oslo Manual and CEN family, aims to foster a culture of continuous improvement and excellence in HEIs. By aligning innovation strategies with strategic objectives, the proposed framework seeks to enhance the global standing and societal impact of HEIs.

### 1. Introduction

In today's rapidly evolving world, the education faces a critical challenge: preparing students for a future of unknown jobs and unforeseen challenges. Higher Education Institutions (HEIs) have long served as cornerstones of society, shaping generations of thinkers and innovators (MIT Institute of Design, 2021). Traditionally, their mission has revolved around four pillars: teaching, research, service to society, and internationalization (Castro & Levy, 2015). These roles remain fundamentally important, equipping students with knowledge, fostering discovery, addressing societal challenges, and promoting global understanding (National Academies of Sciences, Engineering, and Medicine, 2013).

However, the world is constantly evolving, demanding new approaches to education, research, and societal engagement. In this dynamic landscape, a fifth pillar is emerging as a crucial element for HEIs: innovation. By integrating innovation across all aspects of their activities, HEIs can empower students, drive advancements in knowledge, and contribute meaningfully to a rapidly changing world.

The impact of HEI's innovation extends far beyond individual students. It has the power to bridge geographical and socioeconomic divides. Educational innovation is not merely about acquiring skills. It is about fostering an innovative mindset — the ability to think creatively and solve complex problems (EU Commission, 2022). There are a number of prominent examples such as Innopolis HEI's Quantum Computing Center and Center for Hyperloop Transportation Technologies, alongside ITMO HEI's National Center for Cognitive Technologies and Research Center for Neurotechnologies. Additionally, St. Petersburg State HEI's (SPbSU) Research Park and The N.N. Semenov Institute of Chemical Physics will be investigated for their role in fostering groundbreaking research. Also, the HEIs are facilitating cooperation between diverse academic disciplines, paving the way for cross-fertilization of ideas and the development of new solutions. This can be exemplified by HSE HEI St. Petersburg's focus on «Urban Studies and Smart Cities,» a program blending expertise in urban development, transportation planning, and social policy to address critical challenges faced by modern urban environments. SPbSU's pursuit of «Next-Generation Materials,» a field merging physics and materials science to develop graphene-based electronics and cloaking devices, will serve as another illustrative example. ITMO HEI's «Brain-Computer Interfaces (BCIs)» project, bridging neuroscience and engineering to revolutionize human-computer interaction and rehabilitation, can further highlight the power of interdisciplinary collaboration in driving innovation.

By adopting these best practices, HEIs worldwide can contribute to a more innovative and technologically driven future. However, it is important to understand the mechanisms how these and other cases can be measured up as «best» and the mechanisms to make them disseminated to various stakeholders. Evaluating the effectiveness of HEI's innovations is a complex task, but clear guidelines can significantly improve the process.

Transnational cooperation is a significant challenge for modern higher education. In response, Russia hosted the II International Forum of the Minister of Education of BRICS countries «Shaping the Future» in June 2024. This event highlights the BRICS countries' commitment to promoting innovation in higher education and addressing transnational education challenges.

The final key point and a key challenge of modern higher education is ensuring quality in educational offerings across different regions. By combining these all three criteria: innovation, cross-border education and QA, this article aims at proposing a solution: development and integration of an «innovation label» into the family of APQN Quality Label (APQL) framework for tertiary education institutions. The Asia-Pacific Quality Network (APQN) has pioneered the APQN Quality Label (APQL), focusing on both theoretical and practical dimensions. Besides Asia-Pacific Quality Label (APQL) on Internationalization Accreditation, during the COVID-19 pandemic, APQN's research produced the «Standard for Online-teaching Quality Assurance». This comprehensive standard addresses the urgent need for improved online teaching quality. APQN's innovative approach fosters education quality standards in the information age, providing a basis for evaluating online education globally.



This paper explores the significance of the development of well-defined guidelines in evaluating educational innovations. We propose and justify the need to develop the concept of a new label and discuss it with stakeholders, and at the next step to develop and describe criterion and indicators in detail. This structured approach fosters a user-centered focus, ensuring innovations address the specific needs of students, faculty, and other stakeholders (Charm EU, 2023).

## **2. Materials and Methods**

Expanding the Asia-Pacific Quality Label (APQL) to include innovation is an ambitious goal, crucial for improving how innovations in higher education are assessed. This focus on innovation is meant to improve, not replace, the traditional roles of HEIs — teaching, research, service to society, and internationalization. This approach ensures that innovation supports and aligns with the broader mission of higher education institutions, promoting a comprehensive and integrated path to excellence.

In teaching, innovation equips students with adaptability for a dynamic world (Blass, 2014). Innovation also enhances research by encouraging cross-disciplinary collaboration, and it improves service to society by addressing complex issues and providing sustainable solutions (Moscardini, et al. 2020). Internationalization, facilitated by innovation, fosters global collaboration and idea exchange. These four pillars — teaching, research, service, and internationalization — are interconnected, with internationalization elevating their impact to a global level.

The development of the framework for the assessment of innovations in HEIs can be guided by established frameworks such as the Oslo Manual 2018 (OECD/Eurostat, 2018), CEN/TS 16555-7:2015 (TS CEN/TS 16555-7:2016, 2016), UNESCO Guidelines for Quality Provision in Cross-Border Higher Education (Vincent-Lancrin & Sebastian Pfotenhauer, 2012), and ISO 21001 for educational organizations. The Oslo Manual 2018, developed by the OECD and Eurostat expands its scope beyond research and development to include organizational and marketing innovations, thus providing a thorough basis for evaluating diverse innovation activities in HEIs. This manual is internationally recognized and facilitates the benchmarking and policy development necessary for fostering innovation in higher education.

The CEN/TS 16555-7:2015 standard offers a multifaceted approach to assessing an organization's Innovation Management System (IMS). It delineates various assessment types and specifies the competency requirements for personnel conducting these evaluations, ensuring a thorough and reliable assessment process. This standard emphasizes maintaining impartiality and confidentiality, which is crucial for safeguarding sensitive information related to an organization's innovation activities. By adhering to these guidelines, HEIs can gain valuable insights into their innovation processes and identify areas for improvement.

In addition to these guidelines, the UNESCO Guidelines and ISO 21001 for educational organizations provide essential frameworks for ensuring quality education across borders. The UNESCO Guidelines emphasize core principles such as student learning outcomes, effective teaching methodologies, and robust assessment practices. Aligning an Innovation Label with these principles ensures that recognized innovations demonstrably enhance the educational experience. ISO 21001 offers management system requirements for educational organizations, focusing on improving the quality and effectiveness of educational processes and promoting continuous improvement.

The reference point of this structure can be the document «Template and Guidance of APQL (v.9)» is structured to guide higher education institutions (HEIs) through the process of obtaining the APQL (Asia-Pacific Quality Label) for Internationalization Accreditation. It includes detailed criteria, indicators, and review points necessary for evaluation (APQN, 2018).

It shall be noted that due to the limitations, comprehensive coverage of all aspects is not feasible. Accreditation processes inherently involve a degree of selectivity. This targeted approach allows for the engagement of the academic community, HEIs, and the broader audience on the local and international levels. The intention is to foster a collaborative environment where proposed assessment criteria are open to discussion and refinement. It is also important to note that this suggested criteria can be adaptable and function effectively at various levels, including programmatic, institutional, or others, depending on the specific objectives of the label.

## **3. Results**

To systematically evaluate HEI's innovation framework, the authors developed a comprehensive set of criteria, indicators, and review points. Based on the best practices of the CEN standards, this structured approach ensures clear and measurable assessment of innovation activities. Criterion 1 includes four indicators: Innovation Vision, Mission, and Innovation Strategy; Programme of HEI Innovation Development; Policies of Innovation Activities; and System of Innovation Management. Due to article length constraints, the authors present a shortened version focusing on Indicator 1.

To maintain clarity, it is beneficial to avoid some intermediate criteria and indicators. Instead, focusing on a specific, useful example within HEI's innovation framework can highlight the most valuable aspects of the evaluation process. The CEN standards emphasize innovation management, which HEIs can implement to enhance their innovation culture, processes, and capacity. This leads to increased innovation output, improved collaboration, and enhanced reputation. Therefore, introducing the criterion of Innovation Management Methods is important.

This structured approach ensures comprehensive evaluation of HEI innovation activities, promoting continuous improvement and excellence. Criteria are aligned with traditional HEI roles, integrating the latest technologies into teaching, enhancing research capabilities, and fostering cutting-edge research. HEIs should ensure innovation impacts society, contributing to economic and social development through partnerships and community engagement. Internationalization efforts should aim to boost global standing and integration by enhancing staff's international experience and fostering collaborations.

Quantitative indicators are crucial for assessing the impact and scope of innovation activities within an institution. Key metrics include the number of innovation projects, which track ongoing and completed projects to measure productivity and progress, and publication and patent counts, reflecting the quality and recognition of research. Innovation funding, representing the amount of external funding secured, demonstrates the institution's ability to attract financial support. Staff and student participation indicators capture the extent of engagement in innovation activities, while stakeholder engagement metrics highlight the diversity and involvement of stakeholders in policy-making and activities. Developing and pursuing these indicators can lead to the creation of a balanced scorecard (BSC), a transformative tool that bridges the gap between strategic vision and daily operations (2024). The BSC provides a comprehensive framework for strategic management and performance measurement, aligning innovation projects with strategic objectives, defining metrics and targets, measuring the value added by innovation, and managing innovation projects effectively (Zizlavsky, 2013).

#### **4. Conclusions**

In transnational context higher education deals with unique challenges due to varying educational environments and cultural nuances. To address this, the innovation label must be adaptable to ensure relevance in diverse settings. Navigating different countries' regulatory landscapes adds complexity, but the innovation label can serve as a bridge to harmonize quality standards and facilitate smoother operations for HEIs across countries.

Regular assessments and audits will ensure compliance with local and international standards. By employing various foundational documents on innovation, the new framework for labeling innovations in HEIs can achieve globally recognized quality, provide a structured innovation process, integrate seamlessly with existing quality assurance systems, and foster continuous improvement.

Building capacity for innovation is crucial. Training programs and workshops focused on innovative practices and their integration into QA processes can empower HEIs to implement and sustain these initiatives. International conferences would further facilitate the exchange of ideas and experiences, fostering a global culture of innovation and quality improvement.

Integrating the innovation label with DAQAR (Database of External Quality Assurance Results in Education) can enhance the impact and effectiveness of higher education quality assurance. This integration provides stakeholders with comprehensive information about innovative practices and their outcomes, fostering greater public accountability and credibility. Institutions can showcase their commitment to innovation and quality assurance on a global platform, facilitating cross-border collaboration and internationalization. DAQAR offers valuable feedback for continuous improvement, allowing institutions to track progress and measure the impact of their innovations. The standardized criteria of the innovation label enable robust benchmarking and comparative analysis, promoting transparency, accountability, knowledge sharing, and continuous quality enhancement. This integration drives positive change and cultivates a culture of innovation and excellence in global higher education.

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# Embracing Digitalization for QA: Innovations and Future Trends

*As higher education moves toward digital transformation, this section examines the intersection of technology and quality assurance. The articles discuss AI-enhanced teaching evaluation, online course accreditation, digital tools for internal quality assessment, and the role of IT in institutional QA systems. The focus is on innovations that simplify evaluation processes, improve academic integrity in digital learning environments, and support data-driven decision-making in quality assurance. The section also highlights best practices for adapting QA policies to the constantly changing digital landscape.*

## Quality Quest alongside data management in Higher Education Institutes with Digital Frontier

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### **Abstract:**

*The essential feature of Higher Educational Institutions (HEIs) is to impart quality in education and research. The most important task is to tune the processes of the administration involving extensive documentation and tedious workflow. E-governance is one such component which aids the process of administration to drive towards excellence. The attainment of quality is the quest which many institutions are pursuing either due to the mandated statutory requirements or accreditation/ranking requirements or solely for their commitment to serve the society.*

*Whatever be the scenario, to achieve quality relying on the digital arms of the modern world is highly rewarding. The centre of attraction lies the careful and vigilant management of data of the institution. Effective management of institutional data is crucial, ideally through an autonomous system or artificial intelligence, to ensure seamless impact analysis and reduce human intervention. This article discusses the specific components of Digital Quality Assurance to be considered for the proper implementation of the array of digital avenues with innovation and sustainability in assurance towards quality in Higher Education & Research.*

### **1. Introduction:**

Higher Educational Institutions (HEIs) play a pivotal role in influencing the future of an individual and society at large by imparting quality education alongside promoting innovative research (1). Significantly, we have to reiterate that these institutions are not merely centres of learning but also hubs of intellectual development, contributing significantly to societal progress. The core mission of HEIs is to ensure that the education provided is of the highest standard, preparing students to attend to the challenges of a dynamic world. Conversely, achieving this level of quality is a complicated task that involves not only effective and excellent — teaching and — research but also efficient administration and effective management of the data as resultant of the processes of the HEIs.

Administrative processes in HEIs are often complex and involve extensive documentation and rigorous workflows. Effective management of these processes is crucial to maintaining high standards of education and research. Traditional methods of administration, which majorly rely on paper-based documentation and manual workflows with too much of human intervention, can be cumbersome, inefficient, time-consuming, and error-prone inclusive of being prone to data loss or mismanagement. These methods can lead to delays, errors, and a lack of transparency, all of which can undermine the institution's overall performance (2).

The pursuit of quality in education is a endless for many HEIs. This quest for excellence is guided by various factors. Firstly, statutory requirements which mandate that institutions to adhere certain standards and practices to ensure the quality of education. These requirements are laid down by the statutory bodies to protect the interests of students and to maintain the credibility of educational qualifications. Secondly, the benchmarks set by accreditation and ranking systems influence and engage the institutions to continually improve their processes to remain competitive and to emerge or be recognized as leaders in education.

Furthermore, many HEIs are motivated by a genuine commitment to serving society. They recognize that providing high-quality education is not just a regulatory obligation but a social responsibility. By ensuring that their administrative processes are efficient, and their educational standards are high, these institutions contribute to the development of knowledgeable, skilled, and ethical individuals who can positively impact their communities.

E-governance has surfaced as a powerful tool to streamline administrative processes in HEIs. By leveraging digital technologies, e-governance enables efficient management of administrative tasks, reducing the burden of documentation and simplifying workflows. The technological influence enhances the accuracy and speed of administrative operations, allowing institutions to focus more on their core educational activities with effective outcomes. E-governance systems can automate routine tasks, provide real-time data for decision-making, and improve communication within the institution meeting the requirements of the statutory bodies and accreditation agencies (3).



By embracing e-governance, HEIs can streamline their workflows, reduce administrative burdens, and focus more on their primary mission of education and research, thereby driving towards excellence in every aspect of their operations.

Digital Quality Assurance (DQA) in higher educational institutions (HEIs) refers to the process of ensuring the quality and effectiveness of digital tools, platforms, courses, and resources used in educational institutions (4). With the increasing integration of technology in education, it has become essential to maintain high standards of quality in digital educational offerings to ensure positive learning outcomes and a seamless user experience for students and educators while keeping in view the evidence-based decision making alongside the constant consideration for identifying the areas of improvement which serves as eyes towards achieving excellence (Fig 1).



Figure 1: Eyeing excellence in Quality assurance needs two eyes viz., evidence-based decision making alongside the constant consideration for identifying the areas of improvement.

One such initiatives in India has been done with the formation of One Nation One Data (ONOD) portal for HEIs which is more of yearly data provision accessible or presented across multiple accreditation and ranking agencies (5). Another portal in India which has been successfully delivering e-governance named «Samarth eGov» which is an initiative by the Ministry of Education, under the flagship of National Mission on Education through Information and Communication Technology NMEICT. This portal has enabled the Higher Education Institutions (HEIs) through a digital framework for planning, management, delivery, and monitoring of services for students, staff, and other stakeholders. Under the project, the HEIs are provided with a fully managed, cloud based, comprehensive ERP that is custom built for HEIs of the country (6).

Nevertheless, each HEI should follow extremely networked comprehensive methodology to bring e-governance in one platform with interactive leaderboard.

The journey to quality enhancement in digital education involves several stages and practices:

#### **1.1. Needs Assessment and Planning:**

- Identify the specific needs and goals of the educational institution or program.
- Determine how digital tools and resources can best support those needs.
- Create a comprehensive plan for integrating digital technology into teaching and learning.

#### **1.2. Selection and Development of Digital Resources:**

- Choose appropriate digital tools, platforms, and resources that align with educational and administrative objectives.
- Develop or curate digital content, courses, and materials that engage learners and promote effective learning.

#### **1.3. Design and User Experience:**

- Ensure that digital interfaces are user-friendly, intuitive, and accessible to diverse learners.
- Design courses and content with clear navigation, interactive elements, and multimedia to enhance engagement.

#### **1.4. Pedagogical Integration:**

- Integrate digital resources and technology in ways that align with pedagogical best practices.
- Ensure that digital tools enhance the learning experience and promote active student engagement.

#### **1.5. Quality Assurance and Testing:**

- Thoroughly test digital resources for functionality, usability, and compatibility across devices and browsers.
- Conduct user acceptance testing involving educators and students to identify any issues or improvements.

#### **1.6. Training and Support:**

- Provide training and support for educators to effectively use digital tools and resources.
- Offer technical support to address any challenges that arise during implementation.

### **1.7. Continuous Monitoring and Evaluation:**

- Continuously monitor the usage and effectiveness of digital resources.
- Collect data on student engagement, learning outcomes, and user satisfaction.

### **1.8. Feedback and Iteration:**

- Gather feedback from students, educators, employers, and all stakeholders to identify areas for improvement.
- Use feedback to iterate and enhance digital resources over time.

### **1.9. Data-Informed Decision Making:**

- Analyze data to make informed decisions about the effectiveness of digital resources and to guide future enhancements. This is a continuous process and should be managed by the authorities concerned.

### **1.10. Scalability and Sustainability:**

- Ensure that digital quality assurance processes can scale as the institution grows and new technologies emerge.
- Consider the long-term sustainability of digital initiatives and resources.

### **1.11. Adaptation to Emerging Trends:**

- Stay updated on emerging technologies and trends in digital education.
- Adapt digital strategies to incorporate new tools and approaches as they become available.

### **1.12. Collaboration and Stakeholder Engagement:**

- Foster collaboration between educators, instructional designers, technologists, and administrators to ensure a holistic approach to digital quality enhancement.

The journey to quality enhancement in digital education involves a systematic approach to integrating technology, ensuring quality, and continuously improving the digital learning experience for students and educators. It requires a strong commitment to pedagogical principles, user-centered design, data-driven decision-making, and ongoing collaboration among stakeholders (7).

## **2. The Evolution of Quality Assurance in Higher Education**

### **2.1. Historical Perspective**

Quality assurance in higher education has evolved significantly over the decades. Initially, it was predominantly concerned with mere meeting the standard requirements. As globalization increased, so did the need for standardized QA measures, leading to the establishment of various accrediting bodies, benchmarks, and frameworks (8).

### **2.2. Modern QA Frameworks**

In recent years, QA frameworks have become more sophisticated, incorporating diverse metrics and methodologies. These frameworks now emphasize not just academic rigor but also employability, student satisfaction, and institutional accountability (9).

## **3. Digitalization: A Game Changer in QA**

### **3.1. Digital Tools and Platforms**

The rise of digital tools and platforms has dramatically transformed QA processes. Online course evaluations, digital portfolios, and automated data collection systems have streamlined the assessment and feedback mechanisms.

### **3.2. Big Data and Analytics**

Big data analytics is playing a pivotal role in QA by providing deeper insights into student performance, learning outcomes, and institutional effectiveness. These insights enable more informed decision-making and targeted improvements (10).

### **3.3. Blockchain for Academic Credentials and retrieving real-time data**

Blockchain technology offers a secure and transparent method for managing academic credentials, ensuring authenticity and reducing fraud. This innovation supports a more robust QA framework by maintaining the integrity of academic records and consistency in handling of the data (11).

Figure 2 demonstrates the evolution of governance in higher educational institutions through the adoption of digital technology. The process starts with traditional governance, moves through the phase of embracing technology, and culminates in e-governance. This transformation aims to streamline administrative processes, enhance efficiency, and achieve excellence in education and research by leveraging modern digital tools (12).



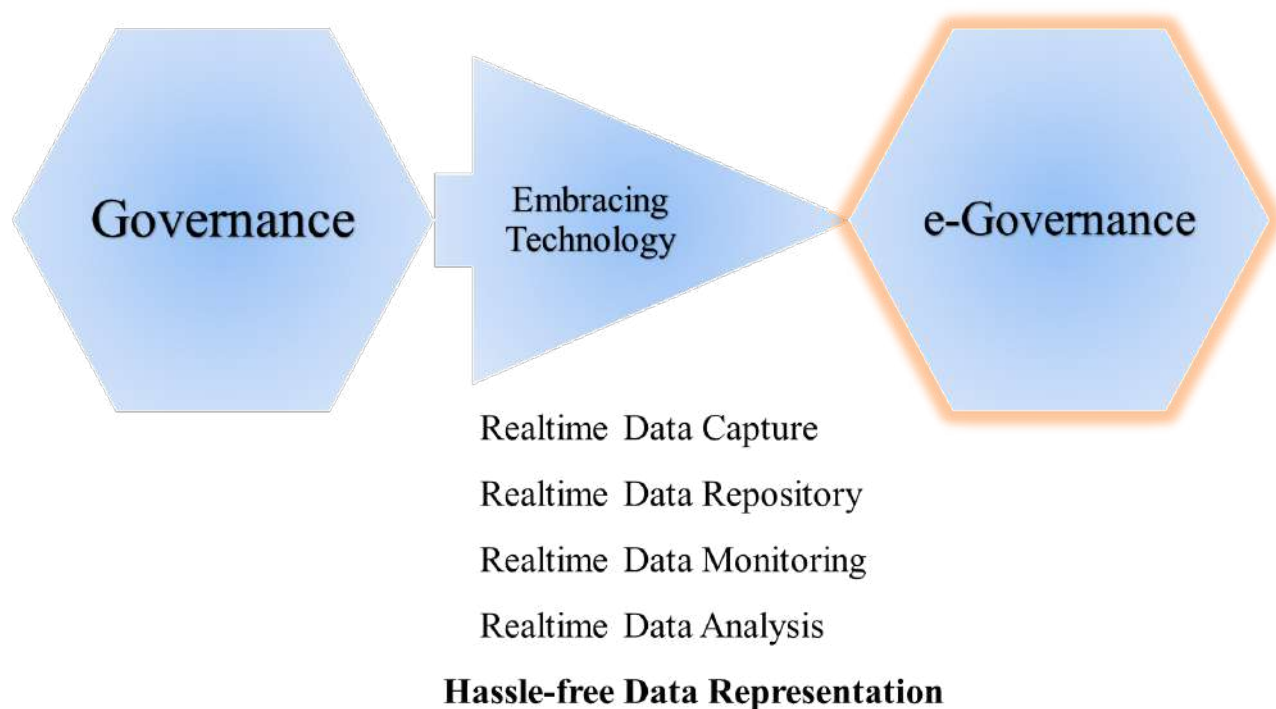


Figure 2. From Traditional Governance to e-Governance: Embracing Technology for Enhanced Administration.

#### **4. Innovations in Teaching Learning and Evaluation Process through Digitalization**

##### **4.1. Adaptive Learning Technologies**

Adaptive learning technologies personalize the educational experience by adjusting the content and pace according to individual student needs. This personalization enhances learning outcomes and provides more accurate measures of student progress (13)

##### **4.2. E-Portfolios**

E-portfolios serve as a comprehensive repository of a student's work, showcasing their skills, achievements, and progress over time. They offer a dynamic and interactive way to assess student performance and support lifelong learning (14)

##### **4.3. Virtual and Augmented Reality**

Virtual and augmented reality (VR/AR) technologies provide immersive learning experiences, enabling students to engage with complex concepts in a more interactive and intuitive manner. These technologies also facilitate remote lab simulations, enhancing practical skills and learning outcomes (15)

#### **5. Future Trends in Digital QA**

##### **5.1. Artificial Intelligence in QA**

Artificial intelligence (AI) has the potential to revolutionize QA by automating administrative tasks, providing real-time feedback, and identifying at-risk students through predictive analytics. AI-driven platforms can also personalize learning pathways, ensuring that quality education is accessible to all (16)

##### **5.2. Internet of Things (IoT) in Campus Management**

The Internet of Things (IoT) can enhance campus management by connecting various devices and systems, leading to more efficient operations and improved student services. IoT-enabled environments can support real-time monitoring and data collection, contributing to a more holistic QA approach (17)

##### **5.3. Gamification in Education**

Gamification incorporates game design elements into educational settings to increase engagement and motivation. This approach can transform assessment methods, making learning more enjoyable and effective, while also providing innovative metrics for QA (18)

#### **6. Challenges and Considerations**

##### **6.1. Data Privacy and Security**

The increasing reliance on digital technologies raises concerns about data privacy and security. Institutions must implement robust measures to protect sensitive information and comply with regulatory standards (19)

##### **6.2. Digital Divide**

The digital divide remains a significant challenge, with disparities in access to technology impacting the quality of education (20). Efforts must be made to ensure that digital tools are accessible to all students, faculty, and stakeholders, regardless of their socio-economic background. The digital divide may also be a resultant of the technical complexity in handling which may be overturned by the next point i.e., through faculty training.

### **6.3. Faculty Training and Development**

As faculty serve as important juncture for enforcing the technological enterprise to students and also act as interface, Effective implementation of digital QA tools requires comprehensive training and development programs for faculty. Continuous professional development is essential to keep pace with technological advancements and leverage them effectively in QA processes (21).

### **6.4. IT infrastructure**

To enable a thorough functioning of the e-Governance component with the scale of HEI's processes, a well-integrated interface and at the same time, a dedicated workforce with infrastructure is of paramount importance. The integration of all the above discussed modules have to be done meticulously to handle and present the data efficiently for QA (22).

### **Conclusion**

The integration of digital technologies in QA processes marks a significant advancement in higher education and research. Innovations such as adaptive learning, blockchain, and AI are transforming traditional methodologies, providing more accurate and efficient ways to ensure quality. However, challenges such as data security and the digital divide must be addressed to fully realize the potential of these technologies. As we look to the future, continued investment in digital tools and professional development will be crucial in maintaining and enhancing QA in higher education and research. Importantly, step by step alignment of digital interface for specific administrative and academic process has to be set based on the functioning framework of the HEIs.

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# Exploration and Practice of AI-Enhanced Smart Classroom Teaching Evaluation

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## Abstract

*In response to the new challenges posed by the development of higher education to traditional classroom teaching evaluation and the new opportunities brought by AI technology applications for future classroom teaching evaluation, this study integrates the most advanced concepts in educational quality management and combines facial recognition, speech analysis, and other artificial intelligence technologies to independently develop the «AI + Human» classroom teaching evaluation system. This system deeply mines and analyzes multimodal classroom teaching data, achieving efficient integration and real-time feedback mechanisms in evaluation. This transforms classroom teaching quality management from sample monitoring to comprehensive real-time tracking. Research shows that the evaluation results of this system have a high degree of consistency with expert evaluations (with a difference of less than 10%), indicating that the results have certain application value for school teaching quality management and teacher teaching reflection.*

**Keywords:** *AI-Enhanced, Smart Classroom, Teaching Qualitative Assessment, Multimodal Data, Intelligent Education Evaluation, Digital Education Evaluation*

## Introduction

Under the strong impetus of frontier technologies such as artificial intelligence, big data, and 5G communication, the higher education system is undergoing a profound transformation. This transformation goes deep into the essence of educational philosophy, reconstructs talent cultivation models and teaching strategies, and poses new challenges to the existing teaching evaluation system (Marks et al., 2020; Alenezi, 2021; Gkrimpizi, Peristeras and Magnisalis, 2024). The introduction of technologies such as computer vision, natural language processing, machine learning, cloud computing, and mobile internet marks a significant shift in teaching evaluation towards sustainability, objectivity, and real-time interactivity (Wang et al., 2023). Currently, realizing AI-enhanced university teaching evaluation still faces some challenges: (1) The complex and diverse teaching contexts pose significant challenges for quickly and accurately integrating video, audio, images, and online interaction data; (2) Single-dimensional evaluation can no longer meet the needs, and it is urgent to utilize AI technology's deep analysis to construct a multi-dimensional, in-depth evaluation index system (Tang et al., 2022); (3) Although AI technology has improved the objectivity and efficiency of evaluations, balancing machine's universal evaluation with human personalized guidance is crucial for building an efficient evaluation system (Mo et al., 2023).

Facing these challenges, some scholars have studied AI-enhanced smart classroom teaching evaluations. For instance, comparing traditional teaching evaluations with smart teaching evaluations to clarify the core elements and positive impacts of smart teaching evaluations, breaking through the limitations of manual evaluations and achieving comprehensive coverage (Hendriks, 2016; Wang, Gao and Du, 2023); designing systematic evaluation indicator frameworks for different stages of smart teaching (Tsayang, Batane and Majuta, 2020; Demir, 2021). Although smart classroom teaching evaluation has achieved phased progress, most remain at the decision-making assistance level, and its practical application potential needs further exploration and expansion, especially in integrating technological innovation and human factors and enhancing the practical effectiveness and efficiency of evaluation measures (Dang et al., 2024).

Our university, leveraging its advanced smart education framework, has constructed a comprehensive learning space integrating smart classroom physical environments and online learning platforms. Through deep integration of AI and big data, we have achieved intelligent collection, integration, and analysis of teaching data, accurately identifying and solving teaching problems, addressing some shortcomings of traditional evaluation systems, such as limitations in coverage, timeliness of feedback, and uniformity of standards. This study analyzes the evolution process of smart teaching evaluation, deeply analyzes the design and implementation details of this smart evaluation system, and demonstrates its implementation results through data analysis. It plays a key role in improving students' learning effectiveness, teachers' professional development, and providing data support for teaching supervision, forming a closed-loop smart evaluation ecosystem that continuously promotes the improvement of educational and teaching quality, providing a practical case for AI-enhanced smart evaluation.

## 1. Evolution and Frontier Exploration of Smart Teaching Evaluation

To deeply analyze the practical application and long-term impact of smart evaluation in smart education practice, we conducted a broad and in-depth literature review, aiming to outline the development context of smart education evaluation, thoroughly review existing research results, and prospectively predict future trends. This part of the study adopts



the keyword co-occurrence analysis method in bibliometrics (Chen et al., 2024), using advanced visualization technology to conduct an in-depth keyword co-occurrence analysis of the smart education evaluation literature library, aiming to reveal research focus, frontier trends, and potential research directions.

Using the Web of Science core collection database, this study ensures comprehensiveness, reliability, and timeliness. By keyword searching «smart teaching», «smart education», «smart evaluation» and their synonyms, 149 relevant documents were screened out. These documents' keywords underwent rigorous data preprocessing operations, including data cleaning and synonym merging. On this basis, keyword frequency statistics were completed, and the relationships between keywords, clustering distribution of research hotspots were visually displayed through charts (Table 1, Figure 1).

Table 1 and Figure 1 reveal that current smart education evaluation research focuses on the basic framework of conceptual cognition, infrastructure, and technical support, emphasizing subject teaching practice, especially using smart evaluation tools to enhance teaching interactivity, stimulate students' autonomous learning motivation, and emphasize the coordination of elements within the evaluation system to achieve optimal teaching effectiveness. Nevertheless, the cognitive scope of smart education evaluation remains narrow, mainly led by education practitioners, mostly revolving around technical integration, lacking independent and in-depth exploration of the field. This situation is closely related to inadequate policy guidance and public awareness. Therefore, the education field is strengthening the popularization of smart evaluation to gradually adjust public perception (Singh and Miah, 2020).

## **2. Through thematic cluster analysis, smart education evaluation can be summarized into four core topics:**

### **2.1. Design and Implementation of Smart Education Systems (Red Cluster):**

In the field of smart classroom teaching, a comprehensive research direction is the design and implementation of educational technology applications inside and outside the classroom, especially using AI technologies (such as virtual reality, facial recognition), big data, and statistical modeling to improve teaching experience. Research covers intelligent evaluation systems, online education (such as MOOCs), physical education, cognitive processing, and teaching behavior analysis. The design frameworks and decision support systems aim to enhance students' learning performance and experience while exploring future educational trends.

### **2.2. Optimization of Teaching and Learning Feedback Mechanisms (Blue Cluster):**

Focuses on using AI algorithms and appreciative inquiry methods to optimize feedback mechanisms for students and children, promoting more effective learning. This includes how to achieve instant, targeted feedback through the design of teaching evaluation systems to enhance teaching quality and student engagement. This direction also explores how to improve teacher-student interaction in both traditional and online environments, ensuring teaching quality while meeting the needs of learners of different age groups.

### **2.3. Quantitative Evaluation and Improvement of Teaching Quality (Green Cluster):**

Focuses on constructing teaching quality evaluation models and systems using big data analysis, deep learning, neural networks, and other technical means. Research involves multi-dimensional evaluation of teaching quality, such as using BP neural networks, decision trees, and other machine learning algorithms for quantitative analysis of teaching behavior and learning outcomes. Additionally, it focuses on the application of data mining, image processing, and speech recognition technologies in educational evaluation to improve education quality in a data-driven manner.

### **2.4. Intelligent Decision-Making and Analysis in Computer Science Education (Yellow Cluster):**

Particularly focuses on how to use machine learning, learning analytics, and other technologies to address challenges in teaching, promoting the cultivation of learners' competitiveness. This research includes using decision science to improve the quality of educational decisions, applying formative assessment in the learning process, and how educational technology adapts to the specific requirements of computer science teaching. By deeply analyzing learning data, it provides empirical foundations for course design, competency model construction, and personalized learning paths in computer science education.

In summary, with the rise of technologies such as IoT, AI, and 5G+, smart education evaluation has gradually become a research frontier, especially focusing on how technology reshapes educational ecology and teaching models. Although existing research provides important references for evaluating smart teaching, it mainly focuses on specific populations, specific disciplines, or local links, without comprehensively discussing implementation strategies. The development of smart education evaluation faces challenges in balancing deep integration of technology with maintaining humanistic care (Nindam et al., 2024). Currently, how to establish a clear boundary between highly rational technology-based evaluation and emphasizing human spirit and individual differences remains an unsolved issue. Additionally, multi-dimensional evaluation methods face practical challenges in implementation, such as complex data processing and limited instant feedback. Therefore, scientifically setting up timely evaluation standards to adapt to changes in the educational environment and diverse learning needs is a crucial task at present.

In conclusion, the field of smart education evaluation faces challenges in pursuing the integration of technology and humanity, improving evaluation efficiency and practical value (Dang et al., 2024). Therefore, this study is committed to constructing a more efficient, fair, and humanistic evaluation system through technological and conceptual innovation, promoting substantial changes in smart evaluation, and fostering the comprehensive development of every learner.



Label	Cluster	Occu.	Avg. pub. Year	Label	Cluster	Occu.	Avg. pub. Year
education	1-red	10	2022.5	big data	3-green	7	2020.714
performance	1-red	5	2022.6	teaching evaluation	3-green	7	2018.714
students	1-red	5	2023.2	neural network	3-green	6	2021.5
framework	1-red	4	2022	teaching quality	3-green	6	2021.5
higher education	1-red	4	2023	bp neural network	3-green	5	2021.4
ai technology	1-red	3	2021	model	3-green	5	2021
classification	1-red	3	2021.333	deep learning	3-green	4	2022
design	1-red	3	2021.667	teaching quality eval- uation	3-green	4	2022.75
physical education	1-red	3	2020	evaluation system	3-green	3	2021.667
recognition	1-red	3	2019.667	intelligent learning	3-green	3	2021.667
system	1-red	3	2021.667	quality	3-green	3	2022.667
virtual-reality	1-red	3	2022.667	bibliometric analysis	3-green	2	2022.5
assessment	1-red	2	2023.5	data analysis	3-green	2	2021
cognitive processing	1-red	2	2024	data mining	3-green	2	2016
construction	1-red	2	2021	decision tree	3-green	2	2020
decision-support	1-red	2	2022.5	educational evaluation	3-green	2	2024
face detection	1-red	2	2021.5	evaluation	3-green	2	2020.5
future	1-red	2	2023.5	image processing	3-green	2	2021
intelligent evaluation	1-red	2	2019	language teaching	3-green	2	2023
learning	1-red	2	2022.5	online teaching	3-green	2	2022
mooc	1-red	2	2019.5	optimization	3-green	2	2022
online education	1-red	2	2022.5	speech recognition	3-green	2	2022.5
statistical modeling	1-red	2	2022	machine learning	4-yellow	5	2022
student evaluation	1-red	2	2022.5	competence	4-yellow	4	2022.75
teaching behavior	1-red	2	2021	challenges	4-yellow	3	2022.667
AI	2-blue	38	2021.895	computer science education	4-yellow	2	2023
algorithms	2-blue	2	2021	decision making	4-yellow	2	2022.5
appreciative inquiry	2-blue	2	2017	educational technology	4-yellow	2	2024
children	2-blue	2	2017.5	formative assessment	4-yellow	2	2023.5
feedback	2-blue	2	2022.5	learning analytics	4-yellow	2	2023.5
teaching evaluation system	2-blue	2	2021				

Table 1. High-Frequency Keywords in Smart Education Evaluation Research.

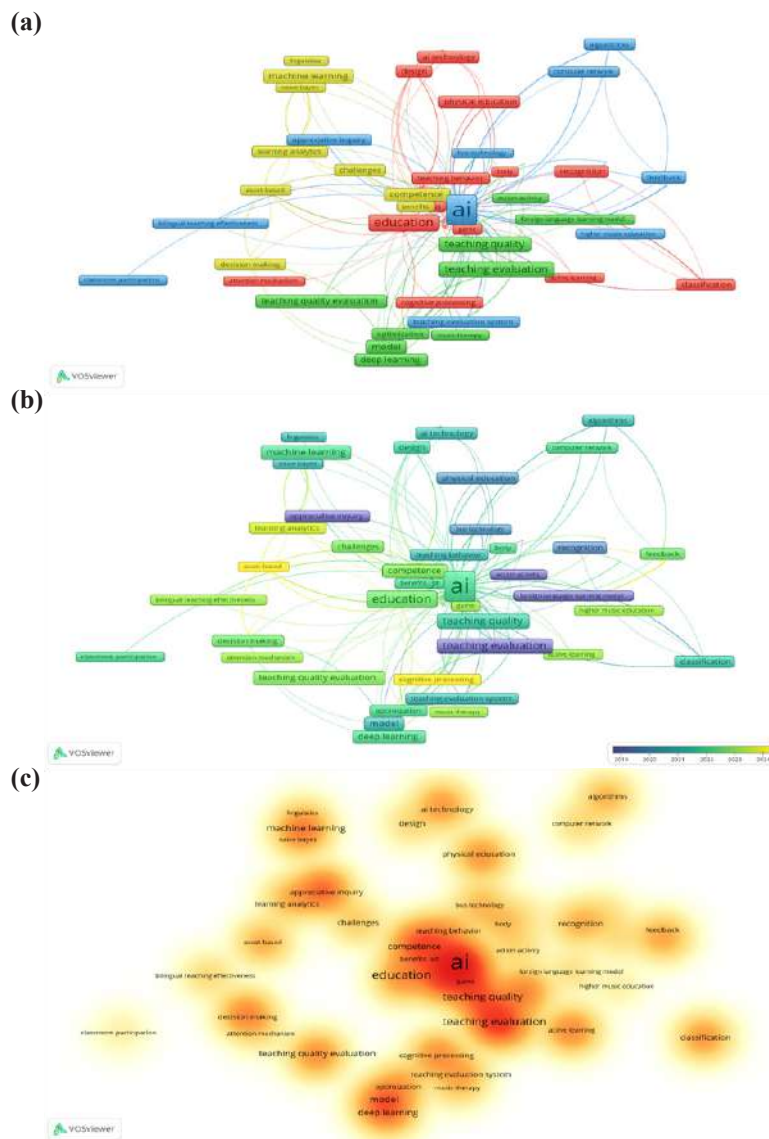


Figure 1. Smart Education Evaluation Research.  
(a) network visualization (b) overlay visualization (c) density visualization

### 3. Overall Design of Smart Classroom Teaching Evaluation

The school's supervision evaluation system covers ten key dimensions, involving various aspects such as the suitability of textbook application, the adaptability of teaching content, the innovation of teaching methods, the effectiveness of classroom interaction, and the significance of teaching achievements. This study explores several core indicators within this comprehensive system. It highlights the irreplaceable value of human supervision within the scope of smart evaluation — especially the immediate face-to-face communication and personalized feedback between supervisors and teachers, which current AI technology cannot reach.

Relying on the hardware configuration of smart classrooms, round-the-clock recording technology, and the support of a mature online teaching platform, this study establishes a big data-driven strategy for integrating teaching evaluation indicators. Given the significant impact of students' classroom behavior on educational quality (Z. Wang Yao et al. 2023), it systematically collects digital trajectories of teaching activities and physical space information, including structured data from the digital ecology of teaching and unstructured information captured through advanced sensing technology — such as teachers' facial expressions, speech features (speed, volume), language patterns, student attendance, and attention indicators (head-up rate), forming a diversified big data resource pool, laying a solid foundation for subsequent intelligent analysis. Utilizing the powerful processing capabilities of the AI middle platform, it deeply analyzes complex data such as videos and presentations, creating a distinctive smart teaching supervision model, achieving precise insights and evaluations of teaching behavior.

#### 4. This system construction revolves around three key links:

##### 4.1. Model Integration and Intelligent Docking:

Carefully sort out the mapping logic and internal connections between qualitative evaluation by teaching supervision and quantitative data output by AI, constructing an integrated teaching behavior evaluation model. This model

seamlessly connects the objective analysis of machine learning with the subjective judgment of human supervision using intelligent toolsets, ensuring that evaluations are scientific and rigorous while containing humanistic care.

4.2. Deep Integration of Evaluation Systems:

After verifying the reliability of AI-assisted judgment, embed a quantitative scoring system within the traditional qualitative evaluation framework, enabling supervisors to implement data-driven evaluations, enhancing the validity and depth of collaboration between qualitative and AI data.

4.3. Building a Dual-Track Intelligent Evaluation Ecosystem:

Form an intelligent evaluation system where AI and human supervision run in parallel. By integrating qualitative descriptions and quantitative data, the system outputs concise, straightforward, process-clear, and visualized reports, making teaching quality evaluation intuitive and in-depth. It provides educational stakeholders with easy-to-understand, forward-looking evaluation tools, significantly improving the efficiency and coverage of smart teaching evaluations.

The school supervision and evaluation system for classroom observation covers indicators from ten key dimensions, including textbook selection, teaching content, teaching methods, classroom interaction, and teaching effectiveness, among many others. The classroom is a crucial setting for education, and conducting multidimensional analysis of classroom teaching behaviors can achieve precise evaluation. Multimodal data, which includes structured, unstructured, and data from different sources, requires unified modeling of learning process behaviors, actions, emotions, etc., to achieve quantitative exploration of the classroom process. Based on indicators such as classroom language and teacher-student interaction, this case combines teacher-student data segmentation in AI-based classroom teaching evaluation, supplements online teaching platforms; physiological and psychological behavioral indicators such as classroom actions, emotions, etc.; and big data classroom syllabi to construct a teaching behavior evaluation system based on multimodal data, as shown in Table 2. It is worth noting that within the scope of intelligent evaluation, human supervision highlights its irreplaceable value — especially the face-to-face instant communication and personalized feedback between supervisors and teachers, a level that current AI technology cannot reach.

Type	Multimodal Data	Data Source	Core Capability	Implicit Indicators	Qualitative Evaluation
Digital Space	Teaching content (text, quizzes, videos)	CANVAS learning management system	Structured data, log data	Classroom teaching resource construction	Flexible handling of teaching content, creative use of teaching materials, reflecting discipline frontiers
	Teaching extension	Teaching resource media library		Online teaching platform participation	Seizing the characteristics of teaching in the new era, fully leveraging online teaching platforms to conduct pre-class and post-class educational activities
Physical Space	Teacher expressions	Smart class-room recorded videos	Facial expression recognition	Teacher status	Teaching status investment, teaching focus, rich emotions, harmonious classroom atmosphere
	Teacher speech speed	Smart class-room recorded videos	Speech analysis	Teacher expression ability	
	Teacher volume	Smart class-room recorded videos	Voice tone analysis		
	Teacher language	Smart class-room recorded videos	Speech-to-text	Teacher-student interaction	Emphasizing teaching interaction, inspiring student thinking, guiding active learning
	Student attendance and head-up rate	Smart classroom video streams	Vacancy rate analysis	Student feedback	Attractive classroom, active student participation
Qualitative Measurement Space	Supervisor patrol indicators; Award-winning course videos	-	Quantitative evaluation indicators basis and verification		

Table 2. Intelligent Teaching Quality Evaluation System Based on Multimodal Data.

5. Application and Optimization of AI-Enhanced Smart Evaluation

In practical applications, through extracting features such as classroom teaching process volume, interaction, head-up rate, etc., speech-to-text, facial control, and other AI atomic capabilities, combined with structured data reports, implicit quantitative indicators are formed for unified modeling of behavior, actions, and emotions data during the learning process to achieve quantitative exploration of the classroom process. This makes teaching management more intelligent, scientific, and efficient, realizing innovation in classroom evaluation analysis models and efficiency improvements. The AI middle platform continuously conducts in-depth data mining and feature extraction and closely connects with offline evaluations by supervision experts to jointly build a multi-dimensional integrated evaluation model. The dataset consists of 130 observations, with 80% of AI classroom analysis results highly consistent with expert scores, with differences controlled within 5% (Figure 2.a), ensuring the robustness of evaluation standards and highlighting the effectiveness of AI evaluations. Comparing qualitative evaluation results of teacher speech by supervision and quantitative evaluation results by AI (Figure 2.b), it is found that although qualitative evaluation involves subjective sampling with high diversity and complexity, increasing analysis difficulty, quantitative evaluation overall maintains a high degree of convergence with it, with errors controlled within 10%, further verifying the effectiveness of AI quantitative evaluation in standardized assessments.

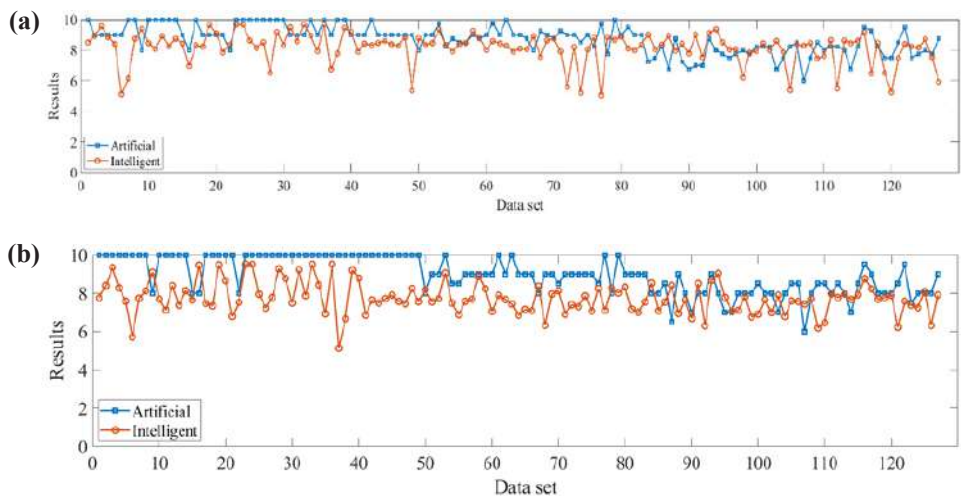


Figure 2. Comparison of Manual and AI Scoring Results.  
(a) overall mean of evaluation results (b) special comparison of teacher's voice

Taking the scoring results of 45 courses in the dataset as an example, polynomial, support vector machine (SVM), artificial neural network (ANN), and other methods were used to fit AI and manual scoring results. The fitting results are shown in Figure 3. Most results of AI and manual evaluations have good correlation, with fitting residuals greater than 1, and about 20% of evaluation results providing suggestions for review. AI and manual scores in the scatter plot show concentration within a certain range. Based on continuously enriched datasets and evaluation index systems, selecting appropriate fitting functions to describe the regularities that corroborate AI evaluation and manual evaluation results provides more precise theoretical support for the scientificity and rationality of AI supervision, enhancing the credibility of routine precise supervision. As shown in Table 3, in this round of test sets, with a 95% confidence interval, triple SVM regression fitting effect is the best, preliminarily establishing the theoretical association between AI scoring and manual scoring. For special cases with significant evaluation differences, some experts were invited to watch the course videos again to analyze the reasons for the differences, including unreasonable AI evaluation results due to improper data collection equipment placement or low sensitivity, and unreasonable manual evaluation results due to the subjectivity of teaching supervision evaluation.

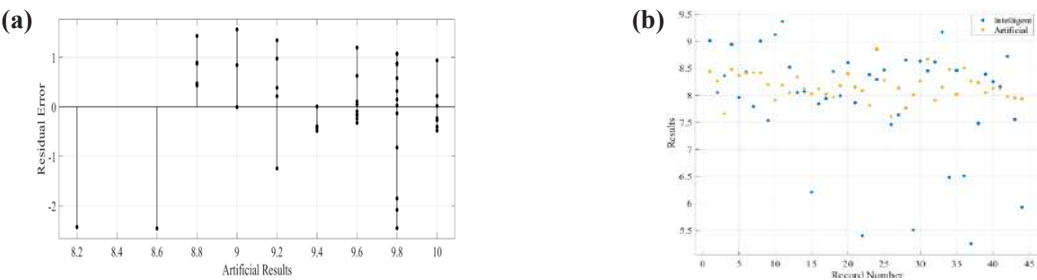


Figure 3. Error and Fitting Results of Manual and Smart Evaluation.  
(a) fitting residual (b) AI and Manual Evaluation Fitting Scatter Distribution

Model	RMSE	R2(Sound)	R2(Interaction)	Border
Polynomial	1.0996	0.05	0.07	95%
Triple SVM regression	1.0541	-0.01	-0.03	95%
Double ANN	1.2594	-0.07	-0.08	95%
Linear SVM	1.0616	0.04	0.04	95%

Table 3. Error Comparison of Special and Overall Evaluation Averages Between Qualitative and Quantitative Indicators.

The AI middle platform developed by the school deeply penetrates classroom teaching behaviors, student learning behaviors, and teacher-student interactions, as well as data integration management. The AI middle platform not only limits current analysis but also summarizes and analyzes phased classroom teaching evaluation data across weeks, months, and even the entire semester, achieving horizontal comparison among different teachers and vertical comparison within the semester and even over the years. The results are then accurately pushed to the instructors, teaching supervisors, and relevant teaching managers, assisting instructors in conducting teaching diagnosis and continuously improving teaching methods and content, assisting teaching supervisors in providing scientific guidance, continuously tracking the implementation and evaluation of teaching improvement measures, and assisting teaching managers in understanding the teaching quality of the entire major, college, and even the entire school, enhancing the intelligence, scientificity, and operational efficiency of teaching management.

**Conclusion and Prospect**

In the practice of AI-enhanced smart classroom evaluation at our school, the successful establishment of the new teaching evaluation model has opened a new chapter of cross-border integration and instant interaction of educational resources, achieving seamless organization of teaching activities and deep participation of all, ensuring comprehensive penetration, comprehensive coverage, and full support of the educational process. Although evaluation methods differ, in practice, we are pleased to see that AI evaluation and manual evaluation results are highly consistent. Since smart evaluation can cover the entire process of all courses in the school, it has fundamental importance in comprehensively improving teaching quality monitoring and promoting teachers’ teaching ability improvement. In the process of system development and iteration, the combination of subjective and objective manual evaluation has guiding significance for machine learning. Our school has a good foundation in teaching supervision and teaching quality management, which will provide precise guidance for AI-enhanced smart evaluation.

The level of AI-enhanced classroom teaching evaluation depends on both hardware and software, namely classroom facilities, AI core capabilities, and evaluation methods. We believe that improving hardware levels is certainly important for the comprehensiveness and accuracy of data collection. However, from the perspective of educational laws and the characteristics of educational evaluation statistics, upgrading evaluation methods themselves is more feasible and representative. Therefore, future AI-enhanced smart evaluations should continue to study the connotations of teaching data and their relationships, expand the types of data collection, and explore the connotations of data, supplemented by precise guidance from human supervision, to continuously iterate evaluation quality.

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## Training of highly qualified staff in quality management for the purpose of digitization

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### **Abstract**

*The article presents the results of digital transformation both in the educational process and in enterprises taking into account current IT trends. In the educational process of the university, this approach has been adopted in training highly qualified personnel and indicated in the dissertation aimed at solving the issue of improving the quality management system based on the PDCA cycle development as an element of the theoretical novelty. The studies also show that the driving mechanism in the digitalization process can be the model of transition to Industry 4.0 in the form of a network-centric production market and the Blockchain digital platform database implemented into the ESG concept for sustainable development. The article also presents the results of cooperation between the Russian Register Certification Body and Chinese enterprises in the field of digital technology implementation and subsequent management systems certification.*

**Key words:** *Digital transformation in the educational process; PDCA cycle; network-centric management system; Blockchain database; ESG criteria for sustainable development; management systems certification.*

### **Introduction**

The motivation for creating a new personnel management system implies new thinking and approaches to management and new digitalization-based principles rather than electronic textbooks and blackboards.

In collaboration with the Russian Register Certification Association, Irkutsk National Research Technical University (IRNTU) has been implementing digital technologies both in the educational processes and in enterprises taking into account modern IT trends. [16]. This cooperation began with the certification of management systems in accordance with ISO 9001:2015 and other standards provided for in the passport of scientific specialties such as «Scientific and practical development of methods for consumer assessment of the quality of products and services for high-tech industries of production and service» [17].

### **1. Materials and Methods**

The cooperation between the Russian Register Certification Association and INRTU has begun with the creation of the dissertation council INRTU.05.04 in 2.5.22 «Product quality management. Standardization. Organization of production». Among the research areas are those that determine the requirements for digitalization of quality management systems:

- 4. Innovations in the design, development, and digitalization of quality management systems (QMS) of enterprises and organizations.
- 25. Development of description models, methods and algorithms for solving problems, designing of production systems, organizing production and making management decisions in the digital economy.

### **2. Results**

#### **2.1. Digital technologies in educational processes**

In March 2024, the dissertation titled «Improving the quality management system of mechanical engineering production based on the development of the PDCA cycle» was defended at the dissertation council IRNTU.05.04 [5]. On the example of digitalization of project management and higher education processes, the author justified the use of the modernized PDDCA cycle aimed to improve these processes [6, 7, 18]. The legitimacy and correctness of the PDDCA cycle was confirmed during the application of project management when introducing the concept of Worldwide CDIO Initiative into

the educational processes [18]. The author proposed a comprehensive method and a system of engineering education PD-CA-CDIO, which implies an integrated training system based on the Deming cycle PDCA and CDIO standards. The method can improve the processes through the application of the PDCA cycle and CDIO standards in various educational processes [7]. The author proved the similarity of the network-centric method with the Deming cycle PDCA. The method can be presented as a cycle of repeated actions known as John Boyd's theory: Observe — Orient — Decide — Act [13].

**2.2. Implementing a digital platform-based network-centric control architecture**

The driving mechanism in this process is the model of transition to Industry 4.0 [19] and the federal programs «Digital Economy of the Russian Federation» and «Development of Industry and Increasing its Competitiveness» [11]. The network-centric approach has proved its effectiveness. Below are the results of the dissertation submitted for consideration to the dissertation council IRNTU.05.04. It implies the creation of a network-centric enterprise management model based on a digital platform and proposes solutions to the problem of implementing network-centric enterprise management [1]. The network-centric approach involves transferring more information and powers to lower management levels, allowing them to make own decisions to achieve common goals.

To solve specific problems, it is not necessary to use all divisions of the group. For effective group management it is necessary to solve the following subtasks:

- Formation of the active part of the group — a cluster of units solving specific problems.
- Optimal distribution of functions and available resources of the production system between group divisions within their powers, as well as redistribution of these functions and resources when the situation changes.
- Implementation of functions by the divisions included in the cluster. [14,15]

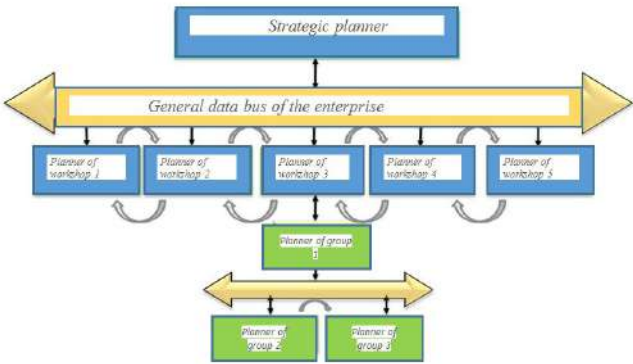


Figure 1: Network-centric architecture of a distributed intelligent system for managing enterprise resources in real time.

The network-centric approach is implemented within the Quick Response Manufacturing (QRM) strategy. Instead of a traditional chain of manufacturing operations, the QRM implies the creation of flexible cells that combine independent, compatible and multifunctional resources to perform a variety of operations.

The QRM cell is more than a set of resources. This is a unique set of skills and capabilities that can quickly respond to changing needs and market conditions. Independent resources are allocated specifically to each QRM cell, which ensures its autonomy and ability to solve problems without delays.

Combined resources located in close proximity to each other form a dynamic production space that can quickly adapt to new tasks and requirements. Multifunctional resources are capable of performing a variety of operations and even training each other. [3]

The QRM cell is marked by the ability to complete a production cycle without returning items, which improves efficiency and eliminates unnecessary delays. The flexibility of the workflow allows the QRM cell to be one step ahead. Its ability to make decisions independently is the real key point that distinguishes the QRM from traditional management methods.

The information platform used in the QRM can use POLCA [2] to prevent bottlenecks and improve processes at every stage of production, ensuring efficiency of QRM cells.

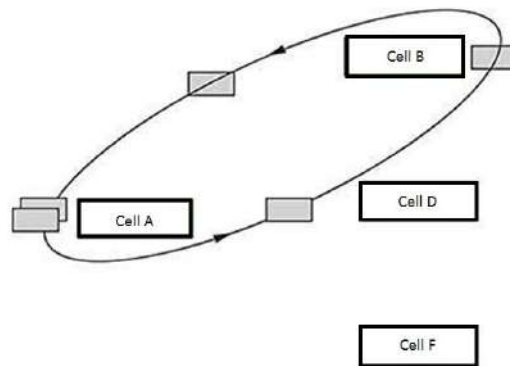


Figure 2: The POLCA cycle between cell A and cell B.

The study showed that there are several alternative technologies which can be used as a digital platform. This may be a blockchain that ensures the decentralized and secure transfer of information and digital assets and its analogues:

- Hashgraph is a distributed ledger that uses the asynchronous Byzantine Fault Tolerance (aBFT) algorithm to achieve consensus on the order of events.
- 2. Holochain is a framework that allows you to create decentralized applications using an agent-centered architecture in which each user has their own data chain. [15]

### 2.3. Implementing the Blockchain digital platform database into the ESG concept of sustainable development

In accordance with the Plan for digitalization-based training of highly qualified personnel in Quality Management, the study presents the results of implementing the Blockchain database into the ESG concept of sustainable development of digital practices in Russia.

In Russian high-tech companies, the ESG principles are applied to a lesser extent than digital transformation tools. New challenges are foreshadowed by many factors, including difficulties in attracting foreign investment given Western sanctions, reorientation of exports to the Asian market, a global change in priorities, a decrease in net profit, etc.

The ESG concept is based on three main elements: environmental — responsible attitude towards the environment; social — high social responsibility; governance — high quality of corporate management [4, 10].

There is a method for assigning ESG rankings to companies interested in sustainable development, and this is the main stimulator for companies as their investment attractiveness increases (Fig. 3).

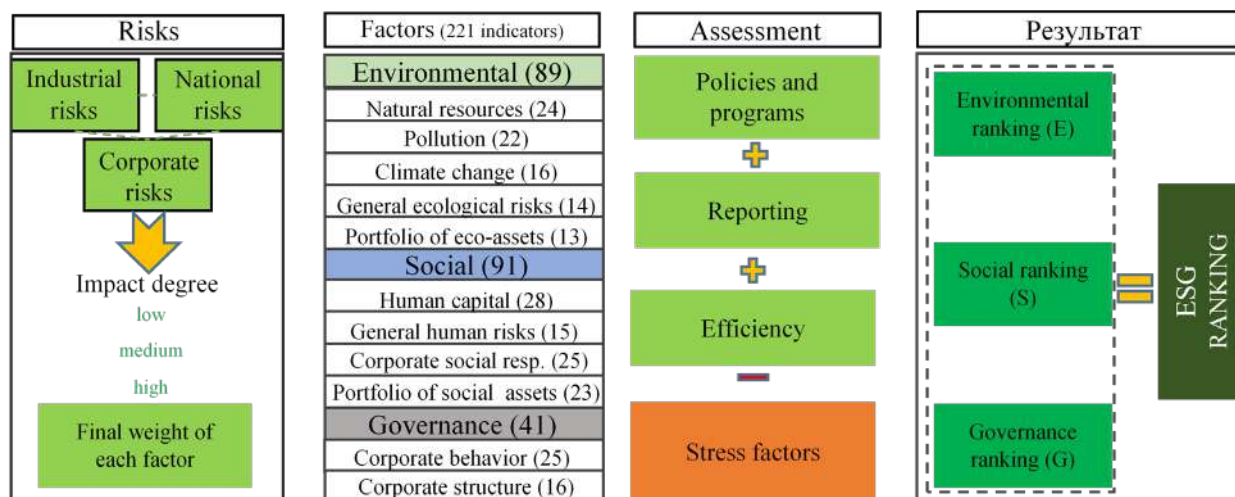


Figure 3: ESG assessment methodology [4].

ESG reporting and compliance with disclosure requirements are of great importance to regulators, investors and consumers. Although recognized as important for sustainable development and social responsibility of organizations, the ESG concept faces some problems and challenges. Addressing these challenges requires efforts on the part of companies, regulators and all stakeholders to develop standardized approaches to assessing and incorporating the ESG criteria. However, to solve the main problem, namely «Lack of Data Reliability», a modern and powerful digital tool is needed.

The authors suggest considering the digital tool Blockchain, which can help address the ESG issues through transparency, traceability and accountability. The operating principle of the Blockchain is presented in Figure 4.

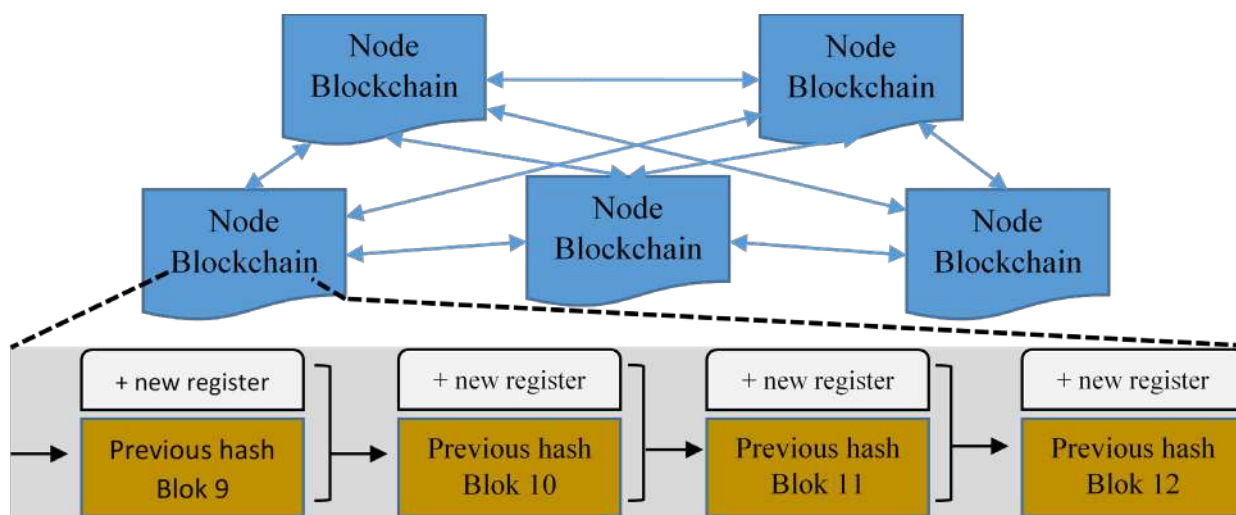


Figure 4: Blockchain's operating principle [12].

The Blockchain in the ESG concept will provide: the opportunity to maximize the impact of ESG; transparent supply chains with traceability; sustainable resource management; increasing consumer confidence; ability to track greenhouse gas emissions; ability to comply with regulatory requirements and to optimize financing.

The digital practices create opportunities for synergy between digital and ESG transformation, which will contribute to the efficiency and sustainable development. Modernization will allow us to establish tangible guidelines for the long-term development of Russian companies.

### 3. Results of the international cooperation between AS «Russian Register» and Southeast Asian enterprises in the implementation and research of digital technologies

The Russian Register Certification Association has collaborated with Southeast Asian companies in the implementation and research of digital technologies with subsequent certification of quality management systems.

#### 3.1. Cooperation between AS «Russian Register» and Chinese enterprises in the implementation of digital technologies and subsequent certification of management systems

Ensuring the competitiveness of Chinese products and enterprises producing titanium and titanium products is achieved through own reserves contributing to the implementation of the TQM (Total Quality Management) strategy based on ISO 9001 and ISO 14001.

The above motivation of Chinese companies is evident on the example of two titanium product companies, SHENYANG DAJI INDUSTRIAL CO., LTD. and Shenyang Bona Titanium Technology Co., Ltd, collaborating with the Russian Register Certification Association. Both companies specialize in the production of titanium, nickel and their alloys, and are engaged in the production and marketing of wire, pipes, rods, and sheets. Shenyang Bona Titanium Technology Co., Ltd has been maintaining business relations with many partners from different parts of China; its products are supplied to Singapore, Australia, Korea, Japan, etc. SHENYANG DAJI INDUSTRIAL CO., LTD. and Shenyang Bona Titanium Technology Co., Ltd, work closely with Baoji Titanium Industrial Company, the global titanium manufacturing giant. The holding has implemented digital technologies in the production of titanium and titanium products, including the FFC-Cambridge process and the direct electrochemical reduction of titanium dioxide to titanium in molten calcium chloride [2].

These companies have also implemented other components of digital technologies: smart panels and EcoStruxure Power (energy and power supply systems using modern digital technologies). The PME (Power Monitoring Expert) program connects users with peripheral users [20].

The quality policy is an integral part of the overall strategy of Shenyang Bona Titanium Technology Co., Ltd. It is aimed at deep processing of titanium, producing finished products in accordance with international quality standards, and satisfying consumer expectations. The companies supply titanium and nickel products to Singapore, Australia, Korea, Japan and other countries of the Asia-Pacific region.

The managers support the quality management system, the company's personnel are involved in the development and implementation of quality management systems. After conducting an internal audit and QMS analysis, the company's management turned to the Certification Association «Russian Register» to certify the quality management system for compliance with ISO 9001:2015, is presented in Figure 5. In 2010, the company conducted a certification audit and confirmed the QMS compliance with ISO 9001. After having taken corrective measures, they received certificates of compliance.





Figure 5: Certificate ISO 9001-2015 Certification Association «Russian Register».

## Conclusions

The article presents the results of the analysis of the digitalization-based training of highly qualified personnel in Quality Management. It analyses the dissertation on the application of the Deming cycle intended to improve project management and higher education processes. The article also presents the results of the dissertation submitted for consideration. It suggests implementing a network-centric management architecture based on the digital platform and discusses the implementation of the Blockchain database of the digital platform in the ESG concept for sustainable development. In addition, the article presents the results of international cooperation between AS «Russian Register» and enterprises from Southeast Asian countries in implementing and studying digital technologies, including with companies from China and Mongolia.



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## Embracing Digitalization in Tertiary Education: Innovations and Sustainable Solutions

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### **Abstract:**

*In tertiary education, technology integration drives sustainable development. This paper explores technology's role in sustainable tertiary education, spanning environmental, social, and economic aspects. It highlights technology's potential to transform knowledge dissemination, research, and learning for sustainability. The paper showcases solutions like AI, IoT, renewable energy, data analytics, and sustainable infrastructure, enabling eco-friendly campuses and personalized learning. Challenges like finance, tech complexity, equity, and privacy require strategic solutions. Despite challenges, technology enables impactful sustainable education. Embracing innovation and collaboration cultivates responsible graduates and resilient learning environments, leaving a positive societal and environmental impact.*

### **Introduction**

Tertiary education, also known as post-secondary or higher education, represents a crucial stage in the academic journey of individuals after completing secondary education (Häyrynen, Saranto & Nykänen, 2008). It offers specialized and advanced learning opportunities, preparing students for their chosen career paths and contributing significantly to personal and societal development. Recently, the integration of technology in tertiary education has emerged as a powerful catalyst for transformation, revolutionizing traditional teaching methods and opening new avenues for sustainable development within these institutions (Kriek & Coetzee, 2016).

Students pursue various programs and degrees at the tertiary level, including bachelor's, master's, and doctoral degrees, along with vocational diplomas and certificates. Tertiary institutions encompass universities, colleges, technical schools, and polytechnics, each catering to diverse fields of study and vocational training.

Technology, with its rapid advancements and widespread accessibility, has become an integral part of modern society, reshaping various industries and sectors. In tertiary education, technology plays a pivotal role in enhancing learning experiences, facilitating research, and streamlining administrative processes. The integration of educational technology, commonly referred to as EdTech, encompasses a broad spectrum of digital tools, software applications, and online platforms, revolutionizing the way knowledge is disseminated and assimilated (Donahoe et al., 2019; Rodriguez, Hudson & Niblock, 2018).

Several technologies are significantly transforming the landscape of tertiary education, including e-learning platforms (Ouadoud, Rida & Chafiq, 2021), virtual and augmented reality (Fealy et al., 2019), learning management systems (Turnbull, Chugh & Luck, 2020), open educational resources (Hylén, 2020), big data analytics (Murumba & Micheni, 2017), and renewable energy applications on campuses (Kumar Nath & Sen, 2021). E-learning platforms offer diverse online courses and resources accessible from anywhere, with interactive features like quizzes and forums. VR and AR technologies provide immersive learning experiences in virtual environments. LMS platforms streamline academic and administrative tasks and enable efficient communication. OER offers free and accessible learning materials, reducing educational costs. Data analytics personalize learning and enhance institutional performance. Renewable energy integration promotes sustainability on campuses. Figure 1 provides an overview of different EdTech components.

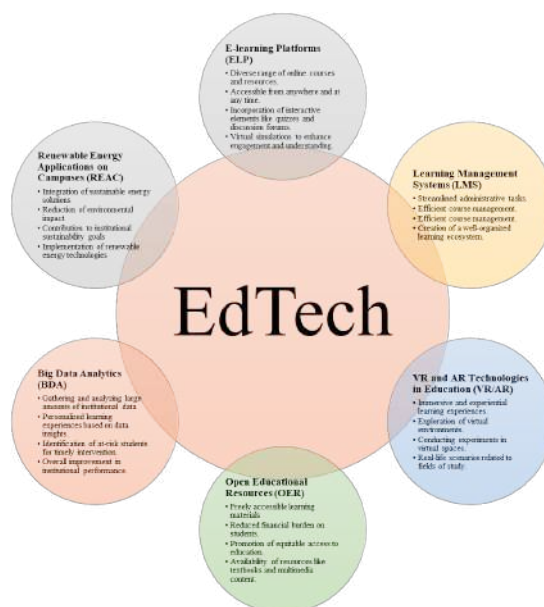


Figure 1: Overview of different EdTech components.

The integration of technology in tertiary education not only enhances learning outcomes but also contributes significantly to sustainable development within these institutions. The symbiotic relationship between technology and sustainability in tertiary education offers several key benefits:

1. **Environmental Impact Reduction:** By adopting digital platforms and online resources, tertiary institutions can reduce paper consumption and minimize their carbon footprint, contributing to a greener and more sustainable environment (Versteijlen et al., 2017).

2. **Increased Access and Inclusivity:** Technology enables remote learning opportunities, breaking down geographical barriers and providing education to learners who may face challenges attending physical classes (Bower et al., 2015; Huang et al., 2020).

3. **Enhanced Collaboration and Networking:** Technology fosters global connectivity, allowing students and educators to collaborate with peers and experts worldwide, thereby promoting cross-cultural learning and research collaborations (Rodriguez, Hudson & Niblock, 2018; Shadiev, Hwang & Huang, 2015).

4. **Data-Driven Decision Making:** Utilizing data analytics helps institutions make informed decisions, optimize resource allocation, and develop effective strategies to improve learning outcomes and institutional efficiency (Ashaari et al., 2021; Gaftandzhieva et al., 2023; Kaspi & Venkatraman, 2023).

5. **Lifelong Learning and Professional Development:** Technology offers continuous learning opportunities, enabling individuals to upskill and reskill throughout their careers, fostering a culture of lifelong learning (Chakrabarti et al., 2021).

This study aims to explore the diverse applications of technology in sustainable development within tertiary education and highlights the potential it holds for nurturing a more inclusive, environmentally responsible, and socially conscious academic landscape.

## 1. Literature Review

The integration of technology in tertiary education has opened new possibilities for promoting sustainable development within higher education institutions. This literature review aims to explore relevant studies, reports, and academic papers that highlight successful implementations of technology for sustainability in higher education. By examining existing research and case studies, we seek to gain insights into the various ways technology is being leveraged to address environmental, social, and economic challenges while fostering a culture of sustainability within tertiary education.

The increasing adoption of digital technologies in education has opened up new avenues for promoting sustainable practices and enhancing learning experiences. One such technology is e-learning platforms, which have gained significant attention in recent years. A study by (Chen, 2021) investigated the implementation of a blended learning approach that combined the Moodle-based iLearn2.0 platform with traditional classroom sessions at a Taiwanese university between 2018 and 2020. The study found that the cohort utilizing iLearn2.0 in conjunction with in-person instruction exhibited significantly improved learning outcomes compared to those receiving solely face-to-face or fully online instruction. Furthermore, the hybrid classroom setup contributed to improvements in three distinct dimensions of sustainability.

(Donath, Mircea & Rozman, 2020) proposed a conceptual framework for leveraging e-learning platforms to foster education for sustainable development. The framework involves a dedicated learning environment for students, trainees, tutors, and mentors, as well as a virtual sustainability center for online interactions. The authors emphasized the integration of gamification strategies, multimedia resources, and the Moodle Learning Management System (LMS) to enhance learner engagement and sustainable learning experiences.



In the Nigerian context, (Falola et al., 2022) examined the impact of e-learning opportunities on faculty engagement across eight private universities. Their findings highlighted the substantial influence of virtual learning platforms, digital databases, online short courses, and webinar-based learning environments on various aspects of faculty engagement, including teaching, research, administrative duties, and community involvement.

Augmented reality (AR) technology has also emerged as a promising tool for environmental education. (Ducasse, 2020) explored the potential of AR in outdoor environmental education, considering learning theories that emphasize contextual learning, exemplar AR applications, and the intent and manifestations of digital augmentations in this context. Similarly, (Theodorou et al., 2018) investigated the integration of AR technology to enhance environmental education among primary school students in Athens. Their study involved the design and deployment of AR applications aimed at addressing climate change concepts and fostering understanding of renewable energy resources. The findings demonstrated the educational value of mobile-assisted learning tools in environmental education.

The role of Learning Management Systems (LMS) in promoting campus sustainability has been explored by (Li, 2022) in a Chinese university. They showcased how the institution leveraged its LMS to integrate sustainable development goals into the curriculum and operational practices such as monitoring and enhancing energy consumption efficiency across campus facilities.

Open Educational Resources (OER) have also gained recognition for their potential to reduce educational disparities and support sustainable development goals. The Paris OER Declaration by (United Nations Educational, Scientific and Cultural Organization (UNESCO), 2012) highlighted the transformative potential of OER in expanding access to quality education and fostering lifelong learning.

(Campbell and Oblinger, 2007) explored the concept of academic analytics in tertiary education and how data-driven approaches can contribute to sustainable development. They discussed how data analytics can identify at-risk students, provide personalized support, improve retention rates, and reduce dropout rates.

Furthermore, the implementation of renewable energy technologies in higher education institutions plays a crucial role in fostering sustainable campus development. A study by (Chiong, Mohamad & Abdul Aziz, 2017) examined how initiatives such as adopting solar energy solutions, wind turbines, and geothermal systems contribute to creating an institutional identity and promoting a culture of sustainability on university campuses.

The reviewed literature demonstrates that technology plays a vital role in promoting sustainable development within tertiary education. E-learning platforms enable flexible and accessible education, while virtual and augmented reality enhance environmental education. Learning management systems contribute to campus sustainability efforts, and open educational resources foster equitable access to quality learning materials. Furthermore, data analytics assists in enhancing student success, reducing dropout rates, and improving institutional efficiency. The adoption of renewable energy applications demonstrates the commitment of tertiary institutions to reduce their environmental impact and embrace sustainable practices.

By leveraging technology in these various ways, higher education institutions can nurture a culture of sustainability, empowering students to become responsible global citizens and fostering innovation to address complex sustainability challenges. The following taxonomy presented in Figure 2 presents an overview of the contents of the reviewed literature.

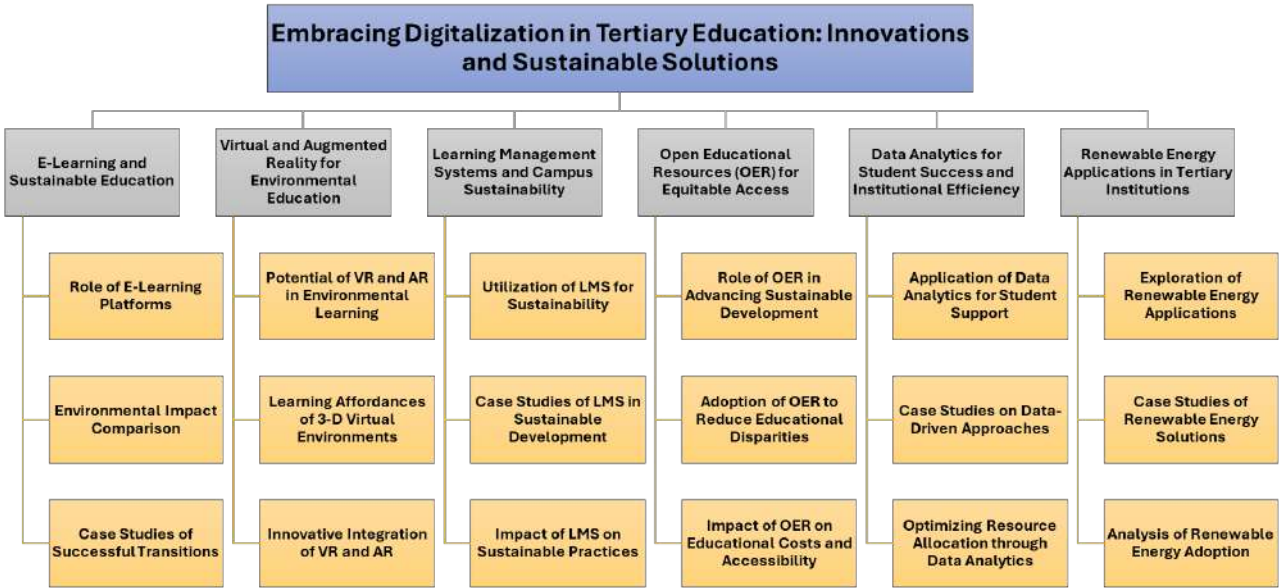


Figure 2: Taxonomy generated from the related works reviewed.

## **2. The Concept of Sustainable Development in Tertiary Education**

The concept of sustainable development in tertiary education revolves around creating an inclusive and equitable learning environment that addresses current needs without compromising the ability of future generations to meet their own needs. It encompasses three interconnected pillars: environmental, social, and economic sustainability (Duić, Urbaniec & Huisingh, 2015).

Environmentally, tertiary institutions can implement sustainable campus operations like energy efficiency, waste reduction, sustainable transportation, and green spaces. Curricula should integrate environmental topics to prepare graduates to address real-world issues. Research advancing areas like climate change, renewable energy, and conservation is vital. Socially, promoting diversity, inclusivity, and a sense of belonging is key. Community engagement through projects, outreach programs, and initiatives addressing societal challenges is important. Instilling ethical leadership and responsible citizenship values in students is crucial. Economically, sound financial management practices ensure long-term stability and viability. Developing relevant skills aligned with job markets enhances graduate employability and economic development. Encouraging entrepreneurship and innovation enables graduates to drive economic growth.

### **2.1. Challenges and Opportunities**

Tertiary institutions face challenges in implementing sustainable development practices due to financial constraints, resistance to change, and balancing immediate needs with long-term goals (Gusmão Caiado et al., 2018). However, sustainable development also presents significant opportunities for tertiary education, including attracting environmentally and socially conscious students, securing funding for sustainability initiatives, and enhancing institutional reputation.

The concept is about creating responsible, forward-thinking, and adaptable institutions that prioritize environmental stewardship, social inclusivity, and economic viability. By integrating sustainability principles into campus operations, curricula, research, and community engagement, tertiary institutions can prepare graduates to be catalysts for positive change, contributing to a more sustainable and prosperous future.

### **2.2. Technology's Potential**

Technology offers opportunities to address sustainability challenges in tertiary education. Online learning and open educational resources enhance access. Digital materials and remote learning reduce environmental impact. VR/AR enables immersive sustainability education, while simulations foster problem-solving skills. Learning analytics provide personalized student support, and smart sensors optimize energy usage. Virtual collaboration tools facilitate knowledge sharing while minimizing travel emissions. Massive open online courses (MOOCs) provide continuous professional upskilling opportunities.

### **2.3. Innovative Solutions**

In the pursuit of sustainable development, the integration of cutting-edge technology solutions holds immense potential to address environmental, social, and economic challenges. These solutions leverage advancements in fields such as artificial intelligence, the Internet of Things (IoT), renewable energy applications, data analytics, and smart infrastructure to create a more sustainable and future-ready learning environment.

Artificial intelligence optimizes energy consumption, improves waste management, and enables personalized learning. The Internet of Things powers smart lighting, HVAC, water, parking, and transportation monitoring. Renewable energy solutions like solar, wind, and geothermal can be implemented. Data analytics enhances learning, monitors resource usage, and assesses environmental impact. Green buildings with net-zero energy consumption, along with green roofs and vertical gardens, create sustainable infrastructure.

While technology offers sustainability benefits, there are challenges: financial constraints, technological complexity and skills gaps, digital divide and inclusivity issues, data privacy/security concerns, resistance to change, energy consumption and e-waste from technology usage, difficulties establishing sustainability metrics, and limited scalability of some solutions. However, recognizing and proactively addressing these obstacles is essential for tertiary institutions to leverage technology effectively and drive sustainable development successfully.

### **Conclusion**

The integration of technology in tertiary education holds immense potential to drive sustainable development, creating a more environmentally conscious, socially inclusive, and economically viable future. By embracing innovative technological solutions, higher education institutions can address complex challenges and cultivate a transformative learning environment that nurtures responsible global citizens and sustainable leaders.

The concept of sustainable development in tertiary education acknowledges the interconnectedness of environmental, social, and economic dimensions. Through sustainable campus operations, curriculum integration, research endeavors, and community engagement, tertiary institutions can lead by example and inspire positive change both within and beyond their campuses. However, the journey toward sustainability in tertiary education is fraught with challenges and limitations. Financial constraints, technological complexities, digital divides, data privacy concerns, and resistance to change are significant obstacles that institutions must navigate. By proactively addressing these challenges, institutions can ensure the successful implementation of technology-driven sustainability initiatives.



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### **Abstract**

*This article explores the challenges facing the education system as a result of the EdTech market growth, defines the main models of online learning implemented in Russia and the limits of using traditional standards for the education field. Practical examples show how a modern university applies international standards online learning quality assurance in the producing and implementation of massive open online courses.*

### **Introduction**

Today the educational landscape is changing every day. Modern digital technologies objectively influence the transformation of traditional education by developing the innovative component in the form of online courses and teaching potential of educational organizations (hereinafter — universities). It should be noted the active influence of such global trends as individualization and personalization of learning, interdisciplinarity and practice-orientation on the development of higher education system, as well as changes in the students' values.

Analysts record that nearly 2/3 of the world's population is connected to the Internet. In Russia, Internet users of working age spend 8 hours a day online on average. Social media accounts for the largest share of time online is almost 4 minutes out of every 10 minutes online. The traditional professor-student interaction in today's world is constantly becoming more complex and extends beyond the classroom. Therefore, the full implementation of individual choice of disciplines, time, place and method of learning is impossible without the use of distance education technologies and e-learning, which development is actively supported by the government in Russia. The distance learning concept was introduced as far back as 1995. Since 2012 the concepts of e-learning and distance education technologies have been enshrined in the law «On Education in the Russian Federation» at the federal level. The priority project «Modern Digital Educational Environment in the Russian Federation», the program «Digital Economy of the Russian Federation», the strategic academic leadership programs «Priority 2030», the project «Young Professionals» are actively implemented, there is an active exchange of best practices between universities. Ministry of Education and Science orders, the Ministry of Education and resolutions of the Government of the Russian Federation regulate organizational and financial issues of networking between HEIs in the process of joint implementation of programs using e-learning and distance education technologies.

We should also note the growth of competition in the educational environment due to the activation of independent online platforms and corporate universities as independent participants in the EdTech market. According to analytical research in 2021, 18 million people in Russia studied online and paid 226 billion rubles for it. There were 12 million students that year, who paid 214 billion rubles. Thus, in the pandemic, for the first time, Russians spent more on online learning than on face-to-face learning (Netology Media, 2022). Since pandemic, the trend toward online learning has continued. In 2023, the total revenue of the hundred largest Russian EdTech companies was 119 billion rubles, which is 32% more than in 2022 (Lapina, 2024). And in general, experts also give positive forecasts for the the online education market volume growth, whose average annual growth rate is estimated at 14.2% per year (AdSkill, 2024). In the economy, education, and social sphere, digital technologies are influencing changes in society and accelerating the emergence of the professions of the future. How can universities compete with companies that spend enormous budgets each year to create and promote hundreds of new online courses? The authors see the solution to the problem in an integrated approach to the development of online learning in universities and building an end-to-end technology for generating online courses, taking into account the current standards of quality management systems and generally accepted quality standards for digital educational products.

This article shows possible innovative solutions to ensure the quality and competitiveness of online courses of the university, tested in Federal State Budget Educational Institution of Higher Education «Saint-Petersburg State Economic University» (SPbSEU) on the example of massive open online courses. The authors substantiate the necessity of using unified methodological approaches in the process of managing online projects, standardizing the technology of creating and ensuring the quality of online courses in higher education institutions in order to meet the needs and expectations of students as the main consumers and all interested parties.

### **1. Materials and methods**

The analysis of a number of scientific articles and conference materials, analytical reports and reviews in accordance with the directions of EdTech market development allows us to conclude that there are several options for each university to use and credit the results of mastering massive open online courses. The model of blended learning, has become the most popular one. Also, universities use online courses for implementation in educational programs of network partners within the framework of networking agreements and virtual academic mobility of students, which improves the quality of education.

The authors' growth dynamics assessment of online educational platforms such as the National Platform for Open Education, Netology, Skillbox, Federal Portal «My Education» by the indicator «Number of posted online courses» showed extensive growth of mass open online courses on the online platforms of market leaders, including at the expense of obtaining the right of access to online courses, the right holders of which are universities, within the framework of license agreements. On average, there are from 100 to more than 1,400 online courses from different vendors on one platform. There are isolated examples when universities create their own online platforms, for example, Financial University, Volgatch (PGTU). As a rule, most universities use for e-learning Moodle — modular object-oriented dynamic learning environment, or its analogues, which do not provide free access to online courses to external users.

Research on the quality of online learning in general is fragmentary and mainly focuses on the problems and prospects of using online courses (Dozhnikov, 2020), as well as assessing the quality of an already implemented online course through measuring the degree of satisfaction of its consumers (Romanova, 2021). The use of the survey method as the main one, where students and less often teachers are the respondents (Shaposhnikov, 2022), seems to be insufficient. Some researchers have focused their attention on mathematical models of online course quality assessment described in terms of fuzzy sets (Shkodina, 2024) or discontinuity theory (Gritsova, 2021). Interesting works on analyzing the quality of the educational process in the conditions of online learning, for example, using artificial intelligence methods (Zhuchkov, Kharin, and Ovchinnikov, 2024) are appearing.

Most Russian universities use the well-proven ISO 9000 — 9004 quality management system standards developed by Technical Committee 176 (TC 176) of the International Organization for Standardization to form quality educational offerings in the field of online learning. This series of standards is based on the ideas and provisions of the theory of Total Quality Management (TQM), which makes it possible to use them when building systematic processes of the internal system of quality assurance of educational programs. At the same time, we note that the framework of ISO 9000 — 9004 standards does not take into account the specifics of online learning and does not contain recommendations regarding quality control of online courses and online learning in general. Therefore, in the process of creating online courses, it is advisable to be guided by generally accepted quality standards for digital educational products, such as the WCAG 2.1 Web Content Accessibility Guidelines. This guide provides universal recommendations for making web content accessible on fixed and mobile devices, regardless of the digital technologies used, to help make online course content usable for different target audiences of users, including people with disabilities and persons with disabilities. Depending on the level of development of digital technologies in higher education institutions, a set of Russian national standards «Information and Communication Technologies in Education» is used.

To address the problem of comparability of quality requirements for online learning across different higher education institutions in general, and to develop universal approaches to assessing the quality of online courses in particular, one should take advantage of the updated versions of the NCO virtual education standards proposed in 2019 by the Virtual Learning Leadership Alliance and Quality Matters from the United States. On the basis of NCO standards, the Russian Association “NPOO” has developed Requirements and Recommendations for the development of online courses published on the national platform of open education, which formed the basis for the technology of online course creation developed at SPbSEU.

The implementation of the blended learning model utilizes other global standards for quality online learning. For example, the iNACOL standards developed by the International Association for K-12 Online Learning, the OLC quality indicator system proposed by a community of higher education leaders and innovators known as the OLC Scorecard for measuring and evaluating elements of online program quality. Of particular note is the Standard for Quality Assurance in Online Learning developed by the Asia Pacific Quality Network (APQN, 2021).

In order to successfully train highly qualified and in-demand specialists ready to solve new professional tasks in the digital economy, taking into account international standards and recommendations for harmonizing the requirements for the quality of online courses, it is advisable to constantly study successful practices of building a comprehensive model of quality of online learning in universities. The example of SPbSEU shows how the first level of the complex system is implemented in terms of creating online courses, and this will be discussed below.

## 2. Results

The authors propose to improve the terminological system and introduce the concept of «academic online course». The main difference between academic online courses and infobusinesses is the learning approach. The academic online course implements a purposeful process of organizing students' activity on mastering knowledge, skills, abilities and competences, forming motivation. This process is designed by the teacher and realized in an individual educational path — custom journey map (CJM), following which the student achieves predetermined educational results.

It is determined that the most systematic and most relevant is APQN's «Standard for Quality Assurance of Online Learning», which presents a comprehensive vision of addressing the problem of bridging the gap in approaches to online course evaluation in order to harmonize online learning systems in the world.

It is revealed that the majority of Russian universities use a blended learning model, as it combines the advantages of online and offline formats. Overall, digital technologies and the development of the EdTech market are gradually transforming higher education towards greater networking exposure.

Based on international standards for assessing the quality of online learning, a universal technology for creating academic online courses that meet the quality level set by the academic community and the requirements of the EdTech market was developed, documented in local regulations of SPbSEU, and tested. The Level 1 process flow model is shown in Figure 1.



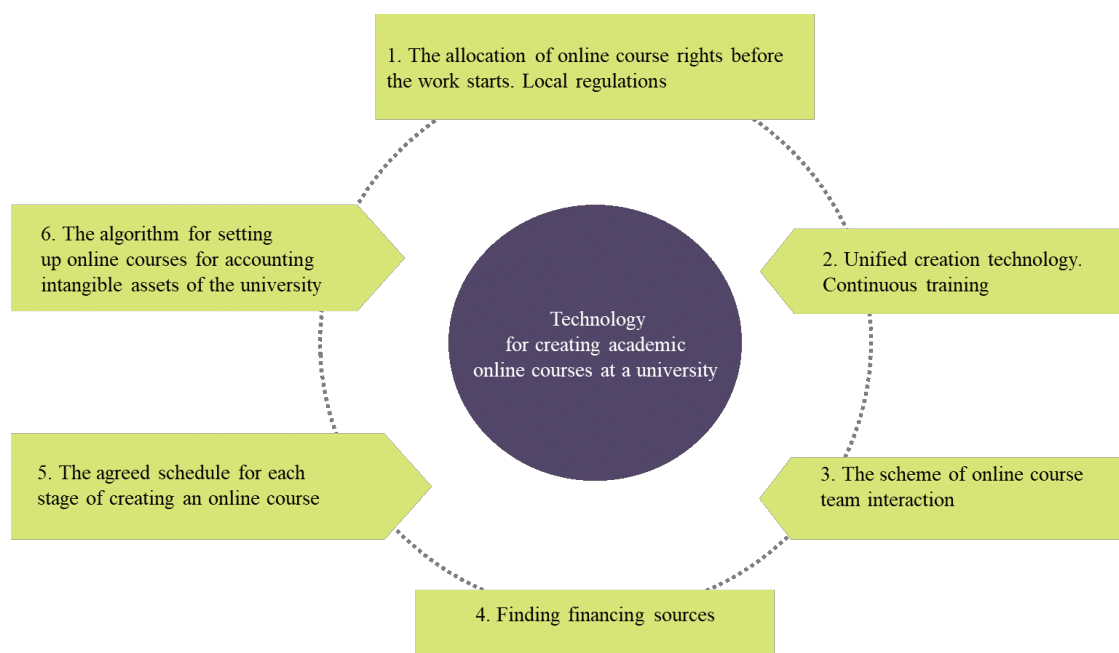


Figure 1: A model of the technological process for creating academic online courses taking into account international standards for online learning quality assurance of online learning.

The technology is based on the Agile approach to project management, which helps to accelerate the process of creating online courses without loss of quality and simultaneously realize them in different directions both in the educational process of the university and on the EdTech market as independent educational offerings. This approach has proven to be effective due to the flexibility of work processes and the constant interaction of all interested parties: students, faculty, administration and other members of the project team. Quality assurance at all stages of the project is carried out by a specially created structural unit at SPbSEU — the «Open Education Center». Generally, the steps in creating online courses follow the classic ADDIE pedagogical design model appropriate for most academic online courses. For online courses of an applied nature, the Backward Design model is used, in which online courses are designed by professors starting with learning outcomes and clear criteria for student achievement of those outcomes (Figure 2).

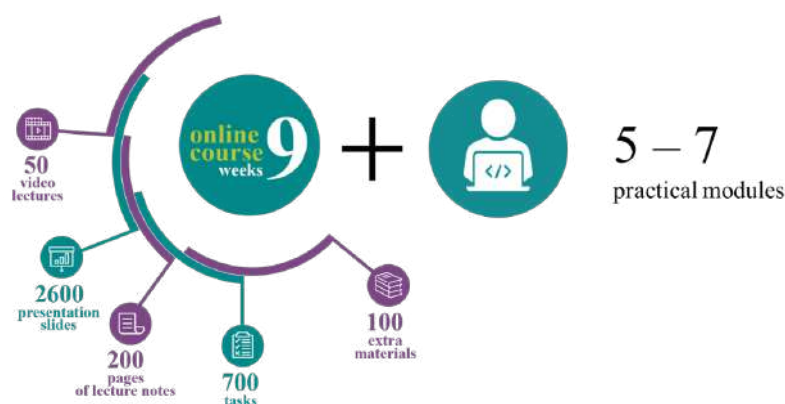


Figure 2: Structure requirements and volume of educational content for the SPbSEU online course for 9 weeks of studying.

Students master online courses if they are included in any discipline of the educational program as a material for independent work or in the curriculum as a discipline implemented in the online format with the substitution of classroom classes. Online courses that are studied for additional education are popular. Interaction between teachers and students takes place on the course forum or in a specially created group in social networks. According to the results of successful completion of the current control and project assignment, the student automatically receives an electronic certificate of SPbSEU in the personal cabinet of the LMS. Due to the approach oriented to the APQN Online Learning Quality Assurance Standard, SPbSEU online courses are also in demand on external online educational platforms DATA Lib, E-Uni, Lectorium. In order to study students' expectations and needs, each online course includes elements of input and output questionnaires. The results of the questionnaire survey of 896 students taking SPbSEU online courses in the fall semester of the 2023–2024 academic year showed that the availability of materials at any time and useful content are the main values of online courses according to students (Figure 3).

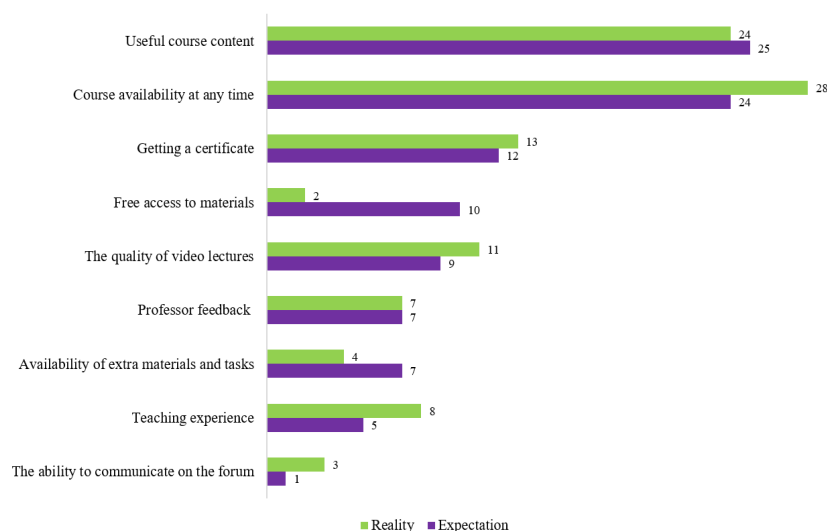


Figure 3: Values in completing the SPbSEU online course for students, %.

The authors believe that useful content is an indispensable requirement not only for online courses, but also for any educational content. Highly qualified university professors, practitioners and experts are involved in the development of SPbSEU online courses, which makes it possible to actively use digital technologies and create high-quality online educational resources for the modern educational process.

### Conclusions

In conclusion, it should be noted that the development of online learning according to international quality standards is a strategic «growth point» of any HEI and helps to improve the results of educational activities, as well as becomes the basis for initiatives focused on the sustainable development of the HEI as a whole.

To fulfill the strategic objectives of mutually beneficial partnership in regional and international online education projects, Russian universities should embed themselves in the global industry of digital educational technologies, solve the tasks of commercialization of their own online educational products in the EdTech market by cooperating with online platforms, improving internal learning management systems, finding technological solutions to increase the availability of quality education through the implementation of online courses and growth of economic growth.

At the same time, the problem of online education quality is fragmented in the academic field. The characteristics and clear boundaries that distinguish an academic online course from any other online business product have not been defined. There is a search for a comprehensive model of the system of internal quality control of online education and unified methodological approaches to improving the quality of online courses by standardizing the conditions for their creation and focusing on best practices.

SPbSEU is solving a large-scale task of creating and implementing online courses using universal technology in order to present SPbSEU educational programs in the Russian and international online space, develop networking with universities around the world and promote the SPbSEU brand in the global market of digital education. The application of international standards, such as the APQN online learning quality assurance standard, guarantees the competitiveness of online courses in the international space.



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# Thoughts on Improving the Evaluation of Virtual Simulation Laboratory Construction in the Context of Digital Transformation

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## Abstract

*By simulating real experiments environments, virtual simulation laboratories provide students with more extensive and convenient experiments resources, thereby addressing the limitations and high costs associated with traditional experiments. However, the current evaluation systems for the construction of virtual simulation laboratories face several issues, such as unreasonable index systems, incomplete content, and unscientific methods. This paper analyzes the existing evaluation index systems and, in light of the requirements of digital transformation in education, underscores the importance of developing a scientific, reasonable, and comprehensive evaluation index system for virtual simulation laboratory construction. It suggests that by integrating the strengths of existing index systems, these evaluation indices should be further reformed and refined to better support the construction and development of virtual simulation laboratories.*

**Keywords:** virtual simulation laboratory, digital transformation, evaluation, indicator system.

## Introduction

Virtual simulation, also known as virtual reality technology or simulation technology, refers to the technology of using a virtual system to simulate real-world systems or environments. With the advancement of computer technology, simulation technology has evolved into an independent system and is now becoming a universal and strategic technology for humans to understand, transform, and create the objective world.<sup>1</sup> In the late 1990s, Chinese colleges and universities began exploring the construction of virtual simulation laboratories. These laboratories utilize computer technology to simulate experimental processes, providing students with a virtual experimental environment. By 2019, 296 projects had been included in the teaching program of national virtual simulation laboratory.

With its unique advantages, the virtual simulation laboratory effectively addresses the challenges of real experimental projects, such as the lack of suitable conditions, operational difficulties, high-risk or extreme environments, high costs, high consumption, and irreversible operations. It transcends the limitations of traditional experiments, broadening the scope of experimental content and enabling students to engage in complex experiments like explosion theory, thereby deepening their understanding of the subject matter. Additionally, virtual experiments eliminate time and space constraints, improving learning efficiency. Their strong interactivity and fault tolerance encourage students to explore independently, fostering innovation.

Moreover, virtual simulation laboratories facilitate the professional development of teachers and laboratory staff, enabling them to better meet students' learning needs. With the advancement of the digital economy and the informatization of education, virtual simulation laboratories have become an essential platform for experiments teaching in higher education, providing a wealth of experiments resources and revolutionizing experiments pedagogy. Currently, the scientific evaluation of their construction effectiveness is crucial. Based on the existing evaluation system and the context of digital transformation in education, this paper proposes suggestions for improvement.

## 1. Current Situation Analysis of the Evaluation of Virtual Simulation Laboratory Construction

Currently, there are relatively few studies related to the evaluation of virtual simulation laboratories and virtual teaching and research laboratories, and there is a lack of a unified and scientific evaluation index system. A review of the literature reveals that the existing evaluation index systems have several key issues: first, the structure of the index system is not sufficiently reasonable, lacking systematicity and completeness; second, the content of the indices is not comprehensive enough, failing to cover all aspects of the construction of virtual simulation laboratories; and third, the evaluation methods are not sufficiently scientific, lacking a combination of quantitative and qualitative approaches. Therefore, it is necessary to construct a scientific, reasonable, and comprehensive evaluation index system for the construction of virtual simulation laboratories in order to objectively and accurately assess their construction effectiveness. The author has selected two index systems related to the evaluation of virtual simulation laboratory construction for comparative analysis.

First, in 2021, the Science and Technology Development Center of the Ministry of Education<sup>6</sup> issued the «Guidelines for the Construction of Model Virtual Simulation Training Bases for Vocational Education» (hereinafter referred to as the «Construction Guidelines»). The «Evaluation of Effectiveness» section of these guidelines sets up indicators according to a chronological logic, including three primary indicators: «base construction», «base application», and «demonstration characteristics». Additionally, it includes ten secondary indicators such as «fund implementation», «management platform», and «school-based resources». However, this index system has structural issues, such as the lack of specific secondary indicators for the primary indicator «demonstration characteristics», making quantitative evaluation difficult.

Second, the General Office of the Ministry of Education provided an indicator system for the construction of national virtual simulation experimental teaching centers. This system is organized according to the logic of elements and includes four primary indicators: «virtual simulation experiments teaching resources», «experiments teaching team», «management and sharing platform», and «conditions and security», along with ten secondary indicators. While this indicator system is relatively complete, it lacks evaluation of the effectiveness of virtual simulation laboratories after their completion.

Through comparative analysis, it is evident that both indicator systems have their strengths and weaknesses.

The former is clearer in structure but lacks specific quantitative indicators; the latter is more comprehensive in content but lacks evaluation of post-construction usage effectiveness. Therefore, it is necessary to combine the advantages of both systems to develop a more scientific, reasonable, and comprehensive evaluation index system for the construction of virtual simulation laboratories.

## **2. The Urgent Need to Reform the Evaluation of Virtual Simulation Laboratories in the Context of the Digital Transformation of Education**

Currently, the digital transformation of education has become an international consensus, requiring students to develop critical thinking, problem-solving, effective communication, and teamwork skills. Digital technologies such as the Internet of Things (IoT), big data, artificial intelligence (AI), and cloud services have driven the development of virtual simulation laboratories. The «Construction Guidelines» issued by the Ministry of Education outline four development directions for virtual simulation laboratories: first, intelligent design, enabling functions such as interaction, judgment, data mining, and semantic understanding; second, turning the system into a platform, which includes centralized management, multi-terminal connectivity, and openness; third, management centralization, involving the establishment of virtual experiment centers for unified management of experiments teaching across the university; and fourth, content integration, where virtual experiments are combined with classroom teaching and physical experiments to form a complete teaching system. These characteristics represent the developmental direction of virtual simulation laboratories in the context of digital transformation in education.

As the digital transformation of education progresses, the evaluation of virtual simulation laboratory construction must also evolve and undergo technological reforms. First, information technology should be fully utilized to enhance the scientific, professional, and objective nature of evaluations. For instance, data mining and analysis techniques can be employed to deeply analyze usage data from virtual simulation laboratories, objectively reflecting their construction effectiveness. Second, it is crucial to adopt an evaluation method that combines both quantitative and qualitative assessments. Quantitative evaluation can yield objective conclusions through data analysis, while qualitative evaluation can capture users' subjective experiences and needs through surveys and interviews. Finally, a diversified evaluation system should be established, involving students, teachers, school administrators, and other stakeholders to ensure comprehensive and fair evaluations.

## **3. Developing the Evaluation System for Virtual Simulation Laboratory Construction**

The «Overall Program for Deepening Educational Evaluation Reform in the New Era» clearly emphasizes the need to «make full use of information technology to improve the scientific, professional, and objective nature of teaching evaluation». As a significant application of modern information technology, virtual experiments have been designed to fully integrate database and data mining technologies, and they have preset interfaces with schools, local education administrative departments, and the Ministry of Education, which greatly facilitates the collection of educational evaluation data.

In the existing evaluation system for the construction of national virtual experimental teaching centers, it is recommended to add «application effect» as a first-level indicator to comprehensively assess the performance of virtual experimental teaching centers. Regarding this new indicator, the following aspects need to be considered in the design and operation of virtual experiment platforms:

**Teaching Resources:** Attention should be given to the number of virtual experiments courses, the diversity of experiments projects (including curriculum-based experiments, experiments derived from scientific research results, and those developed in co-operation with enterprises), the types of skills training, as well as the proportion and dynamic changes of these projects.

**Teaching Team:** The staff structure and technical level of the experiments teaching center should be examined, along with the ratio of staff to experiments projects, the ratio of staff to student users, the activeness of teachers' participation in experiments teaching, their utilization of data, and their guidance of students.

**Teaching Management:** The evaluation should consider whether the virtual experiments platform is equipped with comprehensive experiments guidance, process recording, report submission, and grading functions, as well as the timeliness of software updates and maintenance. Additionally, the soundness of the management system, the effectiveness of network security protection, and the operation of the user feedback mechanism should be assessed.

**Condition Guarantee:** The hardware, communication, and financial guarantee levels of the experiments center can be automatically assessed by mining data on equipment configuration, network communication status, and financial status.

**Application Effect:** Data should be used to quantitatively analyze the frequency, duration, performance, and satisfaction of students using the virtual experiment platform. Additionally, the usage of the platform by the broader society should be monitored to comprehensively evaluate its application effectiveness.

Education evaluation practice shows that combining quantitative and qualitative evaluation methods can provide more objective and effective conclusions. Therefore, when evaluating the achievement of educational goals and effects and the degree of participation of multiple stakeholders, quantitative data should be supplemented and deepened through questionnaires (including online surveys) and interviews.

## **Conclusion**

As an integral part of modern educational technology, virtual simulation laboratories are crucial for enhancing the quality of experiments teaching and fostering students' innovation and practical abilities. However, scientifically evaluating the construction effectiveness of these laboratories remains an urgent issue. Based on an in-depth analysis of existing evaluation index systems and in light of the digital transformation of education, this paper proposes constructing a scientific, reasonable, and comprehensive evaluation index system for virtual simulation laboratories. Moving forward, we will continue to delve into the evaluation of virtual simulation laboratory construction to contribute to the high-quality development of education in China.

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# Quality Assurance in the Digital Age: Charting New Paths for Global Tertiary Education

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## **Abstract:**

*The digital age is revolutionizing global tertiary education, prompting a critical re-evaluation of quality assurance (QA) practices. This article explores the transformative potential of digital technologies in shaping QA processes for higher education institutions worldwide. It examines digitalization's challenges and opportunities, including the rise of online learning, data-driven approaches, and the need for adaptable QA frameworks. The article delves into innovative QA strategies that leverage digital tools to enhance transparency, accountability, and continuous improvement in educational quality. Tertiary institutions must pioneer new approaches to quality assurance in the digital age to ensure that their graduates possess the skills and knowledge required by the 21st-century workforce while maintaining the highest standards of educational excellence. This article aims to contribute to the ongoing discourse on effectively navigating the evolving landscape of QA in the context of global tertiary education's digital transformation.*

**Keywords:** *Quality Assurance, Higher Education, Cross-border, Digital tools.*

## **1. Introduction**

The higher education landscape is experiencing a significant transformation, propelled by an unyielding digital revolution reshaping knowledge dissemination, acquisition, and evaluation. From the proliferation of online learning platforms and massive open online courses (MOOCs) to the ubiquitous presence of digital tools and resources, the digital age has unleashed a wave of innovation and disruption, creating unprecedented opportunities and formidable challenges for tertiary institutions worldwide. While the potential for educational advancement is immense, this paradigm shift necessitates fundamentally re-evaluating traditional quality assurance (QA) mechanisms.

### **1.1. The Digital Revolution and Its Impact on Global Tertiary Education**

The digital revolution has not only democratized access to higher education, breaking down geographical barriers and expanding educational opportunities for learners across the globe. However, it has also revolutionized the very nature of the learning experience. Virtual classrooms, online assessments, and collaborative digital platforms have become integral components of the educational landscape, blurring the boundaries between physical and virtual learning environments. This shift towards digitalization has also paved the way for innovative pedagogical approaches, such as blended learning, which seamlessly integrates online and offline components and personalized learning pathways tailored to individual student's unique needs and preferences. However, the rapid pace of technological advancement has also raised concerns about quality control, academic integrity, and the equitable provision of educational opportunities.

### **1.2. Defining Quality Assurance in the Digital Age**

In the dynamic and evolving landscape, there is a need to carefully re-evaluate the concept of quality assurance to encompass the digital age's distinctive characteristics effectively. Traditional QA frameworks, often rooted in on-campus inspections, standardized assessments, and accreditation processes, may need to capture the nuances of online learning and digital pedagogies fully. A more holistic and comprehensive understanding of QA is required, one that encompasses not only the academic rigor of programs but also the effectiveness and usability of digital tools, the accessibility and inclusivity of online resources, the responsiveness of student support services, and the overall student experience in digital learning environments.

### **1.3. The Need for Adaptable QA Frameworks**

To effectively navigate the complexities of the digital age, tertiary institutions must develop adaptable QA frameworks that can respond to the ever-changing needs of learners and the evolving technological landscape. These frameworks must be agile and flexible, accommodating diverse learning modalities, from fully online programs to hybrid models that blend online and on-campus components. They must also be data-driven, harnessing the vast amounts of information generated by digital platforms to inform continuous improvement efforts and enhance the student learning experience. Moreover, QA frameworks must prioritize equity and inclusivity, ensuring that all learners, regardless of socioeconomic background, geographical location, or learning style, can access high-quality education in the digital age. For instance, a comprehensive literature review on quality assurance in cross-border education has been shown in Table 1.



Insights	Contributions	Conclusion	Reference
Quality assurance in higher education varies globally and is significantly influenced by local dimensions. QA movement in Africa should follow the indigenous route based on reality.	Explains the stratified reality of quality assurance in higher education. Analyzing current trends and offering the African viewpoint on quality assurance.	QA in higher education involves global, national, regional, and local dimensions. African QA efforts should be indigenous and based on ground reality.	A. Srivastava 'Quality assurance in higher education in the global context' <i>Quality Assessment and Enhancement in Higher Education in Africa</i> , 2022. doi: 10.4324/9781003306825-3.
The rapid growth of online programs raises concerns about quality assurance. Public authorities adapting QA systems for digital education in OECD.	Reviewing advice from international QA organizations. Identifying trends and best practices in digital higher education.	The paper guides adapting higher education QA systems to digital education. It discusses how public authorities can support institutions in enhancing their quality management policies for digital teaching and learning.	M. Alenezi 'Digital Learning and Digital Institution in Higher Education' <i>Educ Sci (Basel)</i> , vol. 13, no. 1, 2023, doi: 10.3390/educsci13010088.
Quality enhancement integrated into curriculum delivery, teaching, and research. Quality assurance and enhancement structures fit for purpose in Africa.	Overview of quality, quality assurance, and quality enhancement in HE. Regional quality standards discussion and comparison in different higher education systems.	Quality enhancement is more relevant than quality assurance in modern universities. Quality assurance and quality enhancement structures should be fit for purpose.	Kitawi 'A global review of quality assurance and quality enhancement in higher education' <i>Quality Assessment and Enhancement in Higher Education in Africa</i> , 2022. doi: 10.4324/9781003306825-4.
Digital applications aid in improving and ensuring assessment quality. The application includes dashboards for program overview and assessment alignment.	Quality assurance application for assessment programs in higher education. Supports continuous improvement and accountability in assessment quality.	The developed digital application enhances assessment quality in higher education. Stakeholders perceived the application as user-friendly and supportive.	L. H. Schellekens, M. F. van der Schaaf, C. P. M. van der Vleuten, F. J. Prins, S. Wools, and H. G. J. Bok 'Developing a digital application for quality assurance of assessment programmes in higher education' <i>Quality Assurance in Education</i> , vol. 31, no. 2, 2023, doi: 10.1108/QAE-03-2022-0066.
Higher education quality assurance is a global concern. Factors like globalization and the ICT revolution impact higher education quality.	Quality of higher education in a global context. Factors changing higher education environment and challenges for stakeholders.	Lack of consensus on conceptualization and evaluation of quality. Globalization and the ICT revolution have changed the higher education environment.	A. Durdas, T. Harbuza, V. Borshchovetska, Y. Radchenko, and H. Starosta, "HIGHER EDUCATION QUALITY ASSURANCE: CONTEMPORARY TENDENCIES," <i>Continuing Professional Education: Theory and Practice</i> , vol. 75, no. 2, 2023, doi: 10.28925/1609-8595.2023.2.3.
Curriculum review exercise in Hong Kong University using learning analytics. Impact study shows the effectiveness of digitalized data for quality assurance.	Impact study of curriculum review using digitalized and self-reported data. Learning analytics confirm/refute concerns and offer quality assurance opportunities.	Learning analytics is effective for curriculum review and enhancement. Digitalized data can be used for quality assurance measures.	N. Elassy 'The concepts of quality, quality assurance and quality enhancement' <i>Quality Assurance in Education</i> , vol. 23, no. 3, 2015, doi: 10.1108/QAE-11-2012-0046.
No need for new quality schemes, but global knowledge sharing. ESG guidelines apply with specific extensions for digital education.	Evolution of quality assurance systems and guidelines for digital higher education in Europe. New quality assurance challenges in response to future innovations in higher education.	Digital higher education practices are growing and becoming more complex. Quality benchmarks include flexibility, competency development, and recognition of qualifications.	G. Ubachs and P. Henderikx 'Quality Assurance Systems for Digital Higher Education in Europe' <i>Handbook of Open, Distance and Digital Education</i> , 2023. doi: 10.1007/978-981-19-2080-6_41.

Table 1: Literature Review.

## **2. Challenges in Quality Assurance in the Digital Age**

As tertiary education institutions navigate the uncharted waters of the digital age, they encounter many challenges that threaten to undermine the integrity and effectiveness of their quality assurance processes. These challenges stem from the nature of digital learning environments, which introduce new complexities and vulnerabilities requiring innovative solutions and proactive measures.

### **2.1. Ensuring Academic Integrity in Digital Environments**

One of the most pressing challenges facing QA professionals in the digital age is the erosion of academic integrity. The ease of copying, sharing, and manipulating digital content has led to a surge in plagiarism, contract cheating, and other forms of academic dishonesty. While offering convenience and flexibility, online assessments are particularly susceptible to cheating, as students can readily access unauthorized resources and collaborate with others during exams. To maintain the rigor and credibility of their programs, institutions must implement robust measures to detect and deter academic misconduct in digital environments. These measures may include proctoring software, plagiarism detection tools, and alternative assessment formats emphasizing critical thinking and problem-solving skills rather than rote memorization.

### **2.2. The Data Deluge: Managing and Utilizing Big Data for QA**

The digital age has ushered in an era of big data, where digital platforms and learning management systems generate vast amounts of information. This data deluge presents both challenges and opportunities for QA professionals. On the one hand, data's sheer volume and complexity can be overwhelming, requiring sophisticated tools and expertise to manage and analyze effectively. For example, institutions may collect terabytes of data on student interactions with online course materials, assessment results, and engagement in discussion forums. Additionally, data from external sources, such as social media sentiment analysis or labor market trends, can also be integrated into the QA process. On the other hand, big data offers unprecedented insights into student learning behaviors, engagement patterns, and performance trends. By harnessing the power of data analytics, institutions can identify areas for improvement, personalize learning experiences, and make data-driven decisions to enhance the overall quality of their programs.

### **2.3. Addressing Digital Divides and Equity Concerns**

While the digital revolution has expanded access to education for many, it has also exacerbated existing inequalities and created new digital divides. Not all students have equal access to reliable internet connectivity, digital devices, and the necessary digital literacy skills to thrive in online learning environments. This disparity disproportionately affects students from marginalized communities, including those from low-income backgrounds, rural areas, and underrepresented groups. To ensure equitable access to quality education, institutions must bridge the digital divide by providing affordable technology resources, offering training and support for digital literacy skills, and designing online courses and assessments accessible to learners with diverse needs and abilities.

### **2.4. Opportunities for Quality Assurance in the Digital Age**

While the digital age presents various challenges for quality assurance, it also opens up exciting possibilities for enhancing and transforming QA processes. Embracing the potential of digital technologies can empower institutions to overcome obstacles and elevate their QA efforts to new heights, fostering greater efficiency, effectiveness, and transparency.

### **2.5. Leveraging Technology for Enhanced QA Processes & Data-Driven Decision Making for Continuous Improvement**

One of the digital age's most significant opportunities is leveraging technology to streamline and enhance QA processes. Automation tools can automate repetitive tasks, freeing QA professionals to focus on more complex and strategic activities. Digital platforms can facilitate seamless communication and collaboration among stakeholders, fostering a culture of continuous improvement. Digital learning environments generate vast amounts of data that can provide valuable insights into student learning patterns, engagement levels, and overall program effectiveness. By analyzing this data, institutions can identify areas for improvement, personalize learning experiences, and make data-driven decisions that enhance educational outcomes.

### **2.6. Fostering Transparency and Accountability through Digital Tools**

Transparency and accountability are cornerstones of effective QA. In the digital age, institutions can utilize digital tools to foster greater transparency in their QA processes. Online dashboards and reports can give stakeholders real-time access to key performance indicators, assessment results, and other relevant data, promoting greater accountability and trust. Digital platforms can also facilitate open dialogue and feedback mechanisms, enabling students, faculty, and other stakeholders to participate in the QA process and contribute to the ongoing improvement of educational programs.

### **2.7. Building Global Networks for QA Collaboration**

The digital age has removed geographical barriers, allowing institutions to collaborate and share best practices globally. Online forums, conferences, and communities of practice allow QA professionals from different countries and cultures to share ideas, learn from each other, and find creative solutions to common problems. Building global QA collaboration networks allows institutions to tap into a vast pool of knowledge and expertise, accelerating QA innovation and improvement. The digital age is transforming tertiary education quality assurance with its challenges and opportunities. Digital technologies can help institutions navigate the digital landscape and reimagining QA for the 21st century.

### **2.8. Innovative QA Strategies for the Digital Age**

As the digital revolution continues to reshape the landscape of tertiary education, institutions are increasingly adopting innovative QA strategies that leverage the power of technology to ensure educational excellence in the digital age. These strategies go beyond traditional QA approaches, embracing new tools, methodologies, and paradigms to address digital learning environments' unique challenges and opportunities.

2.9. Case Studies of Successful Digital QA Implementations

Many institutions have implemented innovative digital QA strategies that have improved educational quality, student experiences, and efficiency. Some institutions use learning analytics platforms to track student engagement, progress, and performance, allowing instructors to identify at-risk students early and provide targeted support. Others use adaptive learning technologies to tailor learning to student needs and abilities, improving outcomes. Some institutions use virtual and augmented reality to create immersive learning experiences that improve student engagement and understanding.

2.10. Emerging Trends in Digital QA Technologies

New technologies and methods are constantly appearing in digital QA. QA will benefit from AI and ML, which will automate routine tasks, analyze massive amounts of data, and give students personalized feedback. Block chain technology is also getting used in QA to verify credentials and track student progress securely and transparently. Using NLP to analyze student feedback and sentiment and integrating QA processes into the software development lifecycle to ensure digital learning platform and tool quality are other trends. Some of the emerging trends in technologies can be seen in Table 2.

Insights	Contributions
Predictive Analytics	The University of Maryland Global Campus uses predictive analytics to identify students who may be struggling academically and provide them with additional support.
AI and ML	Turnitin uses AI to detect plagiarism in student assignments, while Carnegie Mellon University's Open Learning Initiative employs ML algorithms to personalize learning pathways for students.
Block chain Technology	Sony Global Education has developed a block chain-based platform for storing and sharing educational records, while the Massachusetts Institute of Technology (MIT) has issued digital diplomas using block chain technology.
NLP	IBM Watson's Tone Analyzer is an example of an NLP tool that can be used to assess student feedback and identify areas for improvement.
Robotic Process Automation	The University of Melbourne has implemented RPA to automate the process of collecting and analyzing student feedback data.
Virtual and Augmented Reality	The University of Michigan Medical School uses VR to train students in surgery, and the USC Institute for Creative Technologies simulates real-world scenarios for training and research.
Cloud-based QA Platforms	Qualtrics is a popular cloud-based platform used by many universities for survey design, data collection, and analysis.
Internet of Things (IoT)	IoT sensors at the University of California, Berkeley track student attendance and movement patterns in classrooms to identify disengagement and struggling students.

Table 2: Emerging trends in Technologies.

2.11. Designing Future-Ready QA Frameworks

To thrive in the digital age, institutions must design QA frameworks that are future-ready, adaptable, and scalable. These frameworks should incorporate the latest technologies and methodologies while aligning with the institution’s strategic goals and values. A future-ready QA framework should be data-driven, utilizing analytics and insights to inform decision-making and continuous improvement efforts. It should also be student-centered, enhancing the student learning experience and ensuring all learners have access to high-quality education, regardless of their background or circumstances. Finally, a future-ready QA framework should be collaborative, fostering partnerships and knowledge-sharing among institutions and stakeholders to collectively address the challenges and opportunities of the digital age.

3. Conclusion

3.1. Charting the Future of Quality Assurance in Global Tertiary Education

The digital age has ushered in a new era for quality assurance in tertiary education, marked by challenges and opportunities. The article explores the profound impact of the digital revolution on teaching, learning, and assessment. Traditional QA approaches may need to be reconsidered. Educational institutions are encouraged to consider embracing digital transformation to flourish in this evolving landscape and adopt innovative QA strategies that utilize technology to enhance educational experiences, uphold academic integrity, and expand access to quality education.

3.2. Recommendations for Institutions Embracing Digital Transformation

For institutions embarking on digital transformation, several vital recommendations can guide their QA efforts. First and foremost, developing a comprehensive and adaptable QA framework that aligns with the institution’s strategic goals and values while addressing the unique challenges and opportunities of digital learning environments is essential. This framework should be data-driven, student-centered, and collaborative, incorporating the latest technologies and best

practices in the field. Institutions should also invest in professional development for faculty and staff to ensure they have the necessary digital literacy skills and competencies to effectively utilize digital tools and resources for teaching, learning, and assessment.

### **3.3. The Importance of Ongoing Dialogue and Collaboration**

In the digital age, rapid change and continuous innovation characterize the landscape. Institutions must engage in ongoing dialogue and collaboration with each other, policymakers, and other stakeholders in the education ecosystem to stay ahead of the curve. By collaborating on knowledge, resources, and best practices, institutions can collectively tackle challenges and seize opportunities presented by the digital revolution. In order to achieve educational excellence in the 21st century, it is crucial to prioritize the maintenance of quality assurance.

In conclusion, the digital age has ushered in a new era for quality assurance in tertiary education, one that requires a fundamental rethinking of traditional approaches and a willingness to embrace innovation and change. By charting new paths for QA in the digital age, institutions can ensure that their graduates are well-prepared for the demands of the 21st-century workforce and that the promise of educational excellence is fulfilled for all learners, regardless of their background or circumstances.

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# QA in Higher Education Institutions: Fostering Excellence in Teaching and Learning in All Stages of Life

*This section explores institutional strategies that drive excellence in teaching and learning across various educational levels. The articles cover topics such as faculty evaluation and training, student engagement, curriculum development, and the role of internal quality assurance in fostering educational excellence. The section also includes case studies on institutional reforms, classification evaluations, and sustainable quality management practices that support continuous improvement in academic outcomes. Special attention is given to higher education institutions' role in lifelong learning and workforce development.*

## Self-assessment in modern education as a sustainable development trend

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### Abstract.

*The study examines models for assessing the quality of education and their development, which allows us to identify both modern ideas about the quality of education itself, and trends in its connection with ideas about sustainable development. The main attention is paid to Russian practice, which, despite sanctions pressure, is quite diverse and continues to develop. The main trend towards sustainable development is becoming more and more obvious, which is confirmed by the practice of reflecting its elements in models of both self-assessment of the activities of educational organizations and the quality of education in general.*

**Keywords:** education, quality assessment models, conformity assessment, accreditation, self-assessment, rankings, sustainable development.

### Introduction

In February 2023, Russian President Vladimir Putin proposed the return of four — to six-year specialty programs to universities. In May 2023, a pilot project for higher education reform was launched in Russia. The new model included three stages of education: basic higher education, specialized and postgraduate education. According to the amended rules, the duration of study at the first level will be from four to six years, and at the second — from one year to three years. Six universities were selected to test the new education system: MAI, MPGU, MISIS, Immanuel Kant Baltic Federal University, St. Petersburg Mining University and Tomsk State University. According to Russian Deputy Prime Minister Dmitry Chernyshenko, by 2026 this model of higher education will cover more than a thousand Russian universities.

Such a radical change in the course of educational reform will require higher education organizations to exert all efforts and additional resources for restructuring, and will also become a serious test for university management systems.

The purpose of this study was to review trends and opportunities for their development in the field of education quality management for sustainable development at various levels — from the educational institution itself to the territorial and national levels. At the same time, special attention is paid to the diversity of the existing practice of self-assessment of the activities of educational institutions in the Russian Federation against the backdrop of changes over the past few years.

### 1. Materials and Methods

The materials for the analysis were ratings of educational organizations posted in the public domain, as well as open data from national quality awards.

For the analysis, graphical methods were used to visualize the dynamics of the participation of educational organizations in ratings and evaluation of their activities according to the models of national quality awards.

### 2. Results

#### 2.1. Independent Assessment of Education Quality in the Russian Federation

An independent assessment of education quality (IAEQ) is an evaluation procedure aimed at obtaining information about the educational activities of organizations that provide education, the quality of student preparation, and the implementation of educational programs. IAEQ is regulated by Articles 95, 95.1, and 95.2 of the Federal Law of December 29, 2012, No. 273-FZ «On Education in the Russian Federation». According to Part 2 of Article 95 of Federal Law No. 273-FZ, IAEQ includes an independent assessment of the quality of student preparation and an independent assessment of the quality of educational activities of organizations providing education.

The independent assessment of education quality is conducted in all regions of the Russian Federation based on the provisions of Federal Law of July 21, 2014, No. 256-FZ «On Amendments to Certain Legislative Acts of the Russian Federation Regarding Independent Assessment of Quality of Services Provided by Organizations in the Fields of Culture, Social Services, Healthcare, and Education» and the regulatory legal acts adopted for its implementation.

The results of IAEQ do not lead to the suspension or annulment of the license to conduct educational activities, the suspension of state accreditation, or the deprivation of state accreditation concerning organizations providing education. For the implementation of Part 5 of Article 95.2 of Federal Law No. 273-FZ, the Ministry of Education and Science of Russia, by order of December 5, 2014, No. 1547, approved indicators characterizing the general criteria for assessing the quality of educational activities of organizations providing education: openness and accessibility of information about the educational organization; the comfort of the conditions in which educational activities are carried out; friendliness, politeness, and competence of employees; satisfaction with the quality of educational activities of the educational organization..

## **2.2. Rankings**

Rankings are becoming an increasingly popular tool for evaluating quality in all spheres of life. Their appeal lies primarily in their accessibility and clarity, which are crucial for interpreting results and making management decisions for those who are not specialists in a particular field. This trend has extended to education, impacting a wide range of stakeholders — students and their parents, teachers and professors, employers, government bodies, and society at large.

The first university rankings emerged in the United States in 1983 (college rankings) and in the United Kingdom in the early 1990s. In 2003, the Academic Ranking of World Universities (ARWU) began publishing annually, followed shortly by the QS World University Rankings and Times Higher Education (THE) rankings. The ARWU remains the most stable of the existing rankings, with its criteria unchanged since its inception when the Shanghai Jiao Tong University Institute of Higher Education was tasked with developing criteria for selecting foreign universities where Chinese students and postgraduates could be sent to improve their own universities and research institutions. The publication of the research results as a list of the world's top 500 universities, based on these criteria, quickly gained popularity and remains influential today.

Since 1983, the Best Global University Ranking evaluated colleges and then universities in the U.S. Since 2014, the American news agency US News has compiled a global ranking, analyzing 1,500 institutions in 81 countries, publishing a top-100 list from the final selection. There are also five regional and 28 subject-specific rankings. The annual Round University Ranking (RUR) has been published since 2010, based on the assessment of four key areas: educational activity, research activity, financial sustainability, and internationalization.

The first methodology for the Moscow International University Ranking «Three University Missions» was developed after extensive public discussions involving over 100 organizations — universities, rectors' councils, expert associations, and ranking agencies. The list of ranking criteria was submitted to the International Expert Council of the ranking, comprising 25 prominent higher education experts from the USA, the UK, Brazil, China, India, South Africa, Iran, Italy, Belgium, Turkey, Poland, and Russia. Following the release of the pilot version in December 2017, consultations with experts continued. Based on feedback, some ranking indicators were adjusted, and the list of participating universities expanded to 500. In 2019, the shortlist included over 1,700 institutions, growing to over 1,800 in 2020, more than 2,000 in 2021, over 2,200 in 2022, and over 2,300 in 2023, representing 165 countries and territories. The «Three University Missions» ranking is the youngest international ranking.

After the events of February 2022, many Western ranking agencies excluded Russian universities from their rankings. In response, Russian universities declared they would ignore the results of such rankings. Therefore, in the near future, Russian educational institutions will not participate in these evaluations. However, other recognized rankings globally, besides the Western ones, will now play a more significant role for Russian universities. The Shanghai Ranking and the Russian «Three University Missions» list are considered the most promising.

Moreover, national rankings continue to operate, such as TOP-5-100, Priority-2030, RAEX-100 Best Universities in Russia, and the National University Ranking. International and national rankings also include subject-specific rankings. For instance, U.S. News Education Rankings include categories like MBA & Business, Education, Engineering, Law, Medical Nursing, Sciences, Library & Information Studies, Social Sciences & Humanities, Health, Public Affairs, Fine Arts. The RAEX rating includes categories like Agricultural Universities, Universities for Mathematicians, IT Universities, Mechanical Engineering and Robotics, Natural Sciences, Physics and Astronomy, Engineering, Medical Direction, Construction and Architecture, Economic Direction, Engineering Universities, Humanities Universities. The «National Recognition» ranking in Russia includes Natural Sciences, Medicine, Agriculture and Forestry, Engineering, Social Sciences, Humanities. The «Education in Russia» ranking, supported by RANEPa, is divided into classic, technical, humanitarian, military, legal, linguistic, pedagogical, medical, arts, economic, sports, agricultural, geological sectors.

There are also specialized national rankings like The Princeton Review's, National American Ranking, The Complete University Guide, Sunday Times, Guardian, VUZopedia, World of Universities, etc. Specialized rankings are quite diverse, such as Webometrics, Leiden Ranking, Nature Index Ranking, U-Multirank, hh.ru recruitment platform ranking, THE-ICE International Student Barometer and Student Barometer (ISBSB)<sup>TM</sup> Survey

& Benchmarking Research, Taylor Nelson Sofres, TNS Global Survey, Worldwide Hospitality Awards, Fashionista, Business of Fashion, Domus, Carnegie Foundation. For example, the UI GreenMetric focuses specifically on assessing the ecological sustainability and «green» aspects of university activities, providing important information for students interested in choosing an institution committed to environmental protection, aligning closely with the idea of sustainable development. In 2020, THE extended its rankings to measure universities across all 17 SDGs. The third edition of these rankings, published in April 2021, included more than 1,200 institutions from 98 countries and regions.

We believe that it is possible to highlight strategic or target rankings, such as the HEEACT research paper ranking; the Performance Research Index (PRI); the Top 20 popular educational online platforms ranking. Digital knowledge is becoming increasingly popular, as are their rankings — the ranking of the largest companies in the online education market ; National quality ; Ranking of educational organization websites.

As demonstrated above, in the field of education, there are several university rankings that classify them by the quality of education. These rankings differ in their goals and approaches to defining what quality education is. To integrate these approaches, the Guild of Experts in Professional Education is developing national aggregated rankings of higher education institutions. Since 2006, the Guild of Experts in Professional Education has been working on the development and improvement of the independent quality assessment system, ensuring the quality assurance of higher education in Russia based on the cooperation and partnership of all interested parties. Drawing on many years of experience, a group of scientists and analysts from the Guild of Experts, in collaboration with the National Foundation for Support of Innovations in Education, is conducting research, studying the advanced domestic and international experience of organizations assessing the quality of professional education, and forming aggregated rankings.

A growing number of rankings and initiatives link university activities with the sustainable development agenda, reflecting the increasing role of higher education institutions in addressing global issues. Various rankings assess universities' achievements in sustainable development differently, but overall, several key approaches can be identified:

- Comprehensive analysis across the set of UN Sustainable Development Goals is conducted by THE Impact Rankings by SDG and SDSN Global Universities Rankings, which evaluate the contribution of universities across all 17 Sustainable Development Goals.

- Focus on individual Sustainable Development Goals in ARWU, which takes into account results in the fields of ecology and energy (Goals 7 and 13), as well as UI GreenMetric, which evaluates «green» aspects related to Goals 7, 11, 12, 13, 15.

The reason why SDGs are becoming more important in rankings is that people are starting to realize how important universities are in making the world a more sustainable place. Universities train future leaders, conduct research, and come up with new solutions to global problems. By including SDGs in their rankings, ranking organizations are pushing universities to make sustainability a priority in everything they do, from teaching to research to how they run their buildings.

### **2.3. National Quality Awards**

National quality awards are prestigious recognitions given to organizations demonstrating high levels of quality and excellence in their operations. They play a vital role in promoting the concept of total quality management (TQM) at the national level. The most renowned national quality awards include:

- The Malcolm Baldrige National Quality Award (USA), established in 1987 to recognize organizations achieving high levels of quality and productivity. The evaluation model includes seven criteria: leadership, strategic planning, customer focus, measurement, analysis and knowledge management, workforce focus, operational efficiency, and results.

- The European Quality Award (EFQM) (Europe), established in 1992 by the European Foundation for Quality Management (EFQM). The EFQM Excellence Model includes seven criteria: purpose, vision and strategy; organizational culture and leadership; stakeholder engagement; creating sustainable value; management practices; digital and operational processes; and achieved results.

- The Deming Prize (Japan), established in 1951 to recognize organizations that have successfully implemented quality management systems. The evaluation model includes ten criteria, such as policy, organization, information, standardization, human resources, and more.

Geopolitical changes in recent years have led to significant modifications in these models. The MBNQA awards now include six categories: Manufacturing, Service Company, Small Business, Education, Healthcare, Non-profit. The education and healthcare categories were added in 1999, while the government and non-profit categories were added in 2007. The 2021–2022 Baldrige Excellence Framework is available for the business/nonprofit industries. The 2019–2020 Baldrige Excellence Framework is available for the business/nonprofit, healthcare, and education industries. The criteria focus on managing all components of an organization as a whole, cybersecurity risks, and understanding the role of risk management within a systems perspective of organizational performance management.

The EFQM Model is a globally recognised management framework that supports organisations in managing change and improving performance. Trusted by thousands of organisations worldwide for more than 30 years, the EFQM Model not only remains relevant but continues to set the management agenda for any organisation wanting a long term, sustainable future.

The EFQM Lens series uses the guiding principles and seven criteria of the EFQM Model as the basis for focusing on a specific topic, such as the United Nations Sustainable Development Goals (UN SDGs), Circular Economy, or a specific sector, for example, Education. Organisations find it important to integrate and embed specific management topics or to ensure sector good practices within its Purpose, Ecosystem, Leadership, Culture, Operations, and Results. Sector lens: Education — Help school leadership teams to measure current performance and shape future activities to improve it. And every headteacher, principal, and Vice-Chancellor wants to help their students achieve more. At the same time, anyone who runs an educational establishment is also managing a complex organisation. Constantly prioritising objectives, balancing budgets, managing people and aiming for excellence. The EFQM-Hamdan Education Model provides a framework for achieving outstanding performance in Educational Institutions, and for recognising high performance. The strategic nature of the EFQM-Hamdan Educational Model, combined with its focus on both strategic and operational performance, make it an ideal framework for testing the alignment of school’s ambitions for the future with its current practices and its ability to respond to challenges.

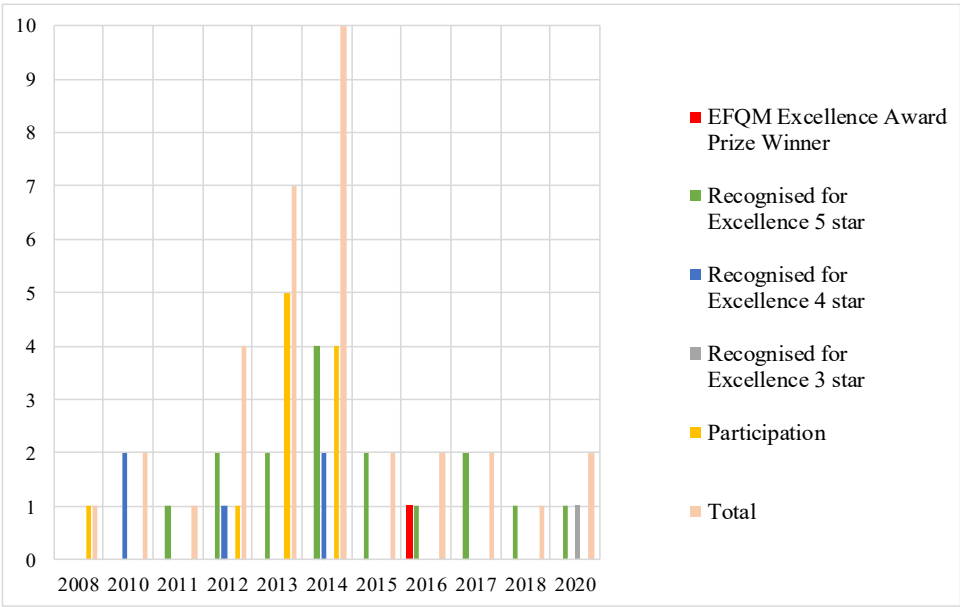


Figure 1: Analysis of participation and results of assessing the activities of Russian universities according to the EFQM model.

Russian universities have long and successfully used the EFQM model of various generations to assess their activities. Stavropol State Agrarian University achieved the greatest result, becoming a winner in 2016. The best results from 2008 to 2020 were shown by National Research University Moscow Power Engineering Institute (MPEI), Kuban State Technological University, National University of Science and Technology «MISiS», Ufa State Petroleum Technological University, Northern (Arctic) Federal University named after M.V. Lomonosov (NArFU), The State University of Management, Ural Federal University, Ivanovo State Power University, Volga region state university of service (Fig.1).

- The Government of the Russian Federation Quality Award (RFQA) was established on April 12, 1996, as the highest award in the field of business excellence and process quality. The RFQA model is based on the EFQM model and includes nine criteria: leadership, strategy, personnel, partnership and resources, processes, products and services, results for consumers, personnel, society, and key results.

The RFQA is awarded annually on a competitive basis to organizations for significant achievements in product and service quality, ensuring safety, and implementing highly effective quality management methods. Participating organizations are divided into three groups by size, with no sectoral grouping. Nonetheless, an analysis of participation shows that the education sector consistently ranks high in terms of the number of participants. Each year, educational organizations of various sizes are nominated for the award, showcasing the widespread commitment to quality improvement within the sector.

The awards of the Government of the Russian Federation in the field of quality are awarded annually on a competitive basis to organizations for achieving significant results in the field of quality of products and services, ensuring their safety, as well as for the introduction of highly effective quality management methods. The organizations participating in the competition are divided into three groups by number, while the industry approach to grouping is not applied. Nevertheless, an analysis of the participation of educational organizations shows that Education occupies consistently leading positions in terms of the number of participants. Moreover, every year educational organizations of different sizes become Graduates and Laureates of the competition (Fig.2).

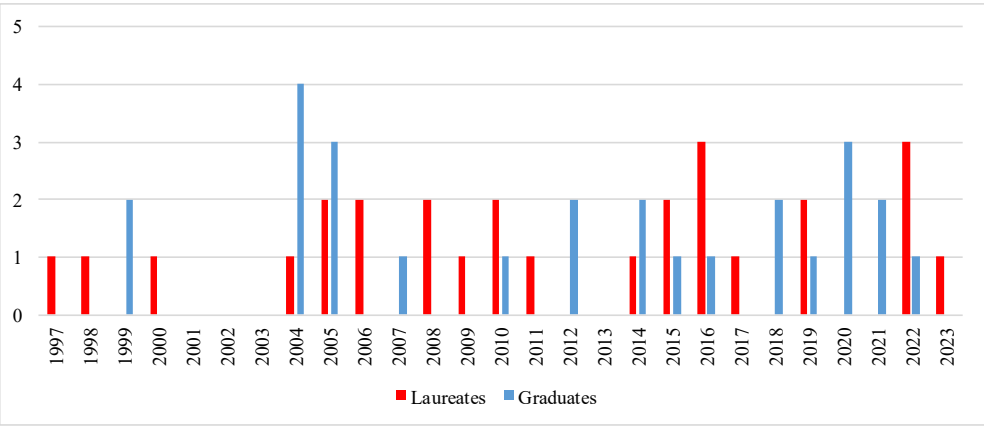


Figure 2: Analysis of the number of educational organizations that became laureates and graduates of the Russian Government Prize competition in the field of quality

Thus, at least a fifth of the winners of the competition annually are educational organizations. Among the educational organizations that have become laureates of the ACC RF competition, a special place is occupied by the Federal State Educational Institution Stavropol Agrarian University, which has become a three-time winner of the ACC RF, and a winner of the European Quality Award according to the EFQM model.

Compared with other countries, Russia has a more complete and interesting experience in assessing the quality of higher education institutions, since a full-fledged competition in the field of education was organized in 2000 on the initiative of Rosobnadzor.

The competition was held with the aim of further developing the system of external independent assessment of the quality of graduate training, stimulating educational institutions to introduce modern systems and methods of quality management of educational institutions of higher, secondary and primary vocational education. When developing the model, the model of Excellence of the European Foundation for Quality Management (EFQM) was taken into account; the model of the Award of the Government of the Russian Federation in the field of quality; «Standards and Directives for quality assurance of Higher Education in Europe», developed by the European Network (Association) for Quality Assurance (ENQA) in higher education; international standards of the ISO 9001 family.

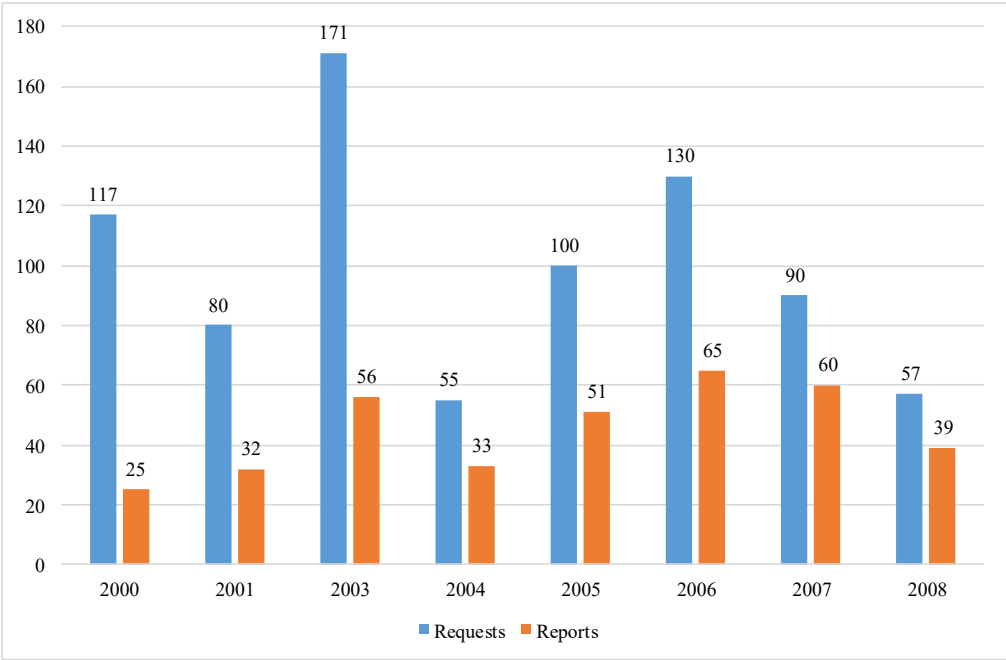


Figure 3: Analysis of the number of educational organizations that submitted an application and report for participation in the Rosobnadzor competition «Quality systems for training graduates of educational institutions of vocational education».



The competition was particularly popular among rapidly developing educational organizations and facilitated the exchange of experience and new practices. During the existence of the competition, almost a third of Russian universities took part in it and more than half got acquainted with the model of business excellence. The peak of the competition development occurred in 2006, since in 2007 the transition to two-level training of students in the Russian Federation begins (Fig.3).

In the last few years, Roskachestvo has announced the launch of regional competitions in the field of quality and business excellence based on the model of the Russian Government's award in the field of quality. The purpose of the campaign is to increase the effectiveness of the implementation of regional industrial policy and ensure the sustainable development of the subjects of the Russian Federation. Within the framework of this company, on March 1, 2024, the acceptance of documents for the competition for the Kursk Region Governor's Award in the field of education quality in 2024 was opened. The award is awarded for achieving significant results in the field of quality management of education and is issued to stimulate the formation of effective management teams of educational organizations.

### **3. Discussion**

The transition from an industrial to a service economy dominated by the service sector is accompanied by the growth of the educational services market. Educational organizations, including virtual ones, compete in size with industrial giants, which shifts the focus from the quality of educational services to the quality of educational service management. At the same time, the multidimensional nature of such a transition requires new management tools, but most importantly, identification, accounting, evaluation and quality analysis. The rapid development of rating assessments and the obvious interest of educational organizations in models for evaluating their management systems indicate a growing need to systematize the experience accumulated by educational organizations in improving the quality of their services with the further formation of sectoral principles for self-assessment of their activities in the context of the UN-defined Sustainable Development Goals. Open reporting in the field of sustainable development of modern educational organizations according to standards provides a basis for evaluating only part of their activities in this aspect in ratings. The models of national quality awards take into account the results of achieving the Sustainable Development Goals to a greater extent than the sectoral features of the development of educational organizations.

### **Conclusions**

The diversification of ratings of educational organizations obviously has a trend towards assessing sustainable development at different levels — from the organization itself to its contribution to the national and global economy. The same trend can be seen in the models for evaluating the activities of organizations with national quality awards. The practice of educational organizations in the preparation of sustainable development reports will also expand and provide a basis for its assessment using different models, since each of them meets the requirements of different stakeholder groups.

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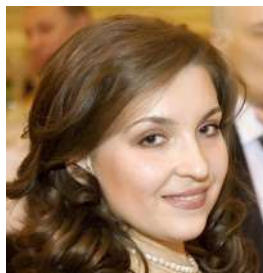


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# Development and Implementation of Internal Quality Assurance: The experiences of establishing a Quality Assurance and Accreditation Framework in The Maldives National University

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## Abstract

*Over the past two decades, quality has become a central concern in the global higher education systems. For countries like the Maldives, where higher education resources and expertise are limited, adopting international best practices and global standards is essential for developing internal quality assurance (QA) mechanisms. The Maldives National University (MNU), the largest, oldest and top-ranked higher education institution in the country, established in 1973, began developing an explicit internal quality assurance system in 2017. This paper explores the features, challenges, and opportunities associated with developing and implementing the Quality Assurance and Accreditation Framework (QAAF) at MNU. Using an «insider-outsider» reflection-in-action and reflection-on-action approach, it examines the development process, implementation strategies, and outcomes of QAAF to date. Data sources include meeting minutes, documentation, and stakeholder reflections. The analysis identifies successful elements and areas needing improvement, revealing that limited awareness and expertise in quality assurance as a key challenge in the establishment of internal QA mechanisms. However, engaging all staff in their areas of expertise fostered a quality culture at MNU. This involvement empowered staff in QA processes, increasing readiness for QAAF implementation and encouraging QA-related dialogue. Ultimately, MNU's approach to developing internal QA provides a roadmap for similar institutions.*

**Keywords:** *Maldives, Small-Island Developing States, Internal Quality Assurance, HE Leadership in QA*

## Introduction

Over the past decade, the global demand for higher education (HE) has surged exponentially, driven by the need for a highly skilled labor force essential to propelling global economies. This demand is further amplified by the increasing internationalization of higher education, including the rise of cross-border providers of HE (Knight, 2006; Gao, Baik and Arkoudis, 2016). Consequently, quality assurance (QA) has become a critical aspect of contemporary higher education provision worldwide. There is now a broader, more diverse participation of stakeholders in QA matters, along with a stratified, internationalized, and student-centered focus on learning and teaching, emphasized by assessment of learning outcomes as core institutional activities (Mieczysław et al., 2016).

Despite this significance of QA at all levels, researchers highlight that the term «quality», associated with QA is still not an easy concept to grasp as there are multiple understandings of the concept by different stakeholders, depending on the HEIs, countries and regions (Mieczysław et al., 2016, Williams and Harvey, 2016). However, these authors conceded that there is some consensus that quality in higher education generally refers to fitness for purpose and conformance to requirements where HEIs are more engaged in «doing right» and «the right things». In this sense, the QA community conceptualises that through a working definition of the term «quality» and «quality assurance», a culture of quality among HEIs needs to be fostered. Developing such a quality culture needs to involve all actors in the process of continuous quality enhancement and be aligned with the institutional vision, mission, and strategic goals along with the expectations and needs of the society, the labour market, and students (Sesay and Fofanah, 2023). Such contextualisation of the working definition of «quality» in the establishment of a quality culture can thus cater to the contextual sensitivities of the HEIs.

This paper focuses on the development of an Internal Quality Assurance (IQA) system at one university in the small island developing state (SIDS) of the Maldives. For the purposes of this paper, an internal quality assurance system refers to the processes and procedures within institutions, that review, evaluate, assess, examine and ensure the quality of the education provided the research undertaken (Quality Assurance and Accreditation Council of Sri Lanka, 2007). According to Mieczysław, et al, (2016) an IQA system in HEIs provides information on the quality of the institution's activities and guidance on how to improve these activities. An IQA system also refers to the procedures adopted by the institution for continuous improvement, where all QA activities are cyclical and periodic, focussing on quality assurance and quality enhancement. Thus, in HEIs, QA and quality enhancement are inter-connected, generating trust in the higher education institution's overall performance.

Within these conceptual definitions of QA and IQA, this paper examines the challenges and opportunities in the developing an IQA system at The Maldives National University (MNU). The aim is to explore these IQA development and implementation processes to highlight how small island developing states (SIDS) with its unique developmental challenges establish such QA systems in their HEIs. Additionally, this paper examines the development of the Quality Assurance and Accountability Framework (QAAF), highlighting the challenges and opportunities that arose to celebrate what works in such a process. The QAAF implementation process is also discussed to examine the IQA implementation at MNU in its journey to establish a quality culture. These aspects will be discussed as findings following the presentation of the methodology, concluding with final remarks.

## 1. The context

According to the OECD, (2018); «Small States» or SIDS are defined as countries with a population of 1.5 million or less. These countries though have similar unique characteristics such as geographic isolation/remoteness, limited natural resources along with economy of scale and climate vulnerability and susceptibility to natural disasters, they all have culturally and socially significant features (Crossley and Louisy, 2019). Bray (2016) argues that, in the provision of higher education in SIDS, these vulnerabilities are exacerbated by limited human resources hindering their ability to respond to the challenges and opportunities of globalization. This issue is compounded by SIDS often being recipients of the global higher education export market, due to their limited capacity to invest in local higher education sectors (Baldacchino, 2011). In this context, HEIs in SIDS face disadvantages in developing their Institutional Quality Assurance (IQA) systems, as many of these countries have poorly regulated External Quality Assurance (EQA) mechanisms governing HEIs (Waheed, 2013). According to Waheed (2013), the QA systems in SIDS are characterized by slow development, limited broader QA functions, excessive government influence, and severely limited human resources and expertise in higher education QA.

The Maldives is a SIDS comprising 1200 small flat islands, most of which are less than 1m above sea-level. It recently attained upper-middle-income status as per the World Bank classification system (World Bank, 2024). With a population of over 500, 000 as at 2022 census, and a booming tourism industry, the Maldives has two public universities and several private HEIs. The rapid economic expansion and shift towards a knowledge economy have led to increased enrolment in higher education, making quality assurance critical (Shareef and Shougee, 2020; Waheed, 2013). In 2021, the Maldives introduced its first-ever Higher Education Act (7/2021), which mandated the establishment of an external quality assurance body — the Maldives Qualifications Authority (MQA). Although MQA existed prior to this Act, its efforts in regulating HEIs' quality assurance were problematic. MQA is responsible for overseeing program accreditation, institutional audits, and qualifications validations. The establishment of this EQA body in the Maldives' higher education landscape, along with individual institutions' commitment to quality assurance, has necessitated the development of IQA systems and processes (Shareef and Shougee, 2020).

The Maldives National University (MNU) is the first higher education institution established in the Maldives, formed by merging various government institutions that provided professional training. Established in 2011 through The Maldives National University Act (3/2011) (MNU, 2020). As at 2024, MNU has 12 teaching faculties with over 7,000 enrolled students and more than 700 staff, including over 300 academic staff. The existence of committee is a strong feature of the university governance's collaborative leadership that enables participation of MNU community in its decision-making processes. Through its history, QA was a key focus in its curriculum development, teaching and learning and governance. However, the principles, processes and mechanism were implicit in policies and practices. To keep apar with international trends in HE, in 2017, the University Council prioritised the establishment of a QA unit in MNU initiating the development of explicit QA policies, processes, and mechanism at MNU. One significant initiative is the formation of the Quality Assurance Committee and the development of the Quality Assurance and Accountability Framework (QAAF) at MNU. This paper discusses the development of QAAF, exploring the challenges and associated learnings.

## 2. Methodology

This paper is based on the concept of «insider-outsider» research identities and epistemologies. Such dualism though have been argued to be more on a spectrum where a «researcher's identity can shift depending on the situation, the status of a researcher as an insider or outsider responding to the social, political and cultural values of a given context or moment,»(Milligan, 2016, p. 235). In this study, researchers in senior management at MNU share similar knowledge, identities, and contextual familiarity with the participants, making them insiders. However, their job functions and background experiences related to QA work at MNU also position them as outsiders in some respects.

Utilizing this insider/outsider methodology, and sometimes occupying an in-between status (Barnes, 2021), this study examines existing data such as meeting minutes, university documentations (policies and working papers) and participants' reflections both in the action (reflection in action) and following the process (reflection on action) in the ongoing implementation of the QAAF.

The analysis focussed on the researchers' involvement in these steps and is presented from their perspectives using the analytical tool of «reflection-on-action» and «reflection-in-action» as described by (Schön, 1983). This approach not only provided evidence on the features and challenges of developing MNU's IQA as the QAAF but also allowed for an analytical examination of the shortcomings in the processes.

## 3. Development of QAAF

The development of the Quality Assurance and Accountability Framework became a strategic focus of MNU's senior management in 2019, while developing the Strategic Plan for 2020–2025. At that point limited documentation on quality assurance of MNU existed. Reflecting on QA at MNU prior to 2019, one key stakeholder reflected «at MNU QA has been implicit in its functions though embedded in all its activities making QA secondary to the functions itself» (Stakeholder, 1). Despite MNU's initial developmental reports outlining the need for an explicit QA mechanism following examples of those identified in UK's QAA standards as outlined in the Operational Priorities for University Title, 2008 and Teaching and Learning Development Plan 2006–2008, the translation of these into actions were slow, and poor.

In 2021 the development of MNU's first QA policy and its associated background work by the senior management of MNU including members of the Academic Senate highlighted the need for a framework or set of guidelines to regulate internal QA standards of MNU. At that moment ongoing work of MNU's Institutional Quality Review (IQR) from UK's

QAA led MNU to align its services with the ESGs providing us with a solid set of standards that are internationally accepted. Using the 10 ESGs through meetings of the Academic Senate, Quality Assurance Committee, the Heads Committee heavy debates on the standards to be adopted by MNU were discussed. While the need to contextualize these standards were argued, there was also the need to ensure local QA authority MQA's institutional QA standards were also reflected to ensure compliance. Additionally, as a Small Island Developing State (SIDS), the Maldives, including MNU, faced a shortage of experts in the field of quality assurance. This necessitated consulting international best practices and examining similar models from other countries. The discussion to agree on the standards for MNU's internal Quality Assurance and Accountability Framework (QAAF) took over a year, with most of the time spent reaching a collective contextual consensus on their definitions. Figure 1 below illustrates the agreed 13 standards of MNU's QAAF.

Reflecting on the process of exploring and selecting these standards, the researchers' reflection on action generated ways in which MNU's staff were involved in the development of the QAAF and the collective experiences of the university staff. The rationale for such a collective approach was that, as IQA is to be maintained by the staff themselves, it is better to be generated by us staff rather than be imposed by an outsider. In the past developing various policies, strategies and curricula at MNU has been led by external experts — a common practice in SIDS (Shiyama, 2020). Despite the limited expertise in developing QA practices among the MNU staff and the poor existence of quality culture at MNU, at the Academic Senate and Quality Assurance Committee (QAC) meetings it was decided to convene small working groups led by the members of the QAC to develop and contextualize these standards further. Such a collaborative approach of IQA development, generated numerous consultative meetings, a spirit of experimentation and creativity as intrapreneurship — values conducive to developing a quality culture (Trivellas et al., 2012).

The small groups were constituted by a QAC member with other MNU staff who volunteered to offer their expertise to the QAAF development. The tasks of these groups were elaborating on the standards identifying the indicators, policies and procedures that exist and need to be established at MNU. As the QAC involved student representatives these working groups also included them, the QAAF development incorporated their unique and powerful perspectives into the conversation (Fossey et al., 2002; Carvalho and Teixeira, 2020)

One of the students involved in such a working group reflected the following:

«The conversations we had at times were so heated in how we viewed standard 6. Everyone described what the learning environment should be like, yet we kept forgetting what was possible. In my turn I highlighted as students how I saw it. Thinking back, I think I learnt so much about the importance of QA and I am happy to have been able to contribute to QAA development»

(Student A)

One of the major challenges from the researchers' perspective, especially that from the Policy and Quality Control Unit (PQCU) who organized and managed these small group activities was the difficulty in convening these small groups and delivering documents as per agreed timelines.

«It was quite time-consuming and utterly frustrating at times when some groups reported no progress on their work. We had a pre-agreed timeline, and tasks were clearly set, yet it was hard to work on it because staff were busy with their regular work»

(Stakeholder B)





Figure 1: The 13 standards of MNU's QAAF.

While this is a challenge typical of SIDS (Baldacchino, 2011), MNU was committed to QAAF development and the consistent follow-up to these tasks, together with the collaborative approach to leadership and accountability enabled the QAAF development.

An interesting feature of contextualizing these standards was observed when working on Standard 12 — Finance Management. This standard was borrowed from MQA's institutional audit standards. When identifying MNU's standards to manage its finances, MNU's unique context of being a public university must be considered. As such finance law and regulations of the country had to be applied and reflected in these standards albeit following the best international practices in managing university finances. Various literature on this aspect was sought, discussions with stakeholders beyond the small groups were needed to develop this standard. However, the resulting details of this standard now have become an exemplary collaborative work at MNU. Similarly, the Standard 11 — Research, Consultancy and Extension Services though have elements borrowed from MQA's standard, it was uniquely developed at MNU because of its numerous consultancy services. As such the ongoing work of consultancy, extension services along with the established research management processes at MNU were used in developing and setting the indicators for this standard. As Trivellas, et. al, (2012) argue, MNU's experiences demonstrate that collaborative-leadership, creativity, contextualization and staff-engagement are key features that work in the IQA process.

#### 4. Implementation of QAAF

The final QAAF was endorsed into action towards the end of 2023 — over two years since work was initiated on it. In this section the implementation of some of these standards will be reported to demonstrate its ongoing and living nature of implementation. Once the QAAF was approved at the Academic Senate a user-friendly version of the document was circulated with all MNU via email and on the Intranet. Below are some examples of how the QAAF is currently being implemented.

Standard 4 — Student-centered learning and teaching (SCLT) are a standard that had been implicitly implemented in the teaching and learning and curriculum development at MNU. However, as part of the implementation of QAAF a set of workshops on orienting staff to SCLT practices across the university was conducted. This orientation workshop was targeted at all staff at MNU where trainers delivered the pre-designed materials by attending to individual faculties. The collective effort to implement this standard now reflects in the curriculum development process at MNU, the teaching, learning and assessment at MNU and various support services provided at MNU. Staff who attended this workshop

reflected that though they knew about this SCLT as a teaching strategy before and as something for the classroom, they can now see it as a broader, holistic philosophy of MNU.

Standard 13 — Internationalization is currently being implemented where support from MNU's involvement in various external projects is bringing in fresh perspectives. For example, MNU's involvement in Erasmus funded project «Strategic Support for Accreditation of Programs and Internationalization» at South Asian Higher Education Institutes — 2021–2023 (SSAPI) provided international and regional expertise and best practice exposures in establishing internationalization standard at MNU. As such, rapid work on this standard's initial implementation has led to the development of MNU's international office (currently being deliberated at the University Council) in supporting MNU's strategic goal of internationalization.

These experiences demonstrate the need for staff awareness and training that enables the development of a quality culture and the criticality of developing partnerships (Mgaiwa, 2021) with global stakeholders in adopting best-practice in developing and implementing an IQA system in country such as the Maldives (Waheed, 2013).

### **5. Concluding Remarks**

The reporting on the development and implementation of MNU's IQA system highlights a unique journey towards establishing common internal QA standards. By leveraging collaborative leadership and utilizing the institution's existing expertise, MNU employed collective decision-making to develop and implement an IQA system that fosters a culture of quality. Such approaches not only empower staff in the QA processes and give them ownership to HEI's ongoing QA but are critical for HEIs in SIDS where paucity of expertise, limited human capital, heavy internal-workload and dysfunctional EQA are prevalent. A key lesson from this journey is that involving staff in the inception and setting of QA standards ensures continuity in the QA processes, making the pursuit of quality enhancement an iterative and sustainable endeavor.

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## QA in Higher Education and Education in Foreign Language(s): Insights from RUDN University

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### **Abstract**

*The report stands on the concept of multilingual education and argues that a comprehensive planning, implementation and further evaluation of university multilingual activities across diverse institutional tracks, both within and outside the curricular, can contribute to the policy and practice of the quality assurance in higher education. Such an approach is relevant within the juxtaposition of education globalization and national education traditions. The report goal is to consider how language diversity might be embraced and utilized within the academic institution from a holistic perspective. The report analyses Academia's trends in the field under study and proceeds to share the experience of RUDN university named after Patrice Lumumba regarding the institutional program for the university multilingual development.*

### **Introduction**

The Asia-Pacific Quality Network has made significant contributions to the advancement of quality assurance in universities over the course of its 20-year journey promoting and fostering international standards, collaboration and development within the region. The 21st push towards globalization alongside the simultaneous drive to preserve the best practices of the national traditions in the education, has brought the question of the education in a foreign language to the forefront of the educational discourse. Within the current context, one may recall that UNESCO in its report of 1953, titled *The Use of Vernacular Languages in Education* asserted as self-evident that the mother tongue was the best medium for teaching a child (UNESCO 1953, p.11). Nevertheless, the report acknowledged a myriad of complex forces at play, encompassing political socio-cultural, economic, and linguistic factors, which intricately impact the implementation of multilingual education. Meanwhile, as scholars and policymakers agree, the consequences of these complexities often lead to the pervasive influence of a monolingual paradigm that narrows educational approaches to a single foreign language, often favoring a prestigious language like English (Martin et al., 2023). However, in recent times, there has been a notable shift in policies and mindsets, that now is recognized as a multilingual turn. This concept, coined separately by different researchers (May, 2014; Conteh and Meier, 2014) as articulated by Meier (2017) underscores a growing recognition of the benefits of multilingualism in various contexts, highlighting the advantages of multiple languages in education and society, thus enhancing multilingual social and professional practices. The aforementioned landscape has substantially influenced the design of the current report.

### **1. Report design**

Taking into account the points discussed above, the report statement argues that enhancing quality assurance in higher education could benefit from incorporating the comprehensive evaluation of university multilingual practices as an integral component of the university overarching activities. This approach emphasizes the report's goal that is to consider how language diversity might be embraced and utilized within the academic institution from a holistic perspective.

The report integrates the analysis of the Academia's trends in the field under study, stands within the paradigm of current vision of language planning and policy, and considers them as a five-stage cycle including the emergence of language-related issues, agenda-setting, policy formation and adoption, implementation, and evaluation (Gazzola et al. 2023). This report further shares the experience of RUDN university named after Patrice Lumumba regarding the above cycle implementation for the university multilingual development.

### **2. Academia trends in language(s) use for instruction on non-language University programs**

The current trends in higher education show a drastic increase in the number of programs being taught in English in non-native-English-speaking countries (Aizawa and Rose, 2019). Amidst globalization, English-medium education is widely recognized as the conventional mode of instruction. Nowadays, when prospective international students consider English-taught courses, they often look beyond Europe and the USA to the Asian region (Top 5 Countries in Asia, 2024).

This juxtaposition reflects a broader tension between the desire to embrace internationalization and economic growth through English-medium instruction while also safeguarding and nurturing indigenous educational practices and linguistic heritage.

Scholars acknowledge that EMI in Europe varies widely, causing heated debates, lawsuits, and resistance in some contexts, while being enthusiastically embraced in others. Within institutions, some struggle with the educational process operation in a non-native language, while others adapt seamlessly to the changing environment (Hultgren, 2024). Thus, scholars express their concern over the fact that amid the universities shift to EMI the education in the national languages loses its values and leads to the societal divides (Gabriëls and Wilkinson, 2024).

Regarding the educational landscape in the Arab countries, researchers agree, that, for instance, in Saudi Arabia there is a significant increase in EMI that is driven by aspiration for internationalization and economic growth, efforts to enhance university ranking in the global context. In the United Arab Emirates, English is highly regarded in the United



Arab Emirates, as well, for its role in enhancing job prospects; however, there are reservations regarding the educational and social implications of English-Medium Instruction (EMI) in relation to language challenges, potential erosion of the Arabic language domain, and impacts on individual identity and sense of belonging (Hopkyns, 2024).

With reference to the Asia region, researchers mention conflicting language ideologies and self-identity issues regarding the global role of English and other languages that are crucial for local regional use due to political, socioeconomic and cultural reasons issues (Choi, 2024, Kobayashi, 2023, Tri and Moskovsky, 2023).

Further, scholars mention that often there might be lack of English-medium higher policy-making initiatives (Kirkpatrick, and Knagg, 2024).

The aforementioned considerations lead to the understanding of the fact that central concern lies in the universities' ability to reconcile their involvement in the globalized knowledge economy with their commitment to national interests on the whole, university traditions and capacities regarding established academic and industrial partnerships. Striking this intricate balance seems crucial in defining the trajectory of a particular education policy and practice as it plays a pivotal role in preparing learners to thrive in an ever evolving and interconnected global landscape.

### **3. Insights from RUDN University**

Peoples' Friendship University of Russia named after Patrice Lumumba since its start in 1960 has always been a comprehensive university offering a diverse pallet of degree programs and a complimentary opportunity to get a second qualification and diploma in a foreign language.

Since its establishment in 1960, Peoples' Friendship University of Russia named after Patrice Lumumba, has consistently been recognized as a comprehensive institution offering a diverse pallet of degree programs. Additionally, it provides students with a valuable opportunity to pursue a second qualification and diploma in a foreign languages, further enhancing their academic and professional capabilities.

As of 2021, the university has made a strategic decision to transition from applied courses of the foreign language training across faculties to a cohesive university-wide initiative focused on fostering multilingual development among the university teachers and learners. The University Program for multilingual development was designed and coordinated among the faculties, going beyond language programs and language students.

The program serves as an overarching framework for a wide array of activities in foreign languages, encompassing seven key areas. These sections span from research initiatives and educational endeavors to a spectrum of activities enhancing faculty language skills, facilitating students' external certification in foreign language-based quasi-professional pursuits, and aligning with the university's social mission to meet the societal needs. Approximately 70 Key Performance Indicators (KPIs) are established each year across both quantitative and qualitative dimensions for each faculty.

Such a comprehensive approach enables the faculties to schedule their activities, manage expenses and income, and assign responsibilities to those in charge of the respective events. The evaluation of each faculty KPIs is implemented each year with the identification of promising practices and further recommendations.

Thus, the five-stage cycle of the identification of language-related issues, agenda-setting, policy and KPIs specification, and adoption, implementation, and evaluation takes place each year.

The report considers it relevant to introduce a number of examples, with a particular focus on students' involvement.

#### **3.1. Foreign languages-facilitated scientific activities**

The number of students' regular (minimum four per academic year) research workshops more than tripled from 6 in 2021 to 21 in 2023. These figures refer to the non-language students' activities and cover a wide range of disciplines, including natural sciences, medicine, engineering, agricultural studies and humanities. Over 40 foreign organizations have participated in these workshops, being conducted in four foreign languages. The number of student conferences conducted in foreign languages has more than doubled escalating from 20 meetings in 2021 to 47 meetings in 2023. The participation of international students from foreign universities in such RUDN-hosted conferences has also shown a significant surge from 386 students in 2021 to over 900 students in 2023. Furthermore, the geographical reach of this international student body has expanded substantially in just one year, with the inclusion of students from 35 countries in 2022 growing to 51 countries in 2023. Moreover, the number of RUDN students' publications in foreign languages has seen a 30% increase, during the period of 2021–2023.

These trends, being represented through KPIs figures, confirm the university's commitment to fostering a diverse and inclusive environment for students to shape and enhance their skills and preparedness for scientific collaboration and exchange.

#### **3.2. Foreign languages-facilitated instruction**

In 2024, the university implements over 60 master's and bachelor's programs conducted in foreign languages (mostly in English) / It is crucial to emphasize that this figure represents courses with enrolled students, and not just theoretical offerings.

The range of languages being learnt, has increased from eight in 2021 to 14 in 2024, with the incorporation of up to eleven languages into the curricula of non-language programs across the university faculties. Furthermore, the percentage of bachelor's students who graduate with two foreign languages has seen a growth from 34% in 2022 to 42% in 2024. Moreover, since 2023 a consistent multilingual approach has been adopted, with the introduction of two foreign languages across all non-linguistic undergraduate programs. Further, there has been a substantial increase in the number of students undergoing external language certification, climbing by over 25% during the period of 2021–2023.

Each year, a significant proportion, namely over 30% of RUDN bachelor's and specialist students engage in professional conversion programs to refine their skills as proficient translators within their respective majors' fields.

The integration of digital technologies in language for specific purposes is underway, with the 2023 launch of the cutting-edge project, that focuses on the development of Virtual Reality (VR) courses tailored for profession specific language learning. Five bespoke courses have been created and launched to train researchers, engineers, ecologists, economists, and lawyers. The project enhances the number and domains of such courses in 2024.

These examples confirm the university dedication to equipping students with valuable multilingual capabilities, to provide learners with enhanced language skills to cater to demands of the contemporary multipolar world.

### **3.3. Foreign languages-facilitated professional orientation, multicultural practices and civic awareness of students**

Over the span of two years, the number of master classes led by representatives from academic and industrial partners has increased by more than 40% (from 82 events in 2021 to 131 events in 2023, conducted in nine foreign languages). The number of the sessions held in foreign languages by RUDN faculties professional students' associations has more than tripled rising from 40 events in 2021 to 149 events in 2023.

Furthermore, the number of RUDN sociocultural events conducted in foreign languages has nearly doubled, with move from 110 event in 2021 to 200 events in 2023).

An annual open forum in Russian and four foreign languages is organized with the focus on the pivotal role of the Soviet Union Army in liberation of Europe from fascism during World War II.

### **3.4. Foreign languages-facilitated social mission of the University**

In the academic year of 2022–2023, an initiative was launched to provide a foreign language program free of charge for Russian schoolchildren who lost parental care. During this program operation, over 300 minors, including those under the care of social centers and guardians, hailing from over 30 federal constituent entities of Russia have benefited from opportunities to learn one of four foreign languages through the specifically designed program under the titles «Discover the Modern World by Learning a Foreign language». Both RUDN teachers and students engaged in material preparation and training activities.

### **Concluding remarks**

The university-wide academic and extracurricular activities are paramount to ensure that students receive a robust multifaceted experience that prepares them for the challenges of the globalized and multipolar world. The RUDN University Program for multilingual development confirms that by offering a diverse range of academic and extracurricular activities conducted in foreign languages for non-language students, universities equip them with valuable multilingual skills that enhance their competitiveness in the job market and facilitate international collaboration in varied contexts.

Quality assurance mechanisms are essential for the university multilingual policies and practices. Such mechanisms play a significant role in maintaining and enhancing higher education standards amid the juxtaposition of globalization trends and national education traditions. The integration of foreign language education and quality assurance in higher education is a vital synergy that fosters the holistic growth of students and ensures long term sustainability of educational institutions. By expanding investments in foreign language education beyond mere language programs and instituting robust quality assurance measures across the comprehensive university landscape, higher education institutions can empower students to excel in an increasingly globalized society with upholding the highest standards of academic excellence.

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## Ensuring excellence: quality assurance in higher education for lifelong teaching and learning

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### Abstract

*Quality Assurance (QA) in higher education ensures institutions uphold educational standards, fostering excellence in teaching and learning throughout all life stages. This paper explores the principles, frameworks, and strategies used to enhance academic quality, emphasizing transparency, accountability, continuous improvement, stakeholder involvement, and evidence-based decision-making. The methodology includes a thorough literature review of existing QA frameworks, case study analyses, and stakeholder interviews. Various QA frameworks, such as those from the New England Commission of Higher Education (NECHE), European Standards and Guidelines (ESG), and HEC Pakistan QAA, are assessed for their effectiveness. The paper discusses how well-designed curricula, innovative pedagogical approaches like active learning, blended learning, and experiential learning, and robust faculty development programs contribute to educational excellence. It highlights the importance of comprehensive student support services, including academic advising, counseling, and career services. Challenges in QA implementation, such as resource constraints, resistance to change, consistency maintenance, and balancing standardization with innovation, are addressed. Through case studies of institutions like Forman Christian College (FCCU), the University of Melbourne, MIT, and the Open University, UK, the paper showcases successful QA practices. It concludes with recommendations for strengthening QA frameworks, enhancing stakeholder engagement, investing in technology, fostering a culture of quality, and supporting continuous professional development to ensure institutions meet evolving educational demands and maintain high academic standards.*

**Keywords:** *Quality Assurance (QA), Higher Education, Educational Standards, Teaching Excellence, Learning Excellence.*

### Introduction

In an era where the landscape of higher education is rapidly evolving, maintaining high standards of teaching and learning is crucial. Quality Assurance (QA) systems play a pivotal role in ensuring that higher education institutions (HEIs) deliver education that meets both national and international standards. Quality Assurance (QA) plays a crucial role in higher education for multiple reasons. Primarily, it ensures the credibility and recognition of degrees, which is fundamental for graduates as they enter the workforce and seek further academic opportunities. Without robust QA processes, the value of educational qualifications can be undermined, affecting both individual career prospects and the institution's standing. Moreover, QA supports student success by fostering an environment where high standards of teaching and learning are consistently maintained. Through systematic evaluation and feedback mechanisms, institutions can identify areas for improvement, implement necessary changes, and ensure that students receive a quality education that meets current academic and industry standards. Enhancing institutional reputation is another significant benefit of QA. Institutions that demonstrate a commitment to quality are more likely to attract and retain students, faculty, and funding. This commitment signals to stakeholders that the institution values excellence and is dedicated to continuous improvement. QA helps institutions adapt to changing educational demands and societal needs. In a rapidly evolving educational landscape, QA provides a framework for institutions to remain relevant and responsive, ensuring that their programs and practices align with contemporary expectations and future trends. This paper explores the principles, practices, and benefits of QA in higher education, emphasizing its importance in fostering excellence from early adulthood through lifelong learning (Harvey & Green, 1993).

#### 1. Objectives.

The primary objectives of this research are to:

- 1.1. Examine the principles and frameworks of QA in higher education.
- 1.2. Analyze the role of QA in promoting excellence in teaching and learning.
- 1.3. Investigate the impact of QA on lifelong learning and continuous professional development.
- 1.4. Identify challenges and propose solutions for effective QA implementation.

#### 2. Principles and Frameworks of Quality Assurance

##### 2.1. Core Principles:

QA in higher education is grounded in several core principles:

##### 2.1.1. Transparency and Accountability.

Transparency and accountability are vital in higher education, fostering trust with stakeholders through open com-

munication about processes and outcomes. This openness ensures institutions are held accountable, promoting integrity and continuous improvement. Transparent practices demonstrate a commitment to quality and ethics, enhancing credibility and public confidence (Biggs & Tang, 2011).

#### **2.1.2. Continuous Improvement:**

Continuous improvement in Quality Assurance (QA) ensures ongoing educational enhancement. By regularly evaluating and refining academic programs, teaching methods, and practices, institutions meet evolving standards and student needs. This fosters a culture of excellence, encouraging higher performance and better outcomes, creating a dynamic and effective educational environment (Gibbs & Simpson, 2004).

#### **2.1.3. Stakeholder Involvement:**

A critical review of quality teaching in higher education has been conducted (Harvey and Walker, 2017) that Stakeholder involvement is crucial in higher education Quality Assurance. Engaging students, faculty, employers, and other stakeholders ensures diverse perspectives are considered, enhancing the relevance and effectiveness of educational programs. This collaboration fosters a more responsive and inclusive educational environment, aligning outcomes with the needs and expectations of all parties involved.

#### **2.1.4. Evidence-Based Decision Making:**

Decisions should be based on reliable data and analysis. Evidence-based decision making in higher education requires decisions grounded in reliable data and thorough analysis. This approach ensures that actions are well-informed and aligned with the institution's goals, leading to more effective outcomes and continuous improvement in educational practices.

### **3. QA Frameworks: Various frameworks guide QA processes, including:**

#### **3.1. The New England Commission of Higher Education (NECHE):**

a regional accrediting agency that evaluates and accredits higher education institutions across the globe. NECHE ensures that institutions meet rigorous standards of quality and integrity, promoting excellence in education and fostering continuous improvement.

#### **3.2. The European Standards and Guidelines (ESG):**

The European Standards and Guidelines (ESG) outline principles and guidelines for quality assurance in European higher education, aiming to enhance the quality and effectiveness of educational programs and institutions (European Association for Quality Assurance in Higher Education [ENQA], 2015).

#### **3.3. HEC Pakistan QAA stands for the Quality Assurance Agency of the Higher Education Commission (HEC)**

of Pakistan. It oversees quality assurance processes in Pakistani higher education institutions, ensuring they meet national and international standards for educational excellence and accountability.

### **4. Promoting Excellence in Teaching and Learning**

#### **4.1. Curriculum Design and Development:**

A well-designed curriculum is central to educational quality. QA processes ensure that curricula are relevant, comprehensive, and aligned with current academic and industry standards. Regular reviews and updates, informed by stakeholder feedback and labor market trends, are essential.

#### **4.2. Pedagogical Approaches:**

Innovative and effective teaching methods are vital for student engagement and learning outcomes. QA promotes the adoption of diverse pedagogical approaches, including:

##### **4.2.1. Active Learning:**

a cornerstone of effective pedagogy, encourages student participation and critical thinking. Through interactive activities, discussions, and hands-on experiences, students actively engage with course materials, enhancing their understanding and retention of concepts while developing essential analytical and problem-solving skills.

##### **4.2.2. Blended Learning:**

Blended Learning integrates traditional classroom instruction with digital tools and resources, offering students greater accessibility and flexibility in their learning experiences. This hybrid approach accommodates diverse learning styles and preferences, fostering a dynamic and adaptable educational environment suited to modern learners. Combines traditional and digital methods to enhance accessibility and flexibility.

##### **4.2.3. Experiential Learning:**

Effective teaching strategies for quality learning at university have been explored (Biggs and Tang, 2017) that states that Experiential Learning immerses students in real-world contexts, offering practical hands-on experiences through internships, projects, and fieldwork. This approach enhances learning by allowing students to apply theoretical knowledge to practical situations, fostering skill development, and deepening understanding through direct engagement with subject matter.

#### **4.3. Faculty Development:**

Faculty competence and commitment are foundational to achieving educational excellence. Quality Assurance (QA) plays a pivotal role in supporting faculty development through continuous professional development (CPD) initiatives, such as workshops and training programs. These programs target pedagogical skills, research methodologies, and technological proficiency, ensuring faculty remain at the forefront of their fields. Additionally, implementing performance appraisal systems is crucial for conducting regular evaluations and providing con-



structive feedback to facilitate improvement. Furthermore, Research and Scholarship Support incentivizes faculty to actively engage in scholarly pursuits, fostering innovation and enabling them to contribute to the advancement of knowledge in their respective disciplines.

#### **4.4. Student Support Services**

Comprehensive student support services play a vital role in creating an environment conducive to learning. Quality Assurance (QA) ensures the availability and quality of these services. Academic Advising aids students in navigating their educational paths and making informed decisions. Counseling Services offer mental health support and guidance, while Career Services assist students in career planning and job placements. Through QA, institutions prioritize the accessibility and effectiveness of these services, fostering student success and well-being.

### **5. Challenges in Implementing QA**

#### **5.1. Resource Constraints:**

According to Deneen and Boud (2018) implementing robust Quality Assurance (QA) systems faces challenges due to limited resources. Adequate funding, advanced technology, and skilled personnel are essential but often lacking, especially in developing countries. Institutions must creatively navigate these constraints, seeking partnerships and prioritizing critical QA components to enhance educational quality despite resource limitations.

#### **5.2. Resistance to Change:**

A review of fifteen years of quality in higher education is provided (Harvey and Williams, 2016) that states that Resistance from faculty and staff challenges Quality Assurance (QA) implementation, often due to concerns about workload and skepticism. Effective change management strategies, including transparent communication, stakeholder involvement, and demonstrating QA benefits, are crucial to overcoming resistance and fostering collaboration and support for QA initiatives.

#### **5.3. Maintaining Consistency:**

Maintaining consistent Quality Assurance (QA) across diverse programs and campuses is challenging. Institutions need a coherent, adaptable QA framework with clear guidelines and flexibility for different disciplines and locations. Regular monitoring and feedback ensure effectiveness, helping achieve uniform quality standards and enhancing overall education quality and student experience (Elken, 2019).

#### **5.4. Balancing Standardization and Innovation:**

Balancing standardization with innovation in Quality Assurance (QA) is crucial. While standardization ensures consistency, it must not hinder innovation in teaching. Institutions should support experimentation, adopt emerging technologies, and promote collaboration, thus maintaining standards while enhancing education quality and adapting to evolving needs (Hazelkorn, 2018).

### **6. Case Studies and Best Practices**

#### **6.1. Forman Christian College — A Chartered University (FCCU) in Lahore,**

Pakistan FCCU is undergoing the rigorous accreditation process with the New England Commission of Higher Education (NECHE), a significant milestone in its journey towards academic excellence and global recognition. This process entails a comprehensive evaluation of the institution's academic programs, faculty qualifications, student support services, and institutional resources. Through self-assessment, peer review, and ongoing monitoring, FCCU demonstrates its commitment to meeting or exceeding NECHE's stringent standards. The accreditation process not only validates FCCU's dedication to quality education but also serves as a catalyst for continuous improvement and innovation. Achieving NECHE accreditation holds numerous benefits for FCCU, including enhanced reputation, increased academic mobility, and improved opportunities for collaboration and partnership with international institutions. Moreover, it reinforces FCCU's commitment to providing students with a world-class education that prepares them for success in an increasingly globalized world. As FCCU progresses through the accreditation process, it reaffirms its position as a leading institution of higher learning in Pakistan, dedicated to excellence, integrity, and service to society.

#### **6.2. The University of Melbourne.**

The University of Melbourne has established a robust Quality Assurance (QA) system encompassing curriculum evaluation, faculty enhancement initiatives, and student feedback mechanisms. This integrated approach ensures high educational standards and continuous improvement. Regular curriculum updates align with industry trends, maintaining relevance. Faculty development programs enhance teaching methodologies, while student feedback addresses needs and preferences. This holistic QA approach has led to notable improvements in teaching quality and student satisfaction, reinforcing the university's reputation as a leading institution of higher learning.

#### **6.3. Massachusetts Institute of Technology (MIT)**

Massachusetts Institute of Technology (MIT) prioritizes Quality Assurance (QA) through a focus on pioneering research and innovative pedagogy. The institution conducts regular evaluations of its curriculum, ensuring it remains at the forefront of academic advancements. Integration of technology into teaching methodologies enhances the learning experience, keeping pace with evolving educational trends. Furthermore, MIT places significant emphasis on faculty development, offering comprehensive support to ensure educators are equipped with the latest teaching techniques and subject knowledge. This commitment to excellence in teaching and research not only elevates the quality of education at MIT but also fosters an environment of continuous improvement and innovation. As a result, MIT remains a global leader in higher education, renowned for its cutting-edge approaches to both teaching and research, and its ability to adapt to the changing needs of students and society.

#### **6.4. The Open University, UK.**

Open University UK has established itself as a pioneer in offering flexible learning pathways tailored to meet the needs of lifelong learners. Central to its success is a robust Quality Assurance (QA) framework that upholds stringent standards across its diverse portfolio of programs, spanning from undergraduate degrees to professional certifications. This framework encompasses meticulous reviews of course content, instructional methodologies, and assessment practices, ensuring alignment with academic rigor and contemporary industry demands. By prioritizing continuous improvement and innovation, the Open University UK maintains its position as a trusted provider of high-quality education accessible to learners of all backgrounds and circumstances. Through its commitment to excellence and inclusivity, the institution empowers individuals to pursue personal and professional development at their own pace, reinforcing its reputation as a leader in flexible and accessible learning opportunities for lifelong learners.

### **7. Solutions and Recommendations**

#### **7.1. Strengthening QA Frameworks.**

Institutions must embrace established Quality Assurance (QA) frameworks, adapting them to suit their unique contexts effectively. This adaptation involves regular reviews and updates to ensure alignment with evolving educational needs and standards. By adopting recognized QA frameworks, institutions benefit from established best practices and benchmarks while tailoring them to address their specific challenges and priorities. This proactive approach enables institutions to remain responsive to changing educational landscapes and emerging trends, ensuring that their QA processes remain robust and effective. Furthermore, by fostering a culture of continuous improvement and innovation, institutions can drive excellence in teaching, learning, and institutional performance. Ultimately, embracing adaptable QA frameworks enables institutions to better meet the evolving needs of their stakeholders and uphold their commitment to delivering high-quality education.

#### **7.2. Enhancing Stakeholder Engagement.**

Incorporating input from students, faculty, employers, and alumni is vital for effective Quality Assurance (QA) in education. Establishing ongoing feedback and collaboration mechanisms allows institutions to identify areas for improvement and innovation. Student feedback tailors educational experiences, while faculty input ensures relevant teaching methods. Employer and alumni insights align programs with industry standards, preparing graduates for careers. Collaborative stakeholder engagement fosters a culture of continuous improvement, enhancing overall education quality. Therefore, robust stakeholder engagement mechanisms are critical for successful QA initiatives in higher education.

#### **7.3. Investing in Technology.**

Utilizing technology significantly enhances Quality Assurance (QA) in educational institutions. Data analytics enable evidence-based decisions, driving improvements in teaching, learning, and operations through comprehensive insights. Online curriculum management platforms streamline workflows, ensuring course content aligns with evolving standards. Digital teaching tools offer interactive resources catering to diverse learning styles. Embracing technology in QA processes boosts efficiency, promotes innovation, and ensures adaptability to changing educational landscapes. Therefore, leveraging technology is crucial for optimizing QA practices and fostering continuous improvement in higher education.

#### **7.4. Building a Culture of Quality.**

Creating a quality culture in education requires dedication at all levels, emphasizing Quality Assurance (QA). Institutions should promote QA awareness, provide training, allocate resources, and reward excellence. This fosters a commitment to high standards and continuous improvement, enhancing institutional effectiveness, stakeholder satisfaction, and confidence in delivering quality education.

#### **7.5. Supporting Continuous Professional Development.**

Institutions must prioritize ongoing professional development for faculty and staff to ensure high-quality education. This involves regular training, research opportunities, and support for conferences. Investing in professional growth enhances teaching effectiveness, fosters a culture of excellence, and improves job satisfaction and retention, benefiting the institution overall.

### **Conclusion.**

Quality Assurance in higher education is essential for fostering excellence in teaching and learning across all stages of life. By adhering to QA principles and frameworks, institutions can ensure that they meet and exceed educational standards, thereby enhancing student success, employability, and lifelong learning. While challenges exist, adopting best practices and innovative solutions can help institutions overcome these hurdles and achieve their educational goals. In a rapidly changing educational landscape, QA remains a cornerstone of educational excellence and continuous improvement.

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# Exploring High-Quality Education Evaluation Practices: A Case Study of Classification Evaluation in Shanghai Universities

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## Abstract:

*In the context of developing our country into a leading nation in education and modernizing education, education evaluation stands as a pivotal component of the educational governance system, holding significant implications for advancing the high-quality development of education. This paper takes the classification evaluation of Shanghai universities as a case study in education evaluation practice, delineating the background, conceptual framework, guiding principles, evaluation criteria, implementation strategies, and effectiveness of this endeavor. By placing emphasis on classification evaluation as the cornerstone of innovative educational assessment practices, it establishes a scientifically robust and operationally effective framework, which serves as a beacon for educational evaluation. This innovative approach not only fosters the diversified and distinctive development of higher education but also guides universities in undertaking structural reforms in talent cultivation, thus contributing to the construction of a globally influential modern socialist system for nurturing talent.*

**Key words:** high-quality education evaluation, classification evaluation, higher education.

## 1. Background

The vision outlined in «China Education Modernization 2035» sets forth the ambitious objective of achieving comprehensive education modernization by 2035. Strengthening education supervision and evaluation is identified as a crucial measure to drive this modernization agenda forward. Education evaluation, as a vital component of the education system, encompasses functions such as guidance, identification, diagnosis, regulation, motivation, and improvement. Over the course of nearly four decades of development, China has established a relatively comprehensive education evaluation system. Originally conceived as a means to ensure education quality, education evaluation has evolved into an integral part of the education governance system, serving as both a component of education modernization and a driving force behind it. This evolution is evident in several key aspects:

- Education assessment practices in China have been widely implemented.
- The scope of assessment has continuously expanded.
- The theoretical underpinnings of assessment have deepened.
- Efforts to establish assessment organizations and institutions have progressed.
- The professional level of assessment has steadily increased.

Presently, education evaluation in China plays a pivotal role in promoting education reform and development. It facilitates government oversight of education, optimizes resource allocation, and enhances school practices and academic standards, yielding significant outcomes. Analyzing case studies of high-quality educational assessment practices is instrumental in elucidating the core concepts, principles, mechanisms, standards, methods, and techniques of assessment. Such analyses offer valuable insights and guidance for future educational assessment initiatives. This paper selects the classification evaluation practices employed in Shanghai universities as a case study. Through innovative approaches centered around classification evaluation, universities are guided in advancing structural reforms in talent cultivation. The ultimate aim is to construct a talent cultivation system commensurate with the stature of a modernized socialist international metropolis with global influence. This endeavor establishes a scientifically sound and effective «baton» for educational evaluation.

## 2. Introduction to the Classification Evaluation Program of Shanghai Universities

The Classification Evaluation Program of Shanghai Universities represents a comprehensive response by Shanghai to the Overall Program for Deepening Educational Evaluation Reform in the New Era and the Implementation Plan for the Audit and Evaluation of Undergraduate Education Teaching in Colleges and Universities (2021–2025). Since 2018, Shanghai has initiated a classification evaluation for 62 colleges and universities. This initiative categorizes colleges and universities based on the differentiation of their main functions in talent cultivation and their engagement in various types of scientific research. Institutions are categorized into four distinct types: academic research, applied research, applied technology, and applied skills. This categorization aims to propel the development of Shanghai's higher education institutions from a single-column paradigm to a multi-column structure.

Further classification is conducted based on the status of core discipline categories (undergraduate and postgraduate) or primary major categories (associate degree programs). Colleges and universities are stratified into three overarching categories: comprehensive, multidisciplinary, and distinctive. This classification framework forms the basis of a two-dimensional twelve-grid classification system for Shanghai's higher education landscape.

The classification process adheres to the operational principles of «government policy guidance, autonomous decision-making by colleges and universities, and societal participation in evaluation».

The classification evaluation of Shanghai colleges and universities is entrusted by the Education Supervision Committee of the Shanghai Municipal People's Government and coordinated by the Shanghai Education Evaluation Institute. The workflow



for each evaluation cycle is as follows: in the first half of the year, an indicator explanation meeting and a training session on information collection are convened to provide guidance on these aspects; in the latter half of the year, a feedback session on evaluation results is held, providing individualized reports to each university and an overall evaluation summary for each category.

The Shanghai Education Evaluation Institute facilitates the exchange of university development experiences by compiling case studies showcasing institutional characteristics. It fosters a platform for universities to exchange and disseminate their experiences through periodic salons and forums on classification evaluation. Additionally, the Institute continuously refines the classification evaluation process by convening scholars and experts from domestic and international educational and research institutions to collaboratively refine evaluation designs.

After years of exploration and experience accumulation, the classification evaluation of Shanghai colleges and universities has yielded preliminary results and established a comprehensive evaluation system. This system not only addresses various challenges but also propels regional higher education towards a trajectory of high-quality development. Moreover, it serves as a model for nationwide higher education reform and development, demonstrating breakthroughs and setting benchmarks for the broader academic community.

### **3. Evaluation Philosophy of Shanghai's Higher Education Institution Classification Evaluation**

The evaluation philosophy serves as the spiritual cornerstone of educational assessment, encapsulating the overarching value orientation and target objectives of the assessment process. It is imperative to clearly articulate and underscore this philosophy prior to commencing the evaluation. Throughout the entire assessment process, the evaluation philosophy plays a pivotal role in guiding and directing actions, delineating the trajectory of high-quality educational assessment. The classification evaluation of higher education institutions in Shanghai seamlessly aligns with the international forefront concepts of being student-centered, output-driven, and continuously improving. Ultimately, it solidifies a high-quality evaluation philosophy centered on human-centric principles, prioritizing procedural emphasis and developmental service. This forward-thinking philosophy not only demonstrates foresight but also reflects the epochal characteristics and developmental trajectory of educational assessment.

#### **3.1. People-Centric Philosophy**

The classification of colleges and universities in Shanghai places colleges and universities at the core, emphasizing their pivotal role and status within the educational landscape. The overarching objective is to mitigate the issue of homogeneity among colleges and universities, which has led to a uniformity in educational approaches across institutions. Grounded in a people-centric philosophy, this initiative tailors its efforts to the unique strengths and objectives of each institution. By delineating four distinct types of colleges and universities, the endeavor aims to cultivate diverse talents suited to various sectors of society.

Through the implementation of classification evaluation, the initiative seeks to address prevalent challenges in contemporary higher education. These include the indiscriminate pursuit of size and comprehensiveness among institutions, the broadening of academic offerings without clear strategic direction, and the replication of standardized training models that fail to accentuate institutional uniqueness.

#### **3.2. Process-Oriented Philosophy**

The classification evaluation of Shanghai's higher education institutions is delineated into three distinct stages: «theoretical exploration and planning», «planning and policy formulation», and «organization, implementation, and dynamic optimization», with «classification» and «evaluation» serving as the two pivotal components. Each stage embodies the philosophy of prioritizing the process.

During the stage of theoretical exploration and planning, the focal point lies in analyzing the objectives of higher education in China and Shanghai, as well as studying international higher education policies and practices. This informs the development of classification standards for Shanghai's colleges and universities, culminating in the issuance of relevant planning documents. In the subsequent stage of planning and policy formulation, the primary objective is to advance the integration of planning into legal frameworks while concurrently devising evaluation indicators to guide the assessment process. Finally, in the stage of organization, implementation, and dynamic optimization, the emphasis shifts to the continuous evaluation of all colleges and universities. This entails aligning evaluation outcomes with the latest policies, refining business optimization indicators and weightings, and integrating evaluation results with ongoing initiatives such as funding, undergraduate teaching incentive plans, enrollment arrangements, faculty performance incentives, and performance evaluations for school leadership teams.

#### **3.3. Development-Oriented Philosophy**

The classification and evaluation of Shanghai's colleges and universities are ultimately geared towards promoting institutional development, with the primary aim of catalyzing structural reforms in talent cultivation within these institutions. This endeavor seeks to address the structural imbalances in institutional resource allocation and the diminishing enthusiasm and self-awareness in talent cultivation resulting from a singular focus on institutional evaluations. By leveraging the diversity and distinctiveness of each institution through the evaluation process, the initiative aims to propel the region's higher education sector towards high-quality development. Furthermore, it serves as a model for nationwide higher education reform and development, exerting a demonstrative and catalytic influence on the broader landscape of higher education in the country.

### **4. Assessment Principles of the Shanghai University Classification Evaluation**

Evaluation principles serve as the stringent guidelines adhered to throughout the process of educational evaluation, encompassing various aspects of evaluation work horizontally and longitudinally spanning the entire evaluation process. The classification evaluation of universities in Shanghai adheres to the fundamental principle of «emphasizing the practical characteristics of China, centering on talent cultivation in universities, and respecting the diversity of disciplines and specialties».



#### **4.1. Manifesting the Practicality of Chinese Characteristics**

Grounded in China's national context and the actual development of academic disciplines, the classification evaluation of Shanghai's universities has devised a distinctive classification evaluation system. By incorporating valuable insights from foreign educational assessment practices, this system reflects the unique characteristics of China. These distinctive Chinese traits are evident in the evaluation orientation, evaluation data, and evaluation methods employed.

#### **4.2. Focusing on Talent Cultivation in Higher Education Institutions**

The classification evaluation of universities in Shanghai are rooted in serving the national talent cultivation strategy. Its objective is to foster a more harmonized structure of disciplines and specialties within universities, emphasizing their distinctive characteristics. This initiative aims to establish institutional safeguards for constructing a first-class university system and fostering a top-tier talent pool in our country. Moreover, it aims to contribute to the formation of a high-level talent autonomous cultivation system, the realization of high-quality development in higher education, and the establishment of a robust higher education landscape.

#### **4.3. Respecting Differences in Disciplines and Specialties**

The Shanghai Classification Evaluation not only abolishes the «one-size-fits-all» evaluation standards among colleges and universities but also respects the «diversity» of disciplines and specialties, acknowledging their «differences». It is imperative to consider the variations among different disciplinary fields and professional categories, as well as the distinctions among the same discipline and specialty across different institutions. This endeavor evaluates the specialties established by colleges and universities based on their distinct positioning, ensuring that each specialty manifests different characteristics across various institutions. This approach encourages colleges and universities to actively explore their unique traits and comparative advantages, concentrating efforts on amplifying these characteristics and strengths. Consequently, each institution can pursue a development trajectory aligned with its distinctive features, thereby enhancing the scientificity of the layout of disciplines and specialties.

### **5. Assessment Criteria for the Classification Evaluation of Shanghai's Colleges and Universities**

Evaluation criteria serve as crucial measurement scales for judging the evaluation subject, typically presented in the form of an indicator system. They primarily encompass various attributes of the evaluation subject, including both quantitative indicators represented by specific numerical values and qualitative indicators described through textual materials. Additionally, they involve aspects such as the collection content and method of the indicator system. The classification evaluation of Shanghai's colleges and universities takes into consideration both fundamental and diverse criteria.

#### **5.1. Fundamental Criterion of Moral Education and Talent Cultivation**

The classification evaluation of Shanghai's colleges and universities upholds the effectiveness of moral education and talent cultivation as the fundamental criterion and value orientation. It uses this criterion to judge the reasonableness of all educational activities, the scientific nature of educational methods, and the effectiveness of educational outcomes, thereby leveraging the guiding role of educational assessment. This guidance directs education back to its core mission of moral education and talent cultivation, ensuring the proper direction of educational development. Particularly, the classification evaluation of Shanghai's universities pays special attention to examining the school's positioning and service orientation, cultivation objectives and outcomes, the establishment of a comprehensive education system, the cultivation of teachers' moral integrity, the implementation of ideological and political education in the curriculum, and the review and selection of teaching materials, among other aspects.

#### **5.2. Scientifically Diverse Evaluation Standards**

The classification evaluation of Shanghai universities fully respects the individual differences of the evaluation subjects and establishes scientifically diverse evaluation standards. On the one hand, the data sources of evaluation indicators are diverse. There are four main sources of data for the evaluation indicators: first, the results of inspections and evaluations from the government departments higher education administration; second, the results of evaluations from expert groups; third, the results of surveys and evaluations from third-party higher education evaluation organizations; and fourth, the basic operational data of colleges and universities. On the other hand, the system of evaluation indicators is diverse. The classification evaluation index system has been upgraded each year to meet new situations and requirements. The indicator systems of various universities focus on talent cultivation, blending commonality and individuality, aligning their unique characteristics with international standards, and integrating comprehensive and individual evaluations. This approach combines comprehensive and individual evaluations, subjective and objective evaluations, and outcome-based and developmental evaluations. The evaluation indices are structured into a three-level index system. Each first-level and second-level index assesses specific aspects of university operations. The combined comprehensive and individual evaluations assess both the overall operational quality and specific aspects of university performance. The evaluation indices include both subjective and objective metrics, with an emphasis on objective evaluation complemented by subjective assessment. This ensures the evaluation's objectivity and accuracy while also capturing certain qualitative aspects of educational effectiveness that cannot be quantified. The system utilizes incremental data rather than cross-sectional data for evaluations, integrating outcome-based and developmental assessments. This approach pays full attention to the dynamic development of universities, guiding them to improve their educational quality based on their specific orientations.

### **6. Implementation of Classification Evaluation of Shanghai Universities**

Based on the aforementioned assessment concepts, principles, and standards, the implementation of Shanghai's classification evaluation in universities reflects the following characteristics after years of practical exploration:

#### **6.1. Establishing a Classification Framework with Talent Cultivation Function as the Main Classification Axis**

The Shanghai classification evaluation initiative categorizes colleges and universities into four types based on the cultivation of talent: academic research, applied research, applied technology, and applied skills. These classifications prioritize the cultivation of academic research talents as the leader, emphasize the development of applied research and development

talents, focus on specialized knowledge and technology application talents, and primarily train operational professional skills talents at the specialized level. Additionally, the initiative divides colleges and universities into three categories — comprehensive, multidisciplinary, and distinctive — based on the concentration of academic disciplines or professional categories, forming a «twelve-grid» picture. Following the principle of «government policy guidance and autonomous selection by colleges and universities», institutions independently determine their development types and maintain relative stability after selection, thus downplaying hierarchical distinctions and strengthening type orientation.

## **6.2. Utilizing a Blend of Common and Individualized Metrics to Drive the Classification and Optimization of Talent Cultivation Structure**

Tailored to the four types of universities, the evaluation system focuses on the five major functions of higher education institutions, crafting assessment indicators and setting three levels of indicators with corresponding weights. Reflecting the variations in talent cultivation structures and the distinct characteristics of universities, specialized indicators for each type and discipline-specific metrics are established. Universities are granted autonomy in evaluation, with the freedom to select indicators, define quantitative metrics, and describe qualitative aspects, accounting for over 30% of the total weightage. Through classification evaluation based on these indicators and observation points, universities are encouraged to concentrate on their strengths in disciplines and specialties, closely align with industry demands, and drive enhancements in talent cultivation structure.

## **6.3. Leveraging Diversified and Open Implementation to Dynamically Enhance the Scientific Rigor of Indicators and the Credibility of Evaluation Results**

The provincial education supervision departments are entrusted with executing the classification evaluation of universities, establishing and continually refining transparent and impartial operational procedures throughout the entire process, including «evaluation mobilization and deployment, university information submission, public data collection, substantive expert evaluation, peer evaluation among universities of similar types, utilization of evaluation results, and feedback for improvement incentives». Incorporating assessments of «double first-class» achievements, discipline evaluations, undergraduate teaching audits, and the latest requirements for university operations and talent cultivation into the scope of indicator observation and evaluation enhances indicator compatibility, prevents redundant evaluations, and minimizes disruption to educational activities. Each university receives comprehensive, efficiency, and value-added evaluations, offering a multifaceted view of academic effectiveness and bolstering the credibility of the evaluation process.

## **6.4. Utilizing the Linkage of Evaluation Results to Drive Deeper Engagement, Guiding Universities to Establish an Intrinsic Mechanism Ensuring the Central Role of Talent Cultivation and Achieving Distinctive Development.**

The assessment outcomes serve as crucial criteria for the government to formulate and execute higher education policies and allocate resources citywide. They are robustly linked to key university initiatives, funding allocations, faculty salary increments, enrollment planning, and institutional performance assessments. This linkage fosters a shift in development dynamics from «being urged to develop» to «actively seeking development» and from a «quantity-oriented» to a «quality-focused» development model. Universities have generally established mechanisms to scrutinize program offerings to ensure distinctiveness and implemented on-campus teaching quality assurance and self-assessment mechanisms to guarantee educational quality.

## **7. Assessment Effectiveness of the Classification Evaluation of Shanghai's Colleges and Universities**

Since the initiation of the classification evaluation of universities in 2018, after years of research and refining, the endeavor has yielded commendable results, establishing a relatively comprehensive evaluation system. Not only has it addressed specific issues but also propelled structural reforms in talent cultivation through university classification evaluation, effectively wielding its guiding role and exerting positive societal influence.

### **7.1. Overall Enhancement in Talent Structure Quality, Leading to Better Alignment of Supply and Demand.**

Shanghai's universities have been selected for 36 Top Talent Bases in Basic Disciplines by the Ministry of Education. Over the past four years, they have independently established 270 secondary disciplines and 26 interdisciplinary secondary disciplines, with a focus on cultivating key doctoral programs and new doctoral enrollment plans in key industrial fields such as artificial intelligence, integrated circuits, and advanced manufacturing. Based on authorization from the Ministry of Education, 32 new undergraduate majors outside the standard catalog have been established, closely aligned with the «four new economies». Nearly 70% of the newly added undergraduate majors each year are in science, engineering, agriculture, and medicine. Over the past four years, students from vocational colleges have represented the country in two World Skills Competition, winning 3 gold, 3 silver, and 1 bronze medal. The employment rate is among the highest in the nation.

### **7.2. Significant Enhancement in the Development Drive of Universities, Leading to More Distinct Characteristics.**

Universities and colleges in Shanghai have shifted from benchmarking against comprehensive research universities to aligning with colleges of similar types and meeting national and regional needs, thereby transforming external impetus into internally driven targets. This reform has stimulated traditional strong institutions' sense of concern, progressive institutions' self-improvement and confidence, and lagging institutions' determination to catch up.

### **7.3. All Facets of Talent Cultivation are Aligned, Consolidating the Central Position.**

Government departments have uniformly integrated the classification concept into various aspects, including title evaluation, salary distribution, funding allocation, international cooperation, assessment, and evaluation, forming a resource allocation pattern centered on talent cultivation. Currently, leading enterprises are fostering industry-education integration enterprises, partnering with classification colleges and universities, facilitating the regular engagement of top talents as adjunct professors, thereby bolstering industry-education integration and collaborative human resource development among academia, industry, and research.

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# A Study on the high-quality development of senior Universities in Colleges and Universities based on research

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## **Abstract**

*Under the background of population aging and economic and social transformation, the high-quality development of universities for the elderly has become particularly important, which is a key part of building a complete education system. Universities for the elderly take research as an important means to achieve the goal of high quality education. The whole development process can be divided into four stages: the first is the indicator development, which defines the measurement standard of education quality; Then the program design, according to the indicators to develop specific educational plans and strategies; Then the concrete implementation, put the plan into practice; Finally, summarize the feedback, evaluate the implementation effect, and provide guidance for high-quality development. Research plays a crucial role in this process. It is not only an important part of the education quality assurance system, but also promotes the improvement of the quality of education assessment through standardized procedures and steps, thus effectively promoting the high-quality development of universities for the elderly.*

**Keywords:** research, universities, senior universities, high quality, development

## **1. Research background**

As the cradle of training higher talents, colleges and universities bear the social function and governance responsibility of promoting lifelong education. Since Fudan University took the lead in setting up the University for the elderly in 1993, more and more universities have begun to participate in this field of education. In particular, from 1999 to 2000, with the promotion of the Municipal Education Commission, seven universities, such as Donghua University and Shanghai Jiao Tong University, have also set up universities for the elderly, making the education for the elderly in colleges and universities gradually large-scale and systematic.

The establishment of universities for the elderly is an important embodiment of colleges and universities actively fulfilling their social responsibilities on the basis of ensuring the quality of education. Colleges and universities make use of their abundant human and material resources to provide systematic and knowledgeable learning activities for the elderly, aiming at serving the continuous development of the elderly and helping them realize their self-worth. This not only reflects the implementation of the concept of lifelong education, but also shows the responsibility of colleges and universities for social responsibility.

In the new era, the functions of universities are more diversified, including personnel training, scientific research, social services, cultural inheritance and international cooperation. The purpose of the university for the elderly is closely related to these functions, aiming to meet the learning needs of the elderly, promote community development, and build a learning society. Universities for the elderly and universities are highly coupled in value orientation, which jointly promote the optimal allocation of educational resources and the improvement of lifelong education system.

Through the investigation of the status quo of senior universities in Shanghai, the development status and existing problems in this field are more deeply understood. At the same time, the guiding ideology of promoting construction by evaluation, reform by evaluation and management by evaluation is helpful to promote the high-quality development of university education and teaching level for the elderly. Universities for the elderly, as an important support for the construction of high-quality education development pattern, will provide a solid base for the stable development of high-quality education system. Therefore, the research on the university for the elderly is not only of practical significance, but also has a far-reaching impact on promoting the improvement of the lifelong education system.

## **2. Research process**

### **2.1. The development of research indicators lays the foundation for high-quality development of universities for the elderly**

#### **2.1.1. Purpose of index system design**

Indicators refer to specific and measurable goals, which are the basis and important preparation for the research of senior universities. The determination of indicators provides corresponding goals and norms for schools. Survey index is the criterion and measure used to judge the level and effect of school work. Through the index design and development, on the one hand, it provides a blueprint for the high-quality development of senior universities; On the other hand, it provides standards for schools to evaluate the level of school construction, facilitate the research group to guide schools, and facilitate the education administration department to conduct process supervision of schools.

#### **2.1.2. Principles of index system design**

##### **Scientific principle**

The index system should be constructed from the core elements of senior universities. In line with the characteristics of high-quality development of universities for the elderly, the formulation of research content and indicators has a certain scientific height, objective and moderate. On the basis of summarizing the practical experience of a number of higher education



and lifelong education evaluation projects carried out by Shanghai Education Evaluation Institute and related research and practice of universities for the elderly, this paper tries to establish a set of research index system suitable for the development characteristics of universities for the elderly in Shanghai. For example, the development of the school is included in the work plan of the university and relevant management departments or reflected in various documents, with clear goals and tasks.

#### **Guiding principle**

The indicators should have a guiding role, and at the same time reflect the national and Shanghai school guidelines and requirements. The index system aims to further promote the development of elderly education from connotation to high quality, accelerate mechanism innovation, curriculum optimization, and teacher professional development. The standard presented in the index system has a certain height, which needs the school to reach through efforts, reflecting the increment. At the same time, the index system has a certain number of core indicators, which reflects the bottom line requirements of education administrative departments for universities for the elderly. For example, colleges and universities have special administrative departments and administrators responsible for guiding schools to run schools according to law.

#### **Operability principle**

The index system should be operable, with a certain number of core indicators, highlighting quantifiable data and standards, so as to facilitate schools to grasp the bottom line requirements and facilitate experts to evaluate schools. Relevant fields should be clearly defined to make the measurement scientific and standardized. For example, combining teaching, carrying out education and scientific research, there are projects, experimental projects or scientific research projects in universities, cities and above; Scientific research results are published in various journals at all levels, and exchanged at relevant conferences in the universities, cities and above.

#### **2.1.3. Method and process of index system design**

##### **Literature analysis was used to determine the primary index**

Refer to the index system of higher education and lifelong education evaluation (research) issued by Shanghai Education Commission since the 12th Five-Year Plan, summarize the results and analyze the literature. Consult the relevant literature of the university for the elderly, sort out and focus on the core factors affecting the university for the elderly. Five first-level indicators of organization and management, job security, team building, education and teaching and work effectiveness are condensed.

##### **Use «Delphi method» to form the overall framework of the index system**

By holding expert consultation meetings, brainstorming and expert voting, the secondary and tertiary indicators and their related connotations under each level indicator module are determined. Determine the weight of each three-level indicator.

##### **Hold several demonstration meetings**

Through the indicator demonstration meeting held by experts and the surveyed objects, the opinions of relevant experts and leaders from the education administration department, educational research institutions, Shanghai University for the Elderly, and District community College are fully listened to. The index system has been discussed, demonstrated and revised for many times.

##### **Revised implementation rules for the indicator system**

Revise the implementation rules of the indicator system, clarify the connotation of key fields in the indicator system, revise the presentation of supporting materials for each three-level indicator, and refine the scoring method.

#### **2.2. The design of the research program reflects the high-quality development goals and plans of the university for the elderly**

The research program is a basic document that regulates the research content and object, methods and tools, procedures and organization, supervision and use of results according to certain purposes, general laws of educational activities and the paradigm of research activities, and is the first content of research activities.

##### **2.2.1. Basic framework of the program**

In the process of comparative analysis of the research and implementation plans of higher education and lifelong education that have been carried out in Shanghai, the framework of various plans basically covers the guiding ideology, principles, standards, content, methods, procedures, results, application and scope of application, with different emphasis.

The research program of senior universities in Shanghai should have Shanghai characteristics. First, the framework is concise. The program is logical and prominent, and the framework structure is not complicated. It mainly covers the purpose, main topics and steps of the research, and the research standards and contents can be reflected and solved in the index system. Second, procedure simplification. The research method of the program is determined according to the research project, which is different from the research method, and adopts the combination of school self-evaluation, field visit and comprehensive evaluation. Third, be clear. The text of the program is concise and concise, and the language is rigorous and standardized.

##### **2.2.2. Scheme connotation**

###### **Clear research objectives**

The purpose of the survey is to answer the question of why we should carry out the survey of senior universities. We believe that in accordance with the requirements of «upgrading the modernization and standardization of teaching places and facilities, and further enhancing their social service capabilities» in the development plan of education for the elderly, we should fully implement the requirements of «building an education system for the elderly with learning for the elderly» put forward in the «14th Five-Year Plan» for the Development of aging undertakings in Shanghai, and in-



investigate universities for the elderly. Clarify the connotation construction positioning of universities for the elderly, further promote the connotation construction of elderly education institutions in the city, constantly improve the management system, improve the operation mechanism, improve the level of teachers, deepen the construction of courses and learning resources, and promote the high-quality development of universities for the elderly.

#### **Construct the organizational structure**

In order to ensure the smooth development of the research work, the plan defines the organizational leadership structure of the entire project. Establish a leading group for research work, whose main responsibility is to review the overall plan and implementation plan for research work, guide, coordinate, inspect, supervise and review the work of research. At the same time, in order to ensure the team support for the work, a research expert group was set up, whose responsibilities are: review and acceptance materials, on-site acceptance; Write acceptance report and put forward preliminary acceptance conclusion. The members of the research expert group include the urban education administration department, the Office of the Senior Education Leading Group of the City, the Senior University of the City, the Senior Education Teacher Training center of the city, some universities for the elderly and some community college leaders and other relevant experts.

#### **Clear research procedures and methods**

Research procedures and methods are to answer how to investigate, when and where to investigate, the steps of the investigation and the methods taken in the investigation. Research objective is an important basis for designing research program and evaluating its rationality. Research procedures are arranged to meet the requirements of accuracy, objectivity, comprehensiveness, education and compulsion. On the basis of the evaluation work, the research method of the program has been inherited and adjusted, using the combination of school self-evaluation, field visit and comprehensive evaluation.

#### **Clear research results and applications**

Survey results and application is to answer how to qualitatively survey results and correlation application relationship. Research results and application are the last link of research activities, and the quality of its work is related to whether the research function and role are fully and effectively played. The research results play a stimulating and guiding role, which is a prerequisite for the subsequent development of universities for the elderly towards high quality.

### **2.3. Research and implementation to strengthen the high-quality development orientation of universities for the elderly**

It is of great significance to carry out scientific and standardized investigation process and accurately grasp the development status and existing problems of universities for the elderly in strengthening the high-quality development orientation of universities for the elderly.

#### **2.3.1. School self-assessment**

Research is the premise and foundation of high quality development of senior universities. Through the self-evaluation report written by each school and the basic information form, the university for the elderly has a comprehensive understanding of the school scale, teachers, curriculum, feedback from students and other situations. The self-assessment report of the university for the elderly objectively and truly reflects the characteristics and existing problems of the school, and provides a reliable basis for follow-up research.

#### **2.3.2. Visit the site**

The field visit of the expert group is an important part of the investigation process. Through interviews with leaders, talks between teachers and students, lectures and verification of information, the expert group has an in-depth understanding of the actual operation of universities for the elderly. The multi-dimensional survey method fully reveals the advantages and disadvantages of senior universities in teaching management, teaching quality and teaching conditions, and provides strong support for high-quality development.

After the field visit, the expert group gave feedback in a timely manner, listened to the feedback of the leaders of each school, and compiled a comprehensive opinion table of the expert group of each school. The aim is to promote the communication between the university of Senior citizens and the research expert group, and jointly explore ways to solve the problem. Through the feedback of opinions and the compilation of comprehensive opinion forms, the comprehensive and objective research results of the development of universities for the elderly are formed.

#### **2.3.3. Comprehensive review**

Based on field visits, the expert group held a summary meeting of experts, conducted thematic summary research, and formed a general report. The general report comprehensively summarizes the findings, problems and suggestions in the investigation process, and puts forward specific strategies to strengthen the high-quality development orientation of universities for the elderly. These strategies include optimizing the curriculum, strengthening the construction of the teaching staff, improving the teaching management system, and the application of information technology, so as to promote the high-quality development of the university for the elderly in all aspects.

### **2.4. Research and summary feedback to improve the quality and efficiency of high-quality development of universities for the elderly**

Feedback is the essence of order. The research pays attention to the three-dimensional content of the feedback. In the form of the research report, it should not only point out the existing problems in the school running, but also put

forward targeted suggestions for improvement. We should not only grasp the shortcomings of the school, but also find the advantages and bright points of the university for the elderly. It is necessary not only to present the overall and various aspects of the development level of the university for the elderly, but also to clarify the impact of various factors on the high-quality development of the university.

### **Summary and prospect**

In this research background, through interviews, lectures, field visits and other research methods, first-hand information is collected to provide decision-making reference for the high-quality development of universities for the elderly. In general, as an important practice for colleges and universities to fulfill their social responsibilities and promote lifelong education, universities for the elderly have achieved remarkable results. Through the use of rich human and material resources, colleges and universities provide systematic and knowledge-based learning activities for the elderly, which not only meets the learning needs of the elderly group, but also promotes the development of the community and the construction of a learning society. At the same time, we also see that universities for the elderly still face some challenges and problems in the development process, such as the optimal allocation of educational resources and the improvement of education and teaching level. Therefore, the high-quality development of universities for the elderly in the future needs to further strengthen the top-level design, improve the quality assurance system, and improve the quality of education and teaching to better meet the learning needs of the elderly and the requirements of social development.

Looking forward to the future, with the deepening of the concept of lifelong education and the intensification of the aging trend of society, the development prospects of universities for the elderly will be broader. It is hoped that universities can continue to give full play to their own advantages, strengthen the contact and cooperation with the society, and promote universities for the elderly to make greater breakthroughs and progress in education, teaching, scientific research and social services. At the same time, the government and all sectors of society can give more attention and support, jointly promote the high-quality development of universities for the elderly, and make greater contributions to the construction of a lifelong education system and a learning society.

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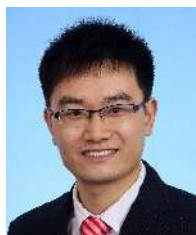
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# Quality Assurance and Teaching Learning in Higher Education

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## Abstract

*Universities the world over, seek excellence in teaching and learning. Emphasis is in put on quality of all universities. Quality Assurance of teaching and learning processes and procedures is important to ensure that relevant and useful graduates are produced from the university. In this paper, we explore the concepts of quality and quality assurance. A link is drawn between quality assurance and teaching and learning process in higher education. Quality Assurance in higher education has been discussed briefly and the different dimensions quality assurance could take in teaching and learning are discussed. We further discuss challenges associated with quality assurance in higher education and conclude on quality enhancement in university teaching and learning processes.*

**Keywords:** Quality Assurance, Higher Education, Teaching, Learning

## Introduction

The process of teaching and learning in higher education should always be reviewed. When we incorporate quality assurance in teaching and learning the topic becomes more involved and deserves careful attention. Higher education teaching and learning procedures should ensure fitness of purpose as well as fitness for purpose, as a requirement of quality assurance practices. We also characterize quality assurance as careful and systematic appraisal practice of an organization, which meets certain specific standard and endeavors to raise that standard continually. Quality assurance is a quality management measure, which provides confidence that fulfilled (Manghani 2011). To this end quality assuring becomes an important aspect of the maintenance of quality as well as ensuring accountability.

Teaching and learning in higher education have a direct bearing on the type of graduate those universities produce as a result of the different curricula and pedagogical approaches. The graduate employability is a critical one as the quality of university graduates is evaluated against capacity to contribute to economic growth and development. A graduate needs to acquire fundamental skills (hard skills) as well as subject specific soft skills which refer to the ability to do something based more on attitude and behavior. Through meticulous quality, assurance of teaching and learning processes in higher education an attempt is made to ensure that appropriate graduate attributes are imparted to students. Andrews and Higson (2008) note the skills gap between what university graduates possesses and what employers look for. This becomes a problem if university programs fail to adequately prepare graduates for the job market. This emphasizes the issue of quality and how it can be assured to ensure a match between graduates, knowledge, and values and job market expectation.

## Quality Assurance and its Purpose

Quality Assurance is a global issue that calls for greater accountability and reflection in higher education Institutions' ways of conducting business in our country. Quality assurance practices and procedures differ institution to institution (Strydom and Lategan 1998). Literature contains many definitions of quality assurance in higher education

According to Wilger (1997), quality assurance in higher education can be referred to as a collective process by which the higher education institution as an academic institution and ensures that the quality of educational purposes is maintained to the standards it has set itself. Institutions endeavor to enhance their standard and strictly adhere to process of good practices.

Strydom (2001) expresses that the reasons of quality assurance at the institutional level is enhancement of quality at the institutions and their academic offerings. It gives affirmation to general society in regards to the accomplishment of the obliged general level of value. Quality assurance also gives confirmation to general society and different stakeholders that a specific set of experts and scholastic principles are accomplished. It exhibits impact of productivity in all capacities of the institution of all levels.

Kis (2005) expresses that quality assurance methodology can fill two real need: changes and responsibility assurance for responsibility. Quality assurance for responsibility reasons focus around criteria situated around outside powers and organizations. They go for reinforcement outside understanding and control.

## Quality Assurance in Higher Education

In order to understand quality, it is very important to define quality. Most of the literature on quality assurance assumes that individual higher education Institutions or group of institutions will develop a working definition of quality. Only a few writers have actually articulated a definition of quality particularly with respect to higher education. Thus, quality has become a much-debated term and that it means different things to different people.

Cloete (1997) argued that quality had at least three different meanings. Firstly, quality can mean a degree of excellence, secondly it could be a characteristic or attribute, and thirdly quality could mean better than something else. In higher education, the concept is multi-dimensional and subjective and there are many «qualities» of higher education as there are sets of objectives and criteria that can be related to higher education.

Barnett (1992) provides a suggestive definition to define quality in higher education. In his definition, importance is placed on achievement of set of objectives as well as overall student development. This suggests that quality assurance should serve particular and specific purposes in higher education.

Georguiev (2006) defines quality as degree to which a product or service meets certain expectations. On the other hand, Harvey and Green (1993) list five separate approaches to describe quality. They argue that quality is seen as far as being remarkable (surpassing elevated expectations and passing on obliged standard) furthermore as far as consis-

cy displayed zero imperfections. It has additionally taken regarding «fitness for purpose» which means that the product or server service meets the expressed reason for its existence.

According to Mammen (2006), these diverse thoughts of quality lead to a conclusion that the quest for a wider spread meaning of quality has been successful. Instead of searching for a solitary definition for quality in high education, one ought of to take a look at the distinct recognition it involves.

A working meaning of quality is in dispensable to any quality assurance in higher education. There is also the issue of qualities and standards required for achievement in the work environment including adaptability and versatility. Thus, it is clear that characteristics of quality found in the quality assurance literature largely conveyed in the language of external stakeholders. An attempt to archive quality would essentially require the contribution of all members in an Institution and not individual members. As a result, the issue of achieving quality becomes a team effort.

#### **Significance of Quality Assurance in Higher Education**

Quality assurance has a component of responsibility. A great part of the current for quality assurance is commenced on the statement that higher education needs reinforced arrangement of responsibility. The great majority of the general public today believes that a reliably high-level state of university teaching and learning is no more ensured and that higher education institution should eagerly take part in quality assurance processes. They view responsibility as essential to fulfill outside constituent as well as precondition for development. Each higher education institution is responsible to its stakeholders regarding general society and public and private funds utilized on it. Sympathy towards quality will guarantee responsibility of the funds used and advice the stakeholders about taking proper decision. Subsequently quality assurance can be considered as an observing component.

The higher education Institution's sympathy towards quality will enhance the spirit and appreciation of the staff performing the duties and obligations. Quality assurance empowers Institutions to improve their images and deceivability. Quality higher education institutions have the ability to pull in better stakeholder backing. The bright students from far and near will flock into get admission.

#### **Importance of quality assuring Teaching and Learning**

According to Biggs (2002), the idea of quality enhancement is central to improving teaching and learning and quality assurance clearly has a role to play in improving quality in higher education. This statement is supported by Chong and Ho (2009). They say that quality assurance is vital to ensure the continuous improvement of the content delivered and development of initial academy preparation. CHE (2012), argues that enhancing the quality of teaching and learning is a key strategic focus area in higher education.

Mcormick (2009), standards for public accountability and demand that we have to find wave of providing evidence in concrete observable and measurable ways of what they are doing to improve teaching and learning.

The most common strategy of ensuring the quality of teaching and learning within the higher education Institutions include among others self-reflection and review, of teaching practice departmental course review processes, summative courses and teaching evaluations, peer review processes teaching and learning surveys, training programs for staff. Annual performance review processes where academic staff reflect upon teaching skills and set objectives for teaching development faculties to identify actions to be taken for any issues raised.

Biggs (2002) worked out details of how assuring and enhancing the quality of teaching and learning in universities is currently a major concern. This is one reason why the CHE is also moving from the audit type of approach this is telling teachers to teach better suggesting to replace institutional audits in second cycle of quality assurance.

#### **Challenges in Quality Assurance**

Building an effective quality assurance system for higher education may consist of a number of different entities and processes acting together. The majority of literature on quality assurance in higher education focuses on institutional quality assurance systems. The process requires participation from all constituents within the institution.

Different writers have attempted to push issues more specifically identified with a powerful quality assurance framework. These issues could be vital when discussing quality assurance.

On administration, the circumstances in regards to quality assurance administration in higher education gets to be more troublesome when considering that institutions are moving towards and association with government and with different stakeholders in higher education. Regarding self-sufficiency assurance management is the obligation of individual institutions and they are required to be freely responsible.

On the issue of funding and finance, subsidizing for quality assurance administration and management oblige levels of funds that are simply not moderate. The budgetary assets are essentially not sufficient and, in the way, the total management faces challenges. Quality and its confirmation ought to be seen fundamentally as an expert issue, not an administration capacity. Higher education Institutions need to give an environment inside which self-discriminant duty to its support. Building a strong culture of quality assurance is a high priority area for producing a successful quality assurance framework.

#### **Conclusion**

It is concluded that the quality assurance should be an integral part of teaching and learning in the higher education Institutions. All teaching and learning activities from curriculum planning to assessment should be based on ways that seek to enhance quality. The issue of quality is important as universities seek to remain relevant by producing graduates that fit in society and serve to drive socio-economic functions of society. Academics in universities should understand and embrace concept of quality assurance in order to be accountable in their teaching. Accountability is made to all stakeholders, particularly, students. Quality assurance should be taken as a professional exercise and not in externally driven management initiative.



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He was Vice Chancellor, Jagannath University, Dhaka (2009–2013). Vice Chancellor, German University Bangladesh (2017–18), Presently the Chairman, Bangladesh Accreditation Council (2018–till now). Professor Ahmed started investigating properties of dilute magnetic alloys, worked on properties of superconductors with magnetic impurities, then on spin glasses. Extensive work was performed in finding electronic structure and properties of binary and ternary alloys.

Professor Ahmed has more than 60 papers published in national and international journals. About 15 students completed their M.Sc. thesis and 3 obtained Ph.D. degree.

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# Effects of Input, Management, and Process on Student Outcomes: a Structural Equation Modeling of Undergraduate Study Program Accreditation in Indonesia

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## **Abstract**

*This study aims to investigate the effects of inputs, management, and processes on student outcomes. Inputs can affect outcomes directly, but can also affect them indirectly through processes. Management affects outcomes indirectly through processes. The data were gained from the accreditation results of undergraduate education study programs conducted by the Accreditation Council for Education in Indonesia. The number of study programs analyzed was 1705 study programs. The data were analyzed using partial least squares structural equation modeling (PLS-SEM). The aspects were assessed by using an accreditation instrument for undergraduate study programs, namely Input, Management, Process, and Output. The number of items that assess the four aspects are respectively: 25, 11, 23, and 14 items. The findings revealed that input has a significant positive effect on output; input has a significant positive effect on process; management has a significant positive effect on process; and process has a significant positive effect on output. Input indirectly affects output through process. The mediating effect of Process is 41%.*

## **Introduction**

Independent accreditation institutions are institutions formed by the government or independent institutions formed by the community that are recognized by the government on the recommendation of BAN-PT (Article 55 paragraph (5) of Law No. 12/2012). Based on the Decree of the Minister of Research, Technology and Higher Education Number 497 of August 2, 2019, the Ministry of Research, Technology and Higher Education approved the recognition of the Accreditation Council for Education (henceforth, ACE; a.k.a LAMDIK). Thus, ACE can carry out accreditation of study programs in the field of education, both those organized by State Universities and by Private Universities.

The aspects of the accreditation instrument developed by ACE include the following four dimensions.

- Management includes: integrity of vision and mission, leadership, governance, resource management system, strategic partnership, and internal quality assurance system;
- Inputs include: human resources (lecturers and education staff), students, curriculum, infrastructure, finance (financing and funding);
- Process includes: learning process, research, community service, and academic atmosphere;
- Outputs include: productivity of outputs and outcomes: quality of graduates, products

The first three aspects above are basically the performance of lecturers, so that the performance of lecturers ultimately becomes a critical element (Rodriguez, 2013; Watanabe, 2013). Four aspects become the reference in the preparation of the accreditation instrument for the Education study program. The four elements are translated into 9 criteria, namely (1) vision, mission, goals, (2) governance, (3) students, (4) human resources, (5) (finance and facilities), (6) education, (7) research, (8) community service, and (9) tridarma outcomes and achievements (BAN PT, 2019). A summary of the 9 criteria and aspects, along with the weight of each aspect is shown in Table 1).

No.	Criteria	Aspect and Weight
1	Vision, Mission, Objectives, and Strategy (5)	Management (11 items=7.5%)
2	Governance and Collaboration (6)	
3	Student (4)	Input (25 items=15.5%)
4	Human Resources (14)	
5	Finance, Facilities, and Infrastructure (7)	
6	Education (16)	Process (23 items=29%)
7	Research (4)	
8	Community Service (3)	Output (14 items=33%)
9	Tridharma Outputs and Achievements (14)	

Table 1. Summary of criteria, aspects and weights.

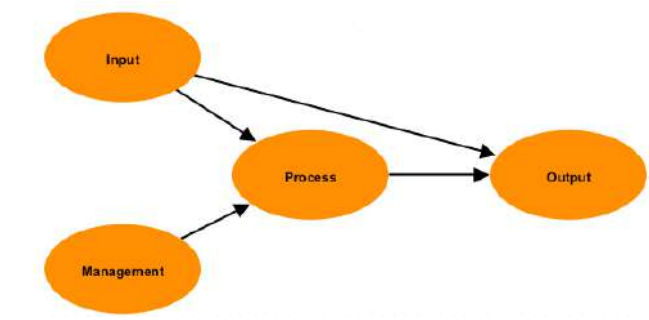


Figure 1. The relationship between inputs, management, processes and outcomes

The study program accreditation process begins with a preparation of self-evaluation report. The self-evaluation refers to the official study program accreditation instrument that has been published by ACE. The study program manager can add elements to be evaluated according to the its interests and the higher education institution concerned. The study program uploads all files (completed accreditation instruments and attachments) according to the applicable provisions in ACE. The study program accreditation model by ACE is carried out based on the following standards: leadership and performance of governance (management), input, process, output productivity.

1. Method

This study design uses an explanatory quantitative approach. This method is used to validate the measurement and structural models of input, management, process and outcome relationships. The data came from the accreditation results of 1705 undergraduate study programs. The data were analyzed using the square structural equation modeling technique. The relationships between aspects are shown in Figure 2.

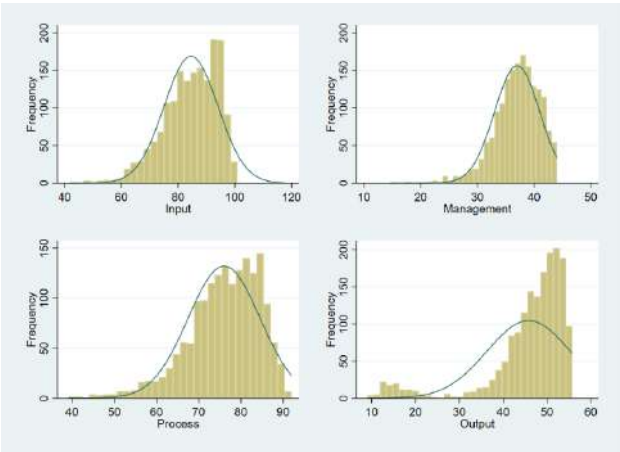


Figure 2. Histogram of Input, Management, Process and Output aspects.

Figure 2 shows that inputs affect outputs directly, but also indirectly through processes. Management affects processes directly. Process affects output directly. There are 73 items that measure aspects of input, management, process and outcome. Each item in the PS accreditation instrument is assessed quantitatively with a score range of 1 (one) to 4 (four). Score 1 (one) is the lowest score that will increase with the better quality of the indicator items assessed, with a maximum score of 4. The distribution of items is shown in Table 2.

No.	Aspects	Item
1	Input	I21,I22,I23,I24,I25,I26,I27,I28,I29,I30,I31,I32,I33,I34,I35,I36,I37,38,39,I49,I41,I42,I43, I44, I45
2	Management	I10,I11,I12,I13,I14,I15,I16,I17,I18,I19,I20
3	Process	I46,I47,I48,I49,I50,I51,I52,I53,I54,I55,I56,I57,I58,I59,I60,I61,I62,I63,I64,I65,I66,I67,I68
4	Output	I69,I70,I71,I72,I73,I74,I75,I76,I77,I78,I79,I80,I81,I82

Table 2. Items that assess aspects of input, management, process and outcome.

Data were analyzed using structural equation modeling. There is a measurement model and a structural model. The measurement model aims to validate the input, management, process and outcome aspects. The structural module determines the amount of influence between aspects.

2. Results and Discussion

2.1. Data Description

The descriptive statistics of the aggregate data of Input, Management, Process and Output aspects are summarized in Table 3 and the graphs of the four aspects are drawn in Figure 3.

Variable	Obs	Mean	Std. dev.	Min	Max
Input	1,704	84.53958	9.476172	42	117.3
Management	1,702	36.99227	3.991457	14.64091	44
Process	1,705	76.01183	8.509707	39.08333	92
Output	1,705	45.80061	9.510922	9	55.76257

Table 3. Data summary of Input, Management, Process and Output aspects.

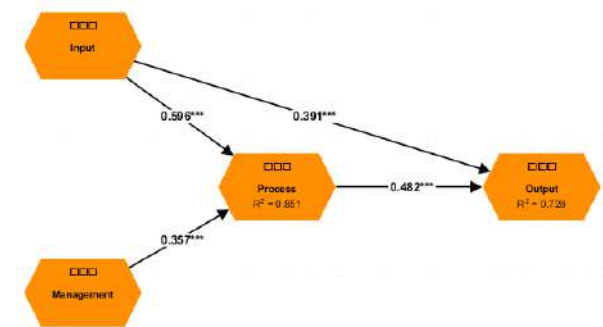


Figure 3. Structural model of inputs, management, processes and outcomes.

2.2. Normality Test

It is necessary to test normality to determine what statistics will be used to analyze the data. The Shapiro-Wilk test was used to test the data from the five aspects of Input, Management, Process and Output. The results of the analysis are shown in Table 4.

Variable	Obs	W	V	z	Prob>z
Input	1,704	0.95758	43.490	9.540	0.00000
Management	1,702	0.95589	45.167	9.635	0.00000
Process	1,705	0.95305	48.150	9.797	0.00000
Output	1,705	0.74927	257.160	14.034	0.00000

Table 4. Shapiro-Wilk test for normal data.

If the p-value is smaller than the significance level (generally 0.05), the data samples are considered not normally distributed. All p-values of the four data are smaller than 0.05, so the data samples are not normally distributed.

2.3. Structure Model

Since all sample data were not normally distributed, the technique used to analyze the data was partial least squares structural equation modeling (PLS-SEM). The structural model specifies the relationship pattern between the aspects of input and outcome, input and process, management and process, process and output. The results of the structural model are shown in Figure 3 and Table 5

Independent variable	Dependent variable	
	Output	Process
Input	0.3913	0.5960
Management		0.3571
Process	0.4825	

Table 5. Path coefficients

Input has a significant effect on output. Input has a significant effect on the process. Management has a significant effect on the process. Process has a significant effect on output.

2.4. Mediation

The Input aspect has a direct influence on Output, as well as an indirect influence (from Input to Process to Output). The direct effect is the coefficient of Input to Output (0.39). The indirect effect is the product of the coefficient of Input to Process (0.59) times the coefficient of Process to Output (0.48),  $0.59 \times 0.48 = 0.28$ . The total effect of Input on Output is the sum of direct and indirect effects,  $0.39 + 0.28 = 0.67$ . To determine if there is mediation, the ratio of indirect and total effects is calculated.

$$RIT = \frac{\text{indirect effect}}{\text{total effect}}$$

$$RIT = \frac{0.28}{0.67} = 0.41$$

This means that 41% of the influence of Input on Output is mediated by Process.

Conclusion

- The aspects assessed by the accreditation instrument for undergraduate study programs by ACE are Input, Management, Process, and Output. The number of items that assess the four are respectively: 25, 11, 23, and 14 items.
- Input has a significant positive effect on output; Input has a significant positive effect on process; Management has a significant positive effect on process; Process has a significant positive effect on output.
- Input indirectly affects output through process. The mediating effect of Process is 41%.



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# Reflection on the Classification Evaluation of Private Universities under the Background of Classification Management

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## **Abstract:**

*The Law on the Promotion of Private Education stipulates the classification management of private universities. Therefore, when evaluating private universities, the principle of classification evaluation should also be followed. This study summarizes the current situation, problems, and development trends of evaluation of private universities in China, and then discusses countermeasures and suggestions for the classification evaluation of private universities in China.*

**Keywords:** Private universities; Classification management; Classification evaluation

## **1. Background**

Private undergraduate institutions in China are a product of the popularization of higher education, with their unique investment and management systems, and also exhibit their own characteristics in talent cultivation. Some private undergraduate colleges have been upgraded from higher vocational colleges, and many private undergraduate colleges have inherited the advantages of vocational education, with the focus on cultivating applied talents. The diversified pattern of higher education has taken shape, and the quality of higher education is multifaceted. We should adapt to the situation and abandon the practice of using a unified scale to measure the quality of higher education.

The Outline of the National Medium — and Long Term Education Reform and Development Plan (2010–2020) (referred to as the «Outline») clearly points out the need to «establish a classification system for universities, implement classification management. Give full play to the role of policy guidance and resource allocation, guide universities to position themselves reasonably, overcome homogenization tendencies, form their own educational concepts and styles, and create distinctive features at different levels and fields, striving to be first-class.». Based on different criteria for consideration, the classification of universities in China currently presents different results. Feng Hui and Wang Qi have classified Chinese universities differently based on six attributes and characteristics: affiliation, talent cultivation level, distinctive main disciplines, government management and resource allocation, and investment entities[1]. Professor Pan Maoyuan divides higher education in China into academic, professional and applied, and vocational types based on the standards of UNESCO. At the same time, the difference between public and private universities was introduced, and the latter is further divided into three categories: student aid type (funded by enterprises or individuals), rolling type (self raised funds — rolling tuition fee accumulation), and public-private partnership type (mainly state-owned and private). The article points out that the evaluation content and standards for «public» and «private» universities cannot be forcibly consistent. The evaluation of private universities with different types and conditions of education should also be classified. The idea of classifying and evaluating private universities is consistent with the Outline: classifying and managing two types of private universities (for-profit and non-profit); Establish scientific and diverse evaluation standards based on training objectives and talent concepts.

## **2. Classification management of private universities**

As an important component of higher education in China, the construction and development of private universities have promoted the popularization of higher education in China. In order to further promote the development of private higher education in China and solve the problem of unclear identity of private universities, the newly revised «Private Education Promotion Law» proposes classification management regulations for private universities, which divides them into two categories: «for-profit» and «non-profit». Both for-profit and non-profit private universities have greatly improved their enthusiasm for education under the policy of classified management. For-profit private universities have gained more autonomy in decision-making, while non-profit private universities have received more government funding.

One of the development goals proposed in the «14th Five Year Plan» for the development of private education in Shanghai is to «establish and improve a classification management system and support policy system for private education.». Specific measures include: improving the classification management system for non-profit and for-profit private schools. Clarify the management mechanism of non-profit and for-profit private schools, optimize management processes, ensure that each type of private school has its own position, and standardize development.

The challenge of classification management is not only to standardize the development of private education, but more importantly, under the guidance of new development concepts in the new era, to promote the innovative and high-quality development of private education through the leverage of classification management.

## **3. Classification evaluation of private universities**

The foundation of classification management is classification evaluation. Only through scientific and reasonable classification evaluation can classification management be achieved. The annual inspection of private higher education institutions in Shanghai is an important measure for the classification and evaluation of private higher education institutions in Shanghai, and the corresponding Management Measures were issued in September 2022. The annual inspection of private universities is a special administrative management system conducted by the education department in accordance with the law and on an annual basis to comprehensively inspect the legal operation and standardized management of private universities. The annual inspection includes aspects such as party building and ideological and political work, basic educational condi-

tions, rule of law, asset and financial management, faculty construction, enrollment management, and education and teaching. The annual inspection conclusion is generally divided into three categories: «qualified», «basically qualified», and «unqualified». The annual inspection conclusion is used for information disclosure, problem rectification, and is linked to special funds for the development of private education, enrollment plans, project applications, etc.

At the same time, the classification and evaluation of private universities in Shanghai also overlap with the classification and evaluation of universities in Shanghai. The «14th Five Year Plan» for the development of Shanghai's citizen run education also proposes to benchmark the classification evaluation index system of universities, and to classify and evaluate private universities in terms of their educational direction and management level, educational conditions and resources, educational quality and level, educational reputation and characteristics, strengthen the requirements for educational quality, and lead the development of the connotation of private universities.

#### **4. Problems and Trends**

##### **4.1. Existing problems**

Professor Pan Maoyuan pointed out at the 3rd Sino foreign Forum on the Development of Private Higher Education that the role of educational evaluation as a «baton» should be fully utilized, with evaluation as the starting point, to promote and implement the standardized operation of private universities, and improve teaching quality[2]. However, there are still some problems in the evaluation of the quality of education in private universities in China.

##### **4.1.1. «One size fits all» evaluation criteria**

At present, the evaluation work of universities in China is based on the «Evaluation Plan for Undergraduate Teaching Level in Ordinary Higher Education Institutions (Trial)», which adopts the same measurement system and standards for more than 1000 universities. This plan adopts the CIPP model (scenario evaluation, input evaluation, process evaluation, and outcome evaluation), covering 7 primary indicators, 19 secondary indicators, 44 observation points, and 1 characteristic project. The «one ruler» approach ignores the differences between private universities and public universities in terms of educational goals, funding sources, funding support, student quality, and teaching staff, which is unfair.

From the perspective of educational type positioning, private colleges in China belong to the technology application (teaching) type, which is significantly different from the training objectives of traditional undergraduate colleges. However, the evaluation requirements for universities are mainly aimed at traditional academic undergraduate institutions, and the evaluation standards and the purpose of private universities are asymmetric.

##### **4.1.2. The evaluation results have limited follow-up effectiveness**

The main function of the existing evaluation model is to standardize management and does not encourage independent education. The evaluation results are mainly used for supervision and application guidance, with little effect on long-term motivation. The current system and laws in our country pay more attention to private colleges and universities in meeting the needs of educational development and promoting short-term goals, but do not pay enough attention to their long-term development and public welfare.

##### **4.1.3. Government support for differentiation**

The government's feedback and support on the evaluation results of «public» and «private» universities are biased. For public institutions that fail the evaluation, local governments will provide more support; Non qualified private universities, on the other hand, need to solve their own problems. If they fail, they may face closure or merger. The government's support for non-profit private universities in terms of regional policies, taxation, and finance is also different from that of public universities. The institutional environment faced by the development of private universities needs to be optimized.

#### **4.2. Development trends**

With the deepening of the market economy system and the arrival of the stage of mass education, international education evaluation has shown a new development trend. Mainly reflected in:

Diversified evaluation methods: shifting from unification to classification. A unified evaluation standard directly intervened by the government cannot distinguish the characteristics of universities, and needs to be classified and evaluated based on the educational goals, talent cultivation goals, and characteristics of each university.

Diversification of evaluation subjects: from one to multiple. The subject of higher education evaluation has shifted from a single government agency to a diverse entity that includes social intermediaries, universities themselves, industry institutions, students, and more. At the same time, emphasis should be placed on the coordination of the division of functions among multiple evaluation subjects. The government has shifted from direct control to indirect participation, and supervises other evaluation subjects and their evaluation activities. Social intermediaries and universities themselves should exhibit differences in evaluation methods and content, and undertake different functions. The Western education evaluation mechanism is a combination of internal and external factors, and it has become a trend for universities to assume the main responsibility for ensuring educational quality.

The evaluation criteria have shifted from pre established to generative. Precompleteness refers to the recognition of higher education as qualified in quality when it meets a predetermined standard. The generative model depends on the needs of the demand subjects in higher education, and the more they meet the needs of the subjects, the higher the quality. That is, the evaluation of higher education depends on both the evaluation of talents by universities themselves and the labor market.

Evaluation indicators emphasize performance and student learning outcomes. The focus of evaluation indicators for higher education in various countries has shifted from teaching resource investment to the learning process and outcomes of students.

The evaluation method has shifted to a combination of quantitative and qualitative methods. Accurately quantifying educational output can make educational evaluation objective and scientific, but it is not possible to quantify all evaluation information. Qualitative description of educational output can reflect the efforts, potential, and expectations of each

university for assistance, thereby achieving the goal of promoting development through evaluation. Therefore, the method of educational evaluation should shift from quantitative to a combination of quantitative and qualitative methods.

Deepening the evaluation of impact: The evaluation results have shifted from rewards and punishments to a balance between rewards and punishments and development. The purpose of educational evaluation is to promote the quality of higher education. In order to avoid universities deliberately catering to or even engaging in fraud for the purpose of obtaining government funding, developmental evaluation methods (such as formative evaluation and self-evaluation) are increasingly valued compared to current reward and punishment evaluations.

## **5. Conclusion and Discussion**

Private universities have their own positioning and characteristics, such as application-oriented, local, autonomous, and flexible mechanisms. Therefore, when evaluating them, it is necessary to respect the commonalities of universities and the inherent laws of higher education, while fully considering the individuality and characteristics of private universities. Based on existing domestic problems and international practices and trends, the evaluation strategies and suggestions for private universities in China are as follows:

### **5.1. Establish multiple evaluation criteria, especially characteristic indicators**

Shift from unified evaluation to personalized evaluation. One specific manifestation is that private universities should choose different evaluation indicator systems. Taking the indicator of «full-time teacher team structure» as an example, universities outside of «985» and «211» choose «the proportion of those with doctoral degrees» instead of examining «the proportion of those with overseas learning or work experience»; The evaluation indicators for skill oriented colleges should also include the proportion of those with work experience in enterprises. The combination of full-time and part-time teaching, with specialization as the main focus, is the advantage and characteristic of the teaching staff mechanism in private universities. Education evaluation should recognize this and include «specially hired teachers» in the «full-time teacher» team. The Third Forum on the Development of Private Higher Education between China and Foreign Countries further proposed that relevant government departments allocate dedicated staffing to create conditions for the construction of the teaching staff in private colleges and universities. In addition, the weight of the same indicator should also vary among private universities. Taking the relative weight of «talent cultivation» and «scientific research» in different types of universities as an example, the two are given a weight of 6:4 in «985» universities, while in private universities, the weight can reach as high as 8:2.

Based on the characteristics of private universities, Yu Bo and Wang Xinli adjusted the CIPP model at the levels of education investment, education process, education output, and education effectiveness. They constructed a performance evaluation system for private universities, including 33 quantitative and qualitative evaluation indicators[3].

### **5.2. The evaluation subject has shifted from government led to social intermediaries**

Some scholars propose to hand over a portion of the evaluation materials to intermediary agencies in order to improve evaluation efficiency and ensure the objectivity of evaluation results. Professor Lv Qicheng, an expert from the Ministry of Education, further proposed a pilot program of diversified evaluation subjects, including the central government, semi official intermediary organizations, social intermediary organizations, and knowledgeable individuals from all sectors of society who pay attention to education. At the same time, establish a third-party evaluation institution with high credibility. At present, there is a lack of influential social evaluation institutions in our country, which makes the evaluation of universities mainly supervised by the government lack external supervision and prone to loopholes.

### **5.3. Transform government responsibilities by using evaluation as a service tool rather than a management tool**

This move coincides with the international trend of shifting evaluation results from rewards and punishments to a balance between rewards and punishments and development. Private universities, like public universities, also play a role in cultivating talents for the country, so the government also has the responsibility to support private universities. Gong Faming suggested that the government take measures to optimize the institutional environment in which non-profit private universities operate, such as promoting equal legal status for both public and private schools; Register private universities established through donations to aid education as public institutions; Implement classified taxation to reduce taxes; Develop differentiated land policies and provide varying degrees of land use incentives[4]. The insufficient financial support for the development of private universities in our country has constrained their growth. The government can allocate special funds for post evaluation incentives based on the evaluation results, and increase financial support for private universities.

### **5.4. Emphasize vertical evaluation and delay the evaluation cycle**

Emphasize the self-evaluation process, shifting from horizontal evaluation between universities to vertical evaluation within universities themselves. Comparing universities on the same level is unfair; Moreover, it has fostered a trend of fraud and deception. Vertical evaluation of universities based on their respective development history can promote their own improvement and steady development.

Delay the evaluation cycle. At present, the teaching evaluation work in higher education institutions in China follows the five-year system determined in the 2003–2007 Education Revitalization Action Plan. Private universities do not need to go hand in hand with public universities. Delaying the evaluation cycle can create a relatively stable and relaxed construction environment for private universities.

Classifying and evaluating the characteristics of private and public universities is essential to ensure the objectivity, impartiality, and effectiveness of the evaluation results; Only the management departments of various higher education institutions can obtain correct feedback information and make corrections and improvements accordingly. The relevant government departments can also take incentive measures based on the evaluation results, contribute to the improvement of the quality and level of higher education, and safeguard the vigorous development of China's education industry.

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# Total Quality Management Practices: a Perspective of Faculty and Administration in Medical Institutions

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## Abstract

The background of the study is the integration of Total Quality Management (TQM) principles in academic and administrative processes within medical institutions, providing valuable insights into the effectiveness and challenges of adopting quality management practices in this specific educational context. This study aims to evaluate the level of adherence to TQM practices by academic staff and administrative staff at medical institutes in the province of the Punjab, Pakistan. The quantitative methodology is used, based on data collection by a questionnaire from the academics and administrative personnel of the medical institutes. After meeting its prerequisites (Kaiser Meyer Olkin (KMO) and Bartlett's test of sphericity), the statistical tool exploratory factor analysis (EFA) was used to identify areas, where medical institutes fall short in the application of TQM practices. Additionally, T-Test and ANOVA support the analysis. Graphical tools are also used for presentation of data. The results of the study identified the improvement areas regarding TQM practices at medical institute. Core output of the work is that TQM is being implemented in medical institutes but in a sluggish manner. The research examined important TQM dimensions that any medical institution might employ for follow-up measures and also to close any gaps in TQM implementation. This study outlined the deficiencies in medical institutions' curriculum design, process improvement, and evaluation areas. This information may assist policymakers (heads of medical institutions) in putting appropriate corrective measures (plans) into place. This research also added value to the quality management literature and provided understandings that how the quality assurance managers could enhance the quality management practices at medical institutions.

**Keywords:** Total Quality Management, Higher Education Institutions, Higher Education Commission of Pakistan, Quality Enhancement Cells

## 1. Introduction

Quality is the most important characteristic these days in any sector, whether it is government, private, non-profit organization, or educational institute (Abu-Nahel et al., 2020). Quality management is being followed extensively in developed countries, whereas developing countries are also now focusing on quality as a core area of concern (Othman et al., 2020). The quality has become an indispensable component in this global world (Sony et al., 2020). The word «quality» has plenty of meanings, i.e., a degree of excellence, freedom from all defects, conformity with respect to standards, and fitness for use (Cheng, 2019). As far as the management of quality is concerned, it is a systematic approach to continuously enhance efficiency and effectiveness and focus on continued improvement. The essence of quality management is continuous improvement (Pambreni et al., 2019). Since education is more important than ever for any nation to stay competitive in correlation with technological innovation, institutions are more accountable to all stakeholders, including governments, society, students, and parents, for providing quality education (Egoro et al., 2020).

### 1.1. Quality in medical education

Quality in medical education is also very vital as it deals with the lives of human beings (Buja, 2019). Quality in medical institutes can be achieved only by producing quality medical graduates, good doctors, excellent support staff (nurses and paramedics), and allied health professionals (Lucey & Saguil, 2020). It is a fact that the concept of quality management has not yet been acknowledged in medical institutes to the degree that it has been recognized by general educational institutes (Wang, 2021). Therefore, TQM practices are mandatory in medical educational institutes. To achieve adherence to TQM practices, first of all, the medical educationists (faculty and administrative personnel) must have a clear understanding of total quality management practices. Secondly, they must be committed to enhancing medical educational standards through improving curricula, policies, and procedures and also concerned with improving teaching methodology (Wilson & Campbell, 2020). The medical institutes (public and private) should always pursue their continuous improvement (Antony, 2020). Implementing TQM practices in medical institutions refers to the institute's ability to provide a high standard of quality education (Mwansa et al., 2020). This enables the institutes to fulfil the expectations and requirements of all stakeholders, including regulatory bodies, accrediting councils, students, faculty members, and management personnel, in a manner that aligns with the demands of this digital era (Kobets et al., 2021).

### 1.2. Role of provisional governments for quality assurance

Provincial governments provide free education up to middle school and offer scholarships for university students to promote education in general, but they still cannot compete with developed countries because of lower educational budgets and less emphasis on quality management practices (Haider et al., 2020). It is observed that the efforts of the provincial government are not up to par because of deprived internal management structures, vague processes, poorly dele-

gated authorities or responsibilities, and a lack of proper standards for performance evaluation, e.t.c. (Fuertes et al., 2020). The Higher Education Commission (HEC) of Pakistan implemented numerous modifications in the education system, focusing on quality and performance facilities through the construction of a short-term, medium-term, and long-term framework. The «Quality Assurance Agency» and the «Quality Enhancement Cells» are developed with the aim of enhancing and elevating the quality of teaching and academic standards (Iqbal et al., 2024).

### **1.3. Objective of study**

The objectives of this research include investigating the extent to which TQM practices are being followed at medical institutions (private or public), assessing the impact of variables such as tenure, job level, and designation on responses, and finally pinpointing areas where TQM practices are lacking and require improvement.

## **2. Research methodology**

In order to determine the TQM practices at medical institutions, an instrument for data collection is identified from Turkish higher education institutions (Erkan Bayraktar et al., 2008). Therefore, the same questionnaire is adopted with a slight modification, considering the context of this study. The instrument was designed largely based on the thoughts of quality gurus including Juran, Feigenbaum, Deming, Crosby, and Principles of Quality Management. The ten key dimensions of the instruments are: leadership, quality policy, evaluation, curriculum design, compensation and benefits, quality system, process improvement, employee involvement, focus on students, training, and development. By scrutinizing the objective of the research, the following null and alternative hypotheses have been projected regarding the implementation of TQM practices at medical institutes in view of faculty and management personnel:

### **2.1. Hypotheses**

Hypothesis 1: There is no significant difference between the perceptions of public and private medical institutes' faculty and management personnel or vice versa

Hypothesis 2: There is no significant difference in perception according to the variables of tenure, job level, and designation or vice versa

A quantitative approach was chosen for this study. The medical educational institutes of the province of Punjab were selected for population because there was a lack of research in the literature (few studies available) on the use of TQM practices at medical educational institutions in Pakistan. Stratified random sampling is chosen based on commonalities, meaning that while all of the institutions are located in the same province, some are public and others private. Altogether, 200 questionnaires were sent to the faculty and administrative staff of the medical institute of Punjab (Erkan Bayraktar et al., 2008), out of which 100 were sent to the public and 100 to private faculty and administrative staff members. Only 129 correct responses were received, of which 74 respondents belong to the public sector and 55 belong to the private sector. So, the rate of response was about 64.5 percent. The demographics of the 82 were male and 47 female. The majority (63) of the respondents belong to the mature age group (30 to 50 years), which definitely refines the research outcomes. Data was received from middle-level job status, which was quite reasonable for research, i.e., 67 respondents from middle-level, 23 from upper-level, and the rest from lower-level. Out of 129 respondents, 47 were purely from management, 58 were from faculty, and the rest were working on both dimensions.

### **2.2. Validity and reliability**

Validity and reliability are vital to providing assurance of real research results. The data was analyzed using the Statistical Package for Social Sciences (SPSS), and hypotheses were analyzed by making use of descriptive statistics and different tests applied, including the reliability test, normality test, t-test, ANOVA, KMO, Bartlett's test, and exploratory factor analysis. The study also met the ethical considerations to gain the trust of the respondents. Respondents were informed and assured that their identities would be kept confidential and used only for academic purposes. Formerly dispensing the questionnaire, a pilot study was also conducted to identify any ambiguity or error in the questionnaire. A sample of 20 was selected to conduct a pilot study. The reliability of the questionnaire was almost 0.9.

## **3. Data analysis and interpretation**

The Cronbach Alpha technique was used to check the reliability of the scale, which was used to measure the internal consistency of the questionnaire scale. According to statistics, the value of Cronbach Alpha should be between 0 and 1. However, a value of at least 0.7 is tolerable. Thus, upon verification, every case is legitimate, and out of a sample of 129 respondents, not a single is disqualified. With a Cronbach's alpha score of 0.977, all scale elements have strong internal consistency, above the minimal acceptable trustworthy value of 0.70. Normality tests show the total number of samples is 129, the minimum value is 1.03 and the maximum value is 4.87 for these variables, the value of the standard deviation is 0.79, and the value of the mean can deviate 0.79 from its original value of 3.34.

### **3.1. t-test**

To address the influence of variables such as tenure, job level, designation, and public or private medical institutions in Hypothesis 1, a t-test is conducted.

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	T	Df	Sig. (2-tailed)	Mean Dif- ference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
TQM Practices	Equal variances assumed	4.200	.042	-2.458	127	.015	-.37912	.15425	-.68436	-.07387
	Equal variances not assumed			-2.516	124.522	.013	-.37912	.15070	-.67737	-.08086

Table 1.1: t-test of public and private sector.

Levene's test for equality of variance tells us that if the significance value is greater than 0.05, then use the row with the assumed equal variance, and if the significance value is less than 0.05, then use the row that shows the assumed equal variance. If the significance (2-tailed) is less than 0.05, then the two groups are significantly different (Field, 2009); (Maulina & Pahamzah, 2019). The value of significance is  $0.013 < 0.05$ , indicating that there are significant differences between means and that sectors have a recognizable effect on perceptions of implementing TQM practices at medical institutes.

### 3.2. Exploratory Factor Analysis (EFA)

Exploratory Factor Analysis (EFA) typically determines the number of factors by looking at the eigenvalue, or output, of a principal component analysis (Newsom, 2005); (Schreiber, 2021). In order to fulfil the basic conditions for conducting exploratory factor analysis (EFA), the Kaiser Meyer Olkin (KMO) and Bartlett's tests of sphericity were performed. The sampling adequacy test value varies from 0 to 1, and values that are inclined towards 1 are considered acceptable. However, the minimum value that can be accepted is 0.6. In this research, the KMO value was 0.947, which was considered acceptable for factor analysis. KMO values that are less than 0.5 require corrective action (Cerny & Kaiser, 1977); (Shrestha, 2021). An identity matrix is one in which every diagonal component is 1 and every other diagonal component is 0. To determine whether or not the correlation matrix is an identity matrix, Bartlett's test of sphericity was performed.

It is determined that the population matrix from which the sample was drawn was not an identity matrix since the Bartlett's test significance value of 0.000 is much less than the significance value of 0.05 (Tobias & Carlson, 1969); (Malek et al., 2021). To ascertain the degree of Total Quality Management adoption, these tests offer a minimal bar that must be met before doing a factor analysis or a principle components analysis (Jasti et al., 2022).

### Extraction Sums of Squared Loadings

Total	% of Variance	Cumulative %
21.027	53.916	53.916
1.817	4.658	58.574
1.384	3.548	62.122
1.159	2.973	65.095

Table 1.2: Cumulative Variance due to extracted factors.

Table 1.2 confirmed that it was extracted into 4 factors because you extract only factors to the left of the point of inflexion and do not take the factor at the point of inflexion (Field, 2009); (Strasberg, 2019). Now the issue was to identify which areas of TQM require attention from institutes. To resolve that issue, the study used the technique of PCA (Principal Component Analysis), in which 65.1% of the variance belongs to the four factors. Hence, the numbers of factors were identified; a rotated component matrix was used, which answered the question about converging factors. Items with above 0.50 values were taken to be significant, so items with below 0.50 values were suppressed (Hair et al., 2006); (Osborne, 2019). According to that principle, 32 of the 39 items of the study converged.

4. Finding and conclusion

The first objective of this research was to clarify the extent of TQM practices in public and private medical institutes. So, graphically, the level of importance given by faculty and administrative personnel to different TQM practices (leadership, quality policy, evaluation, process improvement, curriculum design, quality system, employee involvement, training and development, compensation and benefits, and student focus) was as follows:

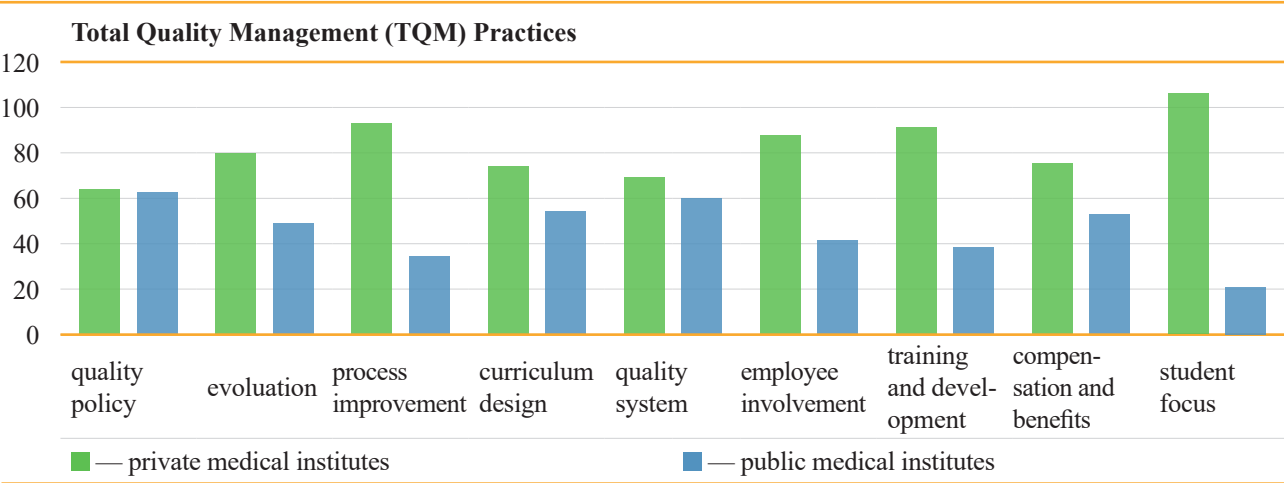


Figure 1.1: TQM practices at private vs public medical institutes

Figure 1.1 clearly shows that private sector medical institutes give relatively more importance to TQM practices as compared to the public sector. These private institutes provide more funds, better facilitate, and systematize efforts on TQM practice, resulting in better results. So Hypothesis #1 is rejected.

The second objective of this research was to evaluate the impact of tenure, job level, and designation on the responses. In this reference, the ANOVA analysis for tenure (less than 3 years, 3–10 years, more than 10 years) shows that the value of significance is  $0.592 > 0.05$ . The ANOVA analysis for variables of job level (lower level, middle level, and upper level) and TQM practices. The value of significance is  $0.753 > 0.05$ . Finally, the ANOVA analysis for variables of designation (lecturer/demonstrators, assistant professors, assistant professors, and other management staff) and TQM practices. The value of significance is  $0.422 > 0.05$ . Hence, the result shows that there is no significant difference between the means and variables of tenure, job level, and designation. So Hypothesis #2 is accepted.

Lastly, identification of improvement areas needed for total quality management implementation in public and private medical institutes was the third goal of this study. Therefore, seven of the thirty-nine items that were examined in this study converge into any of the four factors.

Sr.#	Label	Non Converging Items (Areas of Improvement)
1	Q11E1	Our Institute do audit check on regular basis according to policies.
2	Q12E2	It matches educational and managerial processes with other institutions.
3	Q14E4	It uses Standard performance measures to evaluate university’s top management commitment.
4	Q16P1	Our Institute is kept neat, clean and shine all the time.
5	Q17P2	It is well equipped with up-to-date facilities (e.g. research centers, computer internet and laboratories) to enhance educational level.
6	Q18P3	It gathers numerical data (e.g. educational records, employee attendance) and assesses them to regulate processes.
7	Q20C1	Curriculum design considers students necessities when being planned.

Table 1.3: Areas of Improvement.

Table 1.3 identified seven non-convergent items from the dimensions of evaluation, process improvement, and curriculum design. So medical institutes, while implementing TQM practices, are lacking in these areas, which need improvement.

This study was conducted on faculty and administrators of public and private medical educational institutes. The instrument covers the ten (10) key dimensions, including leadership, quality policy, evaluation, curriculum design, compensation and benefits, quality systems, process improvement, employee involvement, focus on students, training, and development. (Erkan Bayraktar et al., 2008). It is recommended that the same kind of research be conducted in other provinces of Pakistan to gain wide-ranging knowledge about the perceptions of the implementation of TQM practices. It is also suggested to use longitudinal research to study whether the behavior of faculty and management personnel changes with time. In addition to this, it is recommended to research the relationship between TQM practices and the effectiveness of educational institutions. As administrative staff and faculty members are considered an important asset of medical institutes, they should be facilitated and trained on TQM practices. Although it requires little investment, it is helpful to achieve efficiency and effectiveness while producing quality healthcare professionals.



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# Promotion of Quality in Teaching and Learning in Higher Education Institutions (HEIs): Case Study of Randomly Selected Colleges Accredited by NAAC Parameters

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## Abstract

The National Assessment and Accreditation Council (NAAC) is tasked with the assessment and accreditation of higher education institutions in India. For its conformance to the grade based on internal and external quality in terms of its execution related to the curriculum design, teaching and learning process, research innovation and extension, infrastructure, student support, governance and leadership management, and institutional values and best practices. NAAC grades the higher education institutions and awards the cumulative grade point on an average scale range of C to A++, which is taken into consideration. In this paper, the analysis has been carried out on recently NAAC-accredited, randomly selected institutions and their awarded scores and will highlight the promotion of quality assurance in the institutions in terms of NAAC parameters. This paper is categorized into three parameters: student-related quality assurance, faculty-related quality assurance, and social and professional perception-related quality assurance. The finding of the study recommends more hands-on experience and real-world task skills for students to be provided so that students will perform well in the placement and competitive exams. Focus on more outcome-based teaching and learning instead of process-based and also special efforts to be made for publication. HEIs also encourage students and faculty to deepen their understanding of a concept through the act of personal experience. HEIs need to focus more on creative alternatives to do the optimal utilization of resources to enhance the students, faculty, and overall development of social and professional challenges; accordingly, students will apply their skills.

**Keywords:** Accreditation, Higher Education Institutions, parameters related to students, faculty, social, and professional.

## 1. Introduction:

The NAAC continues with its focus on quality culture of the institution in terms of quality initiatives, quality sustenance and quality enhancement, as reflected in its vision, organization, operations and the processes. The NAAC has been carrying out the process of quality assessment and accreditation of HEIs over the past three decades. NAAC assessment and accreditation process is completely ICT enabled, objective, transparent, scalable and robust. The assessment process is carried out in three components, viz., Self Study Report (SSR), Student Satisfaction Survey and the Peer Team Report. Currently, NAAC has different types of manuals based on the category of institutions, like universities, autonomous colleges, affiliated colleges, etc. Each manual clearly mentions quality-based parameters (criteria) such as curricular aspects, best curriculum design as per the latest industrial requirement, institutes should emphasize teaching learning, advance learning systems as per modern learning techniques, research innovation, skill enhancement, resource mobilization, student support, progression and performance, learning outcomes, governance, leadership and management, faculty empowerment strategies, and institution is impactful in this is a sure reflection of its quality in institutional values and social responsibilities.

### 1.1. Background:

The background of the study is basically focused on quality assurance in higher education institutions. In this paper, which is focused on student-related quality parameters, faculty-related quality assurance and social and professional perception-related quality assurance have been covered. To promote students and teachers to build for research, innovation, use of high technology, creativity in knowledge transfer, and entrepreneurial moral leadership; enhancement of social access to higher education; nation building through extension programs for community development; and promotion of collaboration with national and overseas agencies. The best practices, institutional distinctiveness, gender equity, environmental consciousness, sustainability, inclusiveness, and professional ethics are reflected in terms of the kinds of programs, activities, and preferences (values) that it incorporates within its regular functioning and evolves practices that will always be unique. Till now, NAAC has accredited more than approximately 12,000 HEIs out of more than 45,000 HEIs, including universities and colleges.

### 1.2. Objective:

The objective of this paper is to study and analyze the NAAC-accredited HEIs to promote quality in teaching and learning based on NAAC parameters that are related to student, faculty, and social and professional perception aspects. (Details are mentioned in tables 1, 2, & 3.)

### 1.3. Methodology:

In this paper, recently NAAC-accredited, randomly selected ten institutions based on factual data (provided by HEIs) are taken for the analysis purpose, which reflects the promotion of quality in teaching and learning. For the same, the null hypothesis and alternative hypothesis are formulated as follows:

#### 1.3.1. Null Hypothesis (H0)

There is no significant relationship/association between the promotion of quality assurance in teaching-learning parameters such as students, faculty, and institutions and its societal impact.

#### 1.3.2. Alternate Hypothesis (H1)

There is a significant relationship/association between the promotion of quality assurance in teaching-learning parameters, such as students, faculty, and institutions, and its societal impact.

### 1.3.3. Alternate Hypothesis (H2)

There is a minor relationship/association between the promotion of quality assurance in teaching-learning parameters such as students, faculty, and institutions and its societal impact.

## 2. Data Analysis:

In this paper, ten randomly selected NAAC-accredited institutions are taken for the analysis purpose. The NAAC Manual consists of different parameters and various types of key indicators, which consist of quantitative and qualitative metrics based on system-generated scores related to students, faculty, and social and professional perception based on a five-point Likert scale, viz., (0, 1, 2, 3, & 4), where 0 is the minimum score value and 4 is the highest score value, which are taken for the investigating purpose.

### 2.1. Student-related Quality Assurance Parameters:

There are sixteen metrics related to student quality assurance of ten HEIs that are taken, in which the scores are as follows: (Details scores in Table 1)

#### 2.1.1. For first to five metrics as reflected on table 1 and Figure 1:

Number of Pass Students, Student Placement, Students going for higher education, students going for entrepreneurship/start-ups, and value-added courses offered and online courses of MOOCs, SWAYAM, and NPTE.

It is observed that out of 10 HEIs, in pass percentage of students, 3 HEIs score four, 3 HEIs score three, 3 HEIs score two, and only 1 HEI scores one, and in student placement, 2 HEIs score four, 2 HEIs score three, 2 HEIs score two, 2 HEIs score one, and 2 HEIs score zero. Students going for higher education in this metric: there are 2 HEIs scores four, 2 HEIs scores three, 2 HEIs scores two, 2 HEIs scores one and 2 HEIs scores zero. In entrepreneurship/start-ups, there are 5 HEI scores of four, 4 HEI scores of one, and only 1 HEI score of zero. Value-added courses: 4 HEIs score four, 2 HEIs score two, 2 HEIs score one, 1 HEI scores three, and 1 HEI scores zero.

#### 2.1.2. For six to ten metrics as reflected on table 1 and Figure 2:

Curriculum planning and delivery through a well-planned and documented process, including an academic calendar and the conduct of continuous internal assessment, professional ethics, gender, human values, and the environment and sustainability in transacting the curriculum, Students undertaking project work/fieldwork/internships, online student satisfaction surveys, and internal/external assessments are transparent, and the grievance redressal system is time-bound and efficient.

In curriculum planning and delivery through a well-planned system, there are 3 HEIs that score four, and 7 HEIs score three. Professional ethics, gender, human values, and the environment: in this metric, 4 HEIs score four, 4 HEIs score three, and 2 HEIs score two. In students undertaking project work/fieldwork/internships, there are 8 HEIs that score four, 1 HEI that scores two, and 1 HEI that scores zero, and in the online student satisfaction survey, all the 10 HEIs are scored more than three. Internal/external assessment is transparent, and the grievance redressal system is time-bound and efficient; 7 HEIs are scores of three, and 3 HEIs are scores of four.

#### 2.1.3. For eleven to sixteen metrics as reflected on table 1 and Figure 3:

Programme Outcomes (POs) and Course Outcomes (COs): students benefited from scholarships and free-ships, skills enhancement activities for students, students benefited from guidance for competitive examinations and career counselling, students qualifying in state, national, or international level examinations, and awards/medals for outstanding performance in sports/cultural activities at the university/state/national/international level.

In Programme Outcomes (POs) and Course Outcomes (COs): 2 HEIs score four, 6 HEIs score three, and 2 HEIs score two. Students benefited from scholarships and free ships. There are 3 HEIs that score four, 1 HEI that scores three, 1 HEI that scores two, 2 HEIs that score one and 2 HEIs that score zero, and in skills enhancement activities for students, 7 HEIs score four, and 3 HEIs score two. In students benefitted by guidance for competitive examinations and career counselling, there are 4 HEIs that have scores of four, 3 HEIs score one, 1 HEI scores two, and 2 HEIs score zero, and students qualifying in state/national/international level examinations scores are 5 HEIs score one, 2 HEIs score four, and 3 HEIs score zero. 4 HEIs score four, 2 HEIs score one, 1 HEI scores two, and 3 HEIs score zero in awards/medals for outstanding performance in sports/cultural activities.

Student-related Quality Assurance Parameters (Metrics)											
Sl. No	Parameters (Metrics wise scores)	HEIs...1,2,3.....10									
		1	2	3	4	5	6	7	8	9	10
1	Number of Pass Students	3	3	2	2	4	4	4	1	2	3
2	Student Placement	2	3	2	0	3	4	0	1	4	1
3	Students going for Higher education	2	3	2	0	3	4	0	1	4	1
4	Students going for entrepreneurship / startups	4	4	4	1	4	4	1	1	1	0
5	Value added courses offered and online courses of MOOCs, SWAYAM, NPTE	4	4	4	2	2	4	0	1	3	1
6	Curriculum planning and delivery through well-planned and documented process including Academic calendar and conduct of continuous internal Assessment	4	3	3	3	3	3	3	4	4	3
7	Professional Ethics, Gender, Human Values, Environment and Sustainability in transacting the Curriculum	4	4	3	4	3	3	2	4	3	2
8	Students undertaking project work / field work / internships	4	4	4	2	4	4	0	4	4	4
9	Online student satisfaction survey	3.87	3.85	3.85	3.8	3.2	3.77	3.96	3.55	3.89	3.97
10	Internal / external assessment is transparent and the grievance redressal system is time-bound and efficient	4	4	3	3	3	3	3	3	4	3
11	Programme Outcomes (POs) and Course Outcomes (COs)	4	3	2	3	3	3	3	3	4	2
12	Students benefited by scholarships and freeships	0	4	4	0	4	3	0	1	1	2
13	Skills enhancement activities for students	2	4	4	2	4	4	4	4	4	2
14	Students benefitted by guidance for competitive examinations and career counseling	4	4	4	1	2	1	0	1	4	0
15	Students qualifying in state / national / international level examinations	1	4	1	1	1	4	0	0	1	0
16	Awards / medals for outstanding performance in sports / cultural activities at University / state / national / international level	1	4	4	0	2	4	0	1	4	0

Table 1: Student-related Quality Assurance Parameters.



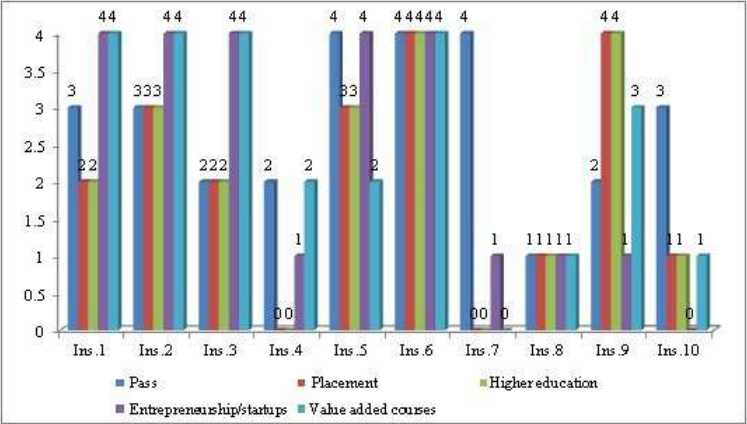


Figure 1.1. Student-related Quality Assurance (for first to five metrics).

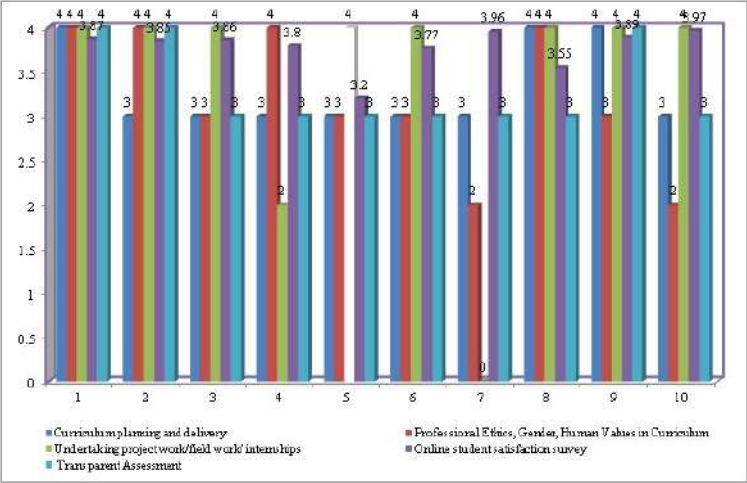


Figure 1.2. Student-related Quality Assurance (for six to ten metrics).

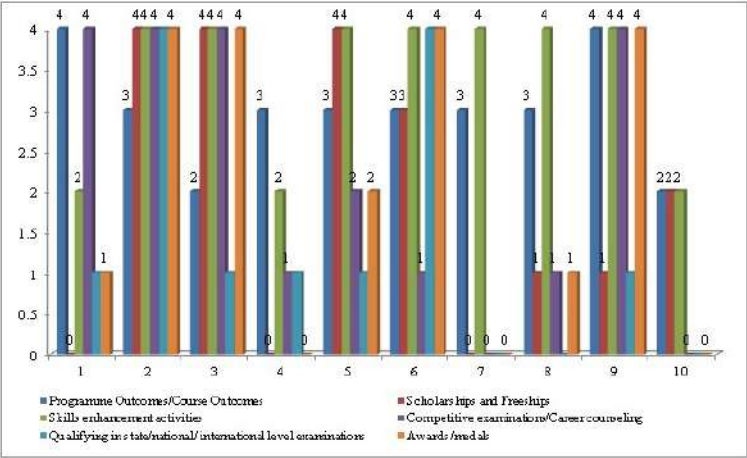


Figure 1.3. Student-related Quality Assurance (for eleven to sixteen metrics).

2.2. Faculty-related Quality Assurance Parameters:

There are six parameters related to faculty quality assurance of ten HEIs that are taken, in which the scores are as follows: (Details of scores are mentioned in Table 2.)

2.2.1. For first to six metrics as reflected on table 2 and Figure 2:

Teachers with NET/SET/SLET/Ph.D./D.Sc./D.Litt./L.L.D., research papers published, books published, and papers published in national/international conferences; a performance appraisal system; effective welfare measures for teaching and non-teaching staff and avenues for career development/progression; teachers provided with financial support to attend conferences/workshops and towards membership fees of professional bodies; and teaching and non-teaching staff participating in Faculty Development Programmes (FDP) and Management Development Programmes (MDPs) professional development/ administrative training programs.

It is observed that out of 10 HEIs, 4 HEIs score four, 1 HEI scores three, 4 HEIs score zero, and only 1 HEI scores one in teachers with NET/SET/SLET/Ph.D./D.Sc./D.Litt./L.L.D. In research papers published in metric, it seems as per Table 2, out of 10 HEIs, 8 HEIs score one, 1 HEI scores three, and 1 HEI scores two. Out of 10 HEIs, 9 HEIs score one, and 1 HEI scores zero in books published and papers published in national and international conferences. It is observed that out of 10 HEIs, 2 HEIs score four, 5 HEIs score three, 2 HEIs score two, and 1 HEI scores one in the performance appraisal system, effective welfare measures for teaching and non-teaching staff, and avenues for career development / progression. In teachers provided with financial support to attend conferences/workshops and towards membership fees of professional bodies in this metric, out of 10 HEIs, 4 HEIs score one, 2 HEIs score three, and 4 HEIs score zero. Teaching and non-teaching staff participating in faculty development programs (FDPs) and management development programs (MDPs) for professional development/administrative training programs, it is observed that out of 10 HEIs, 4 HEIs score one, 2 HEIs score two, 1 HEI scores four, and 3 HEIs score zero.

Faculty-related Quality Assurance Parameters (Metrics)											
Sl. No	Parameters (Metrics wise scores)	HEIs...1,2,3.....10									
		1	2	3	4	5	6	7	8	9	10
1	Teachers with NET / SET / SLET / Ph. D. / D.Sc. / D.Litt. / L.L.D.	0	3	4	0	4	0	0	1	4	4
2	Research papers published	1	1	2	1	1	1	1	1	1	3
3	Books published and papers published in national / international conference	1	1	1	1	1	1	0	1	1	1
4	Performance appraisal system, effective welfare measures for teaching and non-teaching staff and avenues for career development / progression	2	4	2	3	4	3	1	3	3	3
5	Teachers provided with financial support to attend conferences / workshops and towards membership fee of professional bodies	1	3	1	0	3	1	0	0	1	0
6	Teaching and non-teaching staff participating in Faculty development Programmes (FDP), Management Development Programmes (MDPs) professional development / administrative training programs	1	2	1	0	2	4	0	1	1	0

Table 2: Faculty-related Quality Assurance Parameters.

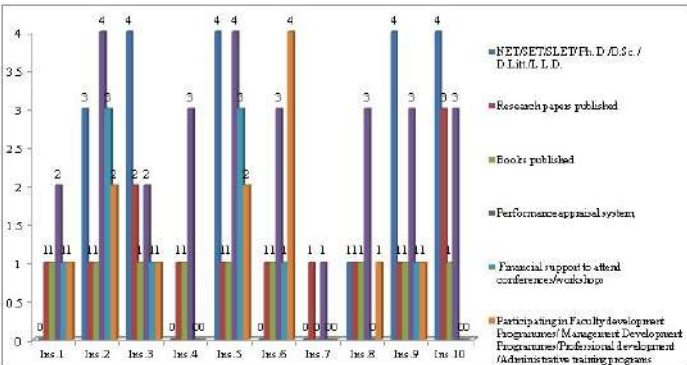


Figure 2. Faculty-related Quality Assurance (for first to six metrics).

### **2.3. Social and Professional Perception-related Quality Assurance Parameters:**

There are twenty parameters related to social and professional perception quality assurance of ten HEIs that are taken, in which the scores are as follows: (Details scores in Table 3)

#### **2.3.1. For first to five metrics as reflected on table 3 and Figure 1:**

Sports and cultural activities leading to state-level/national-level recognition: the institution has created an ecosystem for innovations, the Indian Knowledge System (IKS), including awareness about Intellectual Property Rights (IPR), establishment of an IPR cell, incubation center, and other initiatives for the creation and transfer of knowledge/technology, and the outcomes of the same are evident. Feedback from employers, functional Memorandum of Understandings (MoUs) / linkages with institutions/industries in India and abroad for internships, on-the-job training, project work, student/faculty exchange, and collaborative research.

It is observed that out of 10 institutions, 3 HEIs score four, 2 HEIs score two, 3 HEIs score zero, and 2 HEIs score one in sports and culture. In these parameters, it is observed that out of 10 institutions, 7 HEIs score three, 2 HEIs score two, and 1 HEI scores one in the ecosystem for innovations, the Indian Knowledge System (IKS), the establishment of the IPR cell, the incubation center, and other initiatives for the creation and transfer of knowledge/technology, and the outcomes of the same are evident. Feedback from employers out of 10 institutions in feedback from employers: 8 HEIs score four, and 2 HEIs score three, and in functional MoUs/linkages with institutions/industries in India and abroad for internships, on-the-job training, project work, student/faculty exchange, and collaborative research, it is observed that out of 10 institutions, 4 HEIs score four, 4 HEIs score one, 1 HEI scores three, and 1 HEI scores two. Out of 10 institutions, 2 HEIs score two, 2 HEIs score one, 5 HEIs score zero, and 1 HEI scores four in government and non-governmental agencies for research projects/endowments in the institution.

#### **2.3.2. For six to ten metric as reflected on table 3 and Figure 2:**

Awards and recognitions received, outreach programs conducted by the institution, adequate infrastructure, digital facilities using Integrated Library Management System (ILMS), and IT facilities provide sufficient bandwidth for internet connection.

Out of 10 institutions, 6 HEIs scored three, and 4 HEIs scored two in awards and recognitions received. In outreach programs conducted by the institution, 7 HEIs scored four, and 3 HEIs scored three. Inadequate infrastructure: out of 10 institutions, 5 HEIs score three, 3 HEIs score four, and 2 HEIs score two. In digital facilities using Integrated Library Management System (ILMS), 7 HEIs score three, 2 HEIs score four, and 1 HEI scores two. IT facilities and provides sufficient bandwidth for internet connection 7 HEIs score three, 2 HEIs score four, and 1 HEI scores two.

#### **2.3.3. For eleven to fifteen metrics as reflected on table 3 and Figure 3:**

The Alumni Association that contributes to institutional governance and leadership and institutional bodies is effective and efficient, as visible from policies, administrative setup, appointment, service rules, and procedures, e-governance in its operations, and the Internal Quality Assurance Cell (IQAC) has contributed significantly to institutionalizing the quality assurance strategies and processes.

In an alumni association that contributes 4 HEIs, scores three, 4 HEIs score two, and 2 HEIs score four. Institutional governance and leadership: out of 10 institutions, 4 HEIs score four, 4 HEIs score three, and 2 HEIs score two. In An institutional body is effective and efficient as visible from policies, administrative setup, appointment, service rules, and procedures. 7 HEIs score three, and 1 HEI scores two; 1 HEI scores four, and 1 HEI scores one. In e-governance in its operations, out of 10 institutions, 8 institutions score four, 1 HEI scores three, and 1 HEI scores two. The Internal Quality Assurance Cell (IQAC) has contributed significantly to institutionalizing the quality assurance strategies and processes in these 7 HEIs, scoring three; 1 HEI scores four, and 2 HEIs score two.

#### **2.3.4. For sixteen to twenty metrics as reflected on table 3 and Figure 4:**

Academic and Administrative Audit (AAA) and follow-up action taken, institutional values and social responsibilities, best practices, institutional distinctiveness, and the institution has strategies for mobilization and optimal utilization of resources and funds from various sources (government/nongovernment organizations), and it conducts financial audits regularly (internal and external).

Academic and Administrative Audit (AAA) and follow-up action taken: there are 6 HEIs scoring four, 3 HEIs scoring three, and 1 HEI scoring two. 7 HEIs score three, 1 HEI scores four and 2 HEIs score two in institutional values and social responsibilities. In best practices it is observed that out of 10 institutions, 6 HEIs score three, 3 HEIs score four, and 1 HEI scores two. Institutional Distinctiveness in this 3 HEIs scores four, 3 HEIs scores three, 3 HEIs are scores two, and 1 HEI scores zero, and 6 HEIs scores three; 1 HEI scores four, and 3 HEIs scores two in institution has strategies for mobilization and optimal utilization of resources and funds from various sources.

Student-related Quality Assurance Parameters (Metrics)											
Sl. No	Parameters (Metrics wise scores)	HEIs...1,2,3.....10									
		1	2	3	4	5	6	7	8	9	10
1	Sports and cultural activities leading to state level / national level recognition	2	4	4	0	2	4	0	1	1	0
2	Institution has created an ecosystem for innovations, Indian Knowledge System (IKS),including awareness about IPR, establishment of IPR cell, Incubation centre and other initiatives for the creation and transfer of knowledge / technology and the outcomes of the same are evident	3	3	3	2	3	3	1	3	3	2
3	Feedback from employers	4	4	4	4	4	4	3	4	4	3
4	Functional MoUs/linkages with institutions / industries in India and abroad for internship, on-the-job training, project work, student / faculty exchange and collaborative research	4	4	3	1	2	4	1	1	4	1
5	Government and non-governmental agencies for research projects / endowments in the institution	1	2	2	0	1	4	0	0	0	0
6	Awards and recognitions received	3	3	3	3	3	2	2	2	3	2
7	Outreach programs conducted by the institution	4	4	2	2	4	4	4	4	4	2
8	Adequate infrastructure	3	4	3	3	3	4	4	3	2	2
9	Digital facilities using Integrated Library Management System (ILMS)	3	3	3	3	4	4	2	3	3	3
10	IT facilities and provides sufficient bandwidth for internet connection	4	3	3	4	3	3	3	3	3	2
11	Alumni Association that contributes	4	3	3	3	2	2	2	3	4	2
12	Institutional governance and leadership	3	4	4	3	4	3	2	4	3	2
13	Institutional bodies is effective and efficient as visible from policies, administrative setup, appointment, service rules, and procedures	3	4	3	3	3	2	1	3	3	3
14	e-governance in its operations	4	4	4	2	4	4	4	4	4	3
15	Internal Quality Assurance Cell (IQAC) has contributed significantly for institutionalizing the quality assurance strategies and processes.	3	4	3	3	3	3	2	3	3	2
16	Academic and Administrative Audit (AAA) and follow-up action taken	4	4	4	3	4	3	4	3	4	2
17	Institutional Values and Social Responsibilities	3	3	3	3	3	3	2	3	4	2
18	Best Practices	3	4	4	3	3	3	2	3	4	3
19	Institutional Distinctiveness	4	3	4	2	4	3	0	2	3	2
20	Institution has strategies for mobilization and optimal utilization of resources and funds from various sources (government / nongovernment organizations) and it conducts financial audits regularly (internal and external)	2	3	3	3	4	3	2	3	3	2

Table 3: Social and Professional Perception related Quality Assurance Parameters.

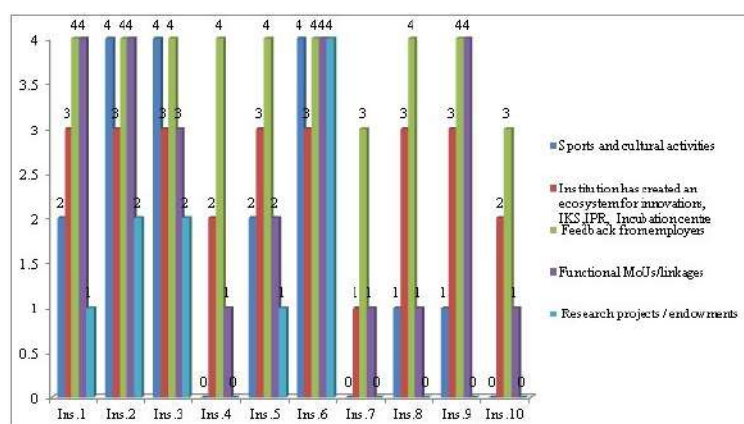


Figure 3.1. Social and Professional Perception related Quality Assurance (for first to five metrics).

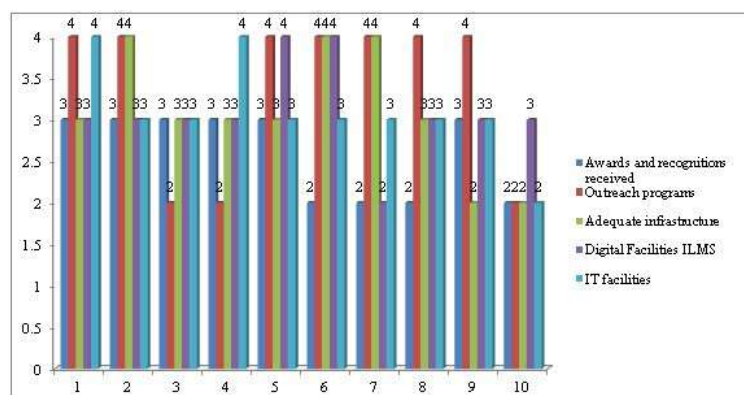


Figure 3.2. Social and Professional Perception related Quality Assurance (for six to ten metrics).

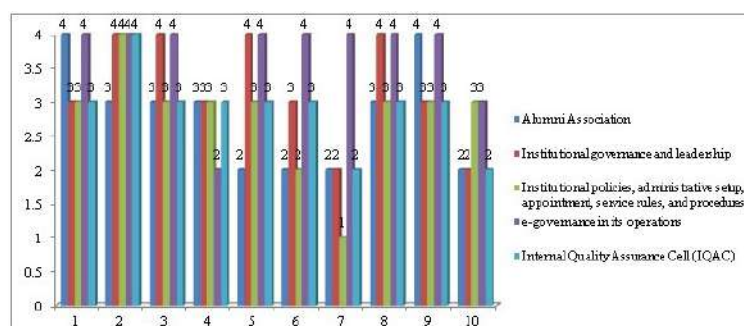


Figure 3.3. Social and Professional Perception related Quality Assurance (for eleven to fifteen metrics).

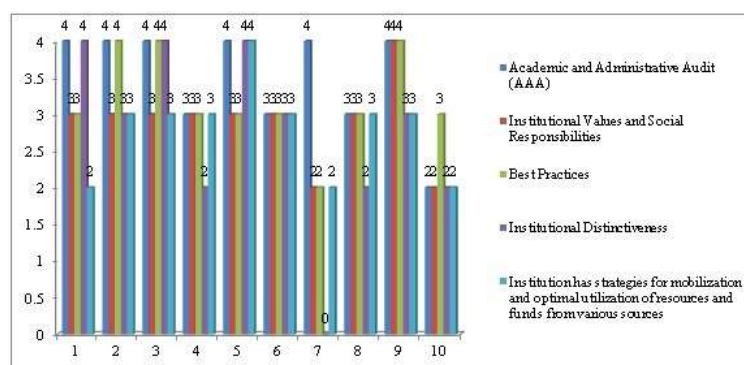


Figure 3.4. Social and Professional Perception related Quality Assurance (for sixteen to twenty metrics).



### **3. Scopes and Limits:**

As per table 1, figures 1.1, 1.2, and 1.3, as mentioned, the institutions are performing averages in number of pass percentage of students, entrepreneurship/start-ups, value-added courses, curriculum planning, program outcomes (POs), course outcomes (COs), students qualifying in various level examinations, and awards/medals/sports/cultural activities. Institutions are not performing well in placement, scholarships, competitive examinations, and career counselling. Institutions are performing well in professional ethics, transparent assessment, and the grievance redressal system.

The Institutions are performing averagely in performance appraisal systems and effective welfare measures. Institutions are not performing well in research, conferences, financial support, participating in professional development, and administrative training programs.

The institutions are performing well in outreach programs, infrastructure, library management systems, alumni, governance and leadership, administrative setup, and optimal utilization of resources. The institutions are not performing well in innovations, the Indian Knowledge System (IKS), IPR cell, Memorandum of understanding, linkages, and research projects. The institutions perform averagely in sports, culture, awards/recognitions/institutional values, and social responsibilities.

### **Conclusion:**

This study is associated with the promotion of quality in teaching and learning in NAAC-accredited, randomly selected HEIs on three parameters, such as students, faculty, and social and professional perception. Based on analysis, students performed well in results, regular curriculum, value-added courses, etc.; however, students did not perform well in placements, competitive exams, and career counselling-related activities. Faculties are not well in research and industry-based skill sets. Social and professional perceptions of the institutions are not good in innovation, research projects, endowments, etc. The finding of the study recommends more training and placement skills for students to be provided so that they will perform well in the placement and competitive exams. Focus on more outcome-based teaching and learning instead of process-based, and also special efforts to be made for publication and research for teachers as well as students. HEIs also enhance collaboration with industrial and research-based trainers for faculty as well as students to improve their skill sets.

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# The impact of internal quality assurance on academic staff performance of non-state higher education institutes in sri lanka

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## Abstract

*It was identified that very few academic staff in Non-State Higher Education Institutes (NSHEI) engage in research at present, and the status of practicing performance appraisal for academic staff is low. Furthermore, the promotion procedure and yearly research awards are the only methods for rewarding innovation, excellence, and scholarship. However, most of the academic staff members are dissatisfied, and their performance has suffered because of a variety of factors. Staff Development Training, Student Feedback, and Peer Observation are the key functions of the IQAU. Hence, it is important to investigate the IQA on Academic Staff Performance in NSHEIs in Sri Lanka. The sample consisted of 400 academic staff from 21 NSHEIs. The main objective of the study is to investigate the dimensional perspective of IQA and academic staff performance of NSHEIs in Sri Lanka. SPSS and AMOS were used to analyze data. The findings of the study established there is a strong positive relationship between the dimensional perspectives of IQA (Staff Development Training, Student Feedback, Peer Observation) and Academic Staff Performance.*

*Furthermore, there is a relationship between IQA and the happiness of academic staff. In addition, there is a relationship between the happiness of academic staff and academic staff performance. Furthermore, the study sought to establish the mediating effect of academic staff happiness on the relationship between internal quality assurance and academic staff performance of NSHEIs in Sri Lanka. Finally, the researchers conclude that institutional support partially mediates the relationship between internal quality assurance and academic staff performance.*

**Keywords:** Institutional Support, Internal Quality Assurance, Staff Development, Staff Happiness, Staff Performance

## Introduction

It is common knowledge that education is a key role in a nation's development and economy (Anon., 2017). Since 1978, the non-state sector has been permitted to grant degrees as part of the nation's higher education program by the University Grants Commission (UGC) of Sri Lanka, the highest body of the Sri Lankan state university system, in order to address the problem of university entrance (Rajapakshe, 2021). As a result, the NSHEIs currently play a significant role in the higher education sector. Many higher education institutions have taken advantage of this possibility. In Sri Lanka, there are 21 non-state higher education institutions (HEIs) with the degree-awarding status that offer 98 Bachelor's Degrees, 35 Postgraduate, Master Level Degrees, and 9 Doctoral Degrees (Anon., 2020)

One of the requirements in the process of gaining institutional recognition and program approval is the staff's academic and research competencies (Anon., 2013). Additionally, academic staff members must be capable and consistently involved in research and development. The educational environment should be conducive to making students and faculty feel at ease when undertaking academic activities, per the standards for topic review approval (Anon., 2013).. To encourage staff to contribute to raising the academic standards of the institutions, adequate resources and welfare benefits should be provided. However, it was discovered that the majority of institutes lacked the necessary trained personnel to carry out those degree programs. A crucial component that has steadily attracted serious attention from higher education institutions around the world is quality assurance (QA) (HEIs) (Peiris & Wickramasinghe, 2015). It must be a continuing, continual process. IQA structures are meant to bring together employees of the same company so they may collaborate and learn from one another, share best practices, and acknowledge each other's accomplishments and efforts (The ultimate aim of the IQA frameworks is to build (or inculcate) the «Quality Culture» within the organization, based on, 2007). In order for NSHEIs in Sri Lanka to provide degrees, the establishment of IQAU is necessary. Sometimes referred to as — «quality enhancement» sectors, internal processes assist institutions in enhancing their performance (Anon., 2013).

Any HEI's success depends greatly on the effectiveness and satisfaction of its academic staff. To improve the quality of the institution, it is essential to encourage businesses to establish centers for research and training, raise awareness among all parties involved in education, ensure that working conditions and teacher workload are up to par, and support lecturers in their fields in attending conferences, seminars, and workshops (Farkiya, 2016). Since no previous research of this kind has been done, it is crucial to investigate the connection between Internal Quality Assurance and Academic Staff Performance of NSHEIs in Sri Lanka.

The accuracy of the analysis procedures is ensured by the IQAU. Academic staff should also possess the competence and exhibit ongoing involvement in research and development (Secretary, 2013). It was determined that just 20% of the academic staff at NSHEIs now engage in research. The majority of private universities offer education that is far lower quality than that offered by foreign universities (Rajapakshe, 2021).. It seems that university teachers lack research and originality. Competent educators favor concentrating on classroom instruction over intellectual research. The quality of university education may have an impact on the growing divide between academic expertise and practical practices.

These fragments of evidence demonstrate Sri Lanka's severe academic and technological lag, which is a major problem for private sector HEIs (Rajapakshe, 2021). The fundamental duty of HEIs is to make sure that their staff members are of a high grade and to provide them with a welcoming environment that enables them to perform their tasks effectively (European Association for Quality Assurance in Higher Education (ENQA), 2015). Such an environment promotes

scholarly work to improve the connection between education and research; encourages innovation in teaching methods and the use of new technology; and provides chances for and supports the professional growth of teaching personnel. Any firm should prioritize employee happiness since it increases output and performance (Bangun, et al., 2021).

When applying for degree-giving status at NSHEIs in Sri Lanka, the establishment of IQAU is a crucial criterion (Secretary, 2013). The findings of the prior study indicate a relationship between staff performance in HEIs and other industries and staff satisfaction, organizational support, student feedback, peer observation, staff development training, and peer observation (primary activities of the IQA). To preserve the caliber and level of the NHEIs in Sri Lanka, it is timely and essential to look into the relationship between such variables in the context of NSHEIs.

The study's primary objective is to build a model to analyze how Internal Quality Assurance (IQA) affects academic staff performance. IQA and academic staff performance are influenced by institutional support and academic staff performance, respectively.

### **1. Literature Review**

In 2014, Ruesseler, Kalozoumi-Paizi, Schill, Knobe, Byhahn, Müller, Marzi, and Walcher conducted a prospective observational study on the effect of peer feedback on the performance of lecturers in emergency medicine (Ruesseler, et al., 2014). The results of the study demonstrated that a lecturer's performance is significantly impacted by peer observation. In order to bring about change, peer observation aims to promote practice sharing and raise self-awareness of the impacts of one's teaching practice. Additionally, it helps professors develop their own skills and a common understanding of good teaching techniques (Anon., 2018).

The institution must offer continual training to current and new teachers in order to maintain and improve teaching delivery standards (Sok-Foon, et al., 2012). In order to maintain their performance, it is always best for professors to stick to their areas of expertise and refrain from being offered too many new courses all the time.

Performance and motivation are impacted by a lack of advancement chances. On the other hand, respondents highlighted poor promotion policies as a roadblock to professional advancement after training (Pillay, et al., 2015). The performance of the teacher is mostly considered while rating students. (Lutovac, et al., 2016).

Despite some skepticism regarding some of the effects of university-based training programs, the data also demonstrated positive attitudes on the influence of training on job performance at universities (Al-Mzary, et al., 2015). The study discovered that staff performance benefited from training and development.

Dewiana Novitasari did a study to find out how perceived organizational support affected the academic staff's performance at a private university in Tangerang. The results of this study show that perceived organizational support affects lecturer performance favorably and significantly, both directly and indirectly through lecturer engagement mediation (Novitasari, 2020). The association between work performance and perceived organizational support in faculty members at Chinese institutions was the subject of a different study (Guan, et al., 2014). A second study was done to look into how personality, aptitude, organizational support, job satisfaction, and organizational commitment affected the performance of lecturers at a private university in Gorontalo (Darman, et al., 2017). According to the research's findings, organizational support, talent, and personality all have an impact on performance, both directly and indirectly. Rocha and Chelladurai (2011) assert that perceived organizational support has a significant impact on performance. The results of this study indicate that perceived organizational support has a positive and significant influence on lecturer performance (Novitasari, 2020).

Researchers Bangun, Pritasari, Widjaja, Wirawan, and Ginting looked into how lecturers' job performance in higher education was related to their level of happiness and attitudes toward technology. This study found that the relationship between attitude toward digital technology and job performance was completely mediated by happiness. Additionally, this research discovered that, to a certain extent, happiness moderated the relationship between job satisfaction and performance (Bangun, et al., 2021). Businesses should value employee happiness since it improves output and performance. Numerous studies indicate that happiness significantly affects work performance in educational institutions. According to Gholami et al. (2013), job performance and employee happiness are strongly and favorably correlated in educational institutions.

A higher level of enjoyment is characterized by a strong sense of identity. The belief that one's work makes a positive contribution to society may be a sign that one is a content university instructor (Arora, 2020). It has been demonstrated that job happiness significantly improves work output (Arora, 2020). In conclusion, contentment can foster a pleasant teaching and learning environment for both students and lecturers, which will lead to an improvement in lecturers' performance (Appasamy, et al., 2014).

The relevance of staff development quality metrics to educators has increased in the debate over the quality of inservice education (Villar, et al., 2014). Student evaluation can be used to raise standards and enhance teaching and learning (Kinash, et al., 2015). According to Jena and Chakraborty's study, university teachers were shown to have a very high overall motivation for student evaluation, which had a significant impact on the teachers' classroom performance (JENA & CHAKRABORTY, 2014). Peer Observation (PO) is a method used by academic staff to enhance their teaching abilities, boost staff morale, and create a supportive teaching environment. PO is thought to be a helpful strategy for enhancing university professors' instructional abilities and knowledge (Lomas & Kinchin, 2006). According to Blackwell and McLean (1996), Academic staff members get the chance to critically evaluate their instruction through PO, which enhances performance.

### **2. Research Methods**

During the literature review, several journal articles, conference papers, referred theses and dissertations, and expert interviews were done. Five (5) hypotheses were constructed based on the identified independent variables, mediate variables, moderate variables, and dependent variables in the literature review (McGaghie, et al., 2015).

The researcher was able to conceptualize the relationship between the independent and dependent variables. Dimensions of the NSHEIS IQA System: Academic Staff Performance is the dependent variable, Academic Staff Happiness is the mediating variable, Institutional Support is the moderating variable, and Student Feedback, Peer Observation, and Staff Development Training are the independent factors. This would make it possible for the researcher to interpret the data more thoroughly. The research’s conceptual framework is shown in figure 1.

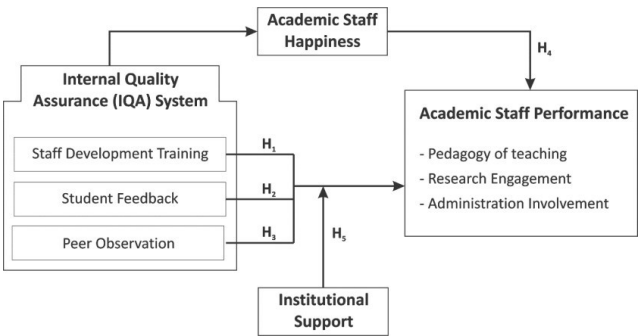


Figure 5: Global Distribution of Countries and Regions Involved in Different Clusters of English Educational Evaluation Research.

H1: Staff Development Training has a positive effect on Academic Staff Performance. H2: Student Feedback has a positive impact on Academic Staff Performance.

H3: Peer Observation has a positive influence on Academic Staff Performance.

H4: Academic Staff Happiness has a mediating effect on the relationship between IQA and Academic Staff Performance.

H5: Institutional Support has a moderating effect on the relationship between IQA and Academic Staff Performance.

Because positivism holds that academic staff performance, Internal Quality Assurance (IQA), academic staff happiness, and institutional support can all be quantitatively examined using well-established theoretical frameworks and structured instruments to assess and analyze it, as well as generalizations can be drawn from the results, positivism was chosen as the study’s theoretical framework. The study, which is descriptive in nature, is used to gather data. As a result, positivist research is most frequently in line with quantitative techniques for gathering and analyzing data. This study applies and tests carefully chosen empirical theories to evaluate the connection between IQA and Academic Staff Performance of NSHEIs in Sri Lanka. Deductive reasoning was thus employed to create relationship hypotheses and uncover the truth. In order to determine the association between IQA and academic staff performance at NSHEIs in Sri Lanka, the research primarily used a survey technique. Consequently, the study makes use of numerical data. The association between IQA and Academic Performance of NSHEIs in Sri Lanka, as determined by data collected from 20 NSHEIs, is the emphasis of the study’s problem statement. The researcher is then interested in certain academic staff members at NSHEIs. Therefore, the individual is the unit of analysis.

The design of the questionnaire was based on how each notion was operationalized. There were two (2) sections in the questionnaire. The researcher includes a number of inquiries to gather background information in section A. (Demographic Data). Information on independent variables was gathered in section B. The questionnaire will employ the most commonly used (1–7) Likert Scale to gauge the sample’s opinion. As of 30.11.2020, 20 NSHEIs have been awarded degree-awarding status by the Ministry of Higher Education (MoHE) (Anon., 2020).

Therefore, academic personnel from those 20 NSHEIs were chosen as the target population. Senior lecturers, lecturers, and assistant lecturers in the key fields of education, business management, banking & finance, engineering, information technology, science, and other disciplines made up the academic staff in question. An element of the population is a sample. It consists of the NSHEIs’ permanent academic staff [20 Permanent Academic Staff (Senior Lecturers, Lecturers and Assistant Lecturers) from each NSHEI], (20 Permanent Academic Staff) \* (20 NSHEIs) = 400

The main justification for choosing just permanent employees was that they were familiar with the institute’s IQA and only received other perks like pay raises, promotions, and research funds. In the study, the researcher looked into the performance of academic staff, and the chosen sample of permanent academic staff members represented a variety of fields, including engineering, IT, management, finance, science, and education. Statistical analysis was then carried out to determine whether there is any correlation between the variables. Cross sectional studies were utilized since data was only collected once, possibly over the course of several months, to address a specific study question. Descriptive statistics were used to analyze quantitative data. The survey data were summarized using descriptive statistics, which comprised percentages, frequencies, means, and standard deviations. Regression analysis was utilized in inferential statistics, on the other hand, which was used to test hypotheses and derive conclusions. Data analysis tools included IBM Statistical Package for the Social Sciences (SPSS) version 20 and AMOS.

### 3. Findings and Discussion.

The researcher used an online questionnaire to gather primary data needed for the study and the questionnaire was developed referring literature related to each variable. After identifying all the variables required for this study through literature review, researcher developed a measurement scale to measure the variables. The main objective of the study is to investigate the dimensional perspective of IQA and academic staff performance of NSHEIs in Sri Lanka. The specific objectives are to explore the relationship between IQA and happiness of academic staff of NSHEIs in Sri Lanka, to identify the relationship between



happiness of academic staff and academic staff performance of NSHEI's in Sri Lanka, to examine the relationship between institutional support and academic staff performance of NSHEI's in Sri Lanka, and to investigate the relationship between institutional support and IQA of NSHEI's in Sri Lanka. To justify the quality of data set, and to analyse the reliability and validity of the survey instrument. IBM Statistical Package for the Social Science (SPSS) ver.20 and AMOS were used to analyse data. The response rate of distributed questionnaire was 92 percent and 387 responses which was considered sufficient for making inferences and drawing conclusions. Descriptive statistics was used to summarise the survey data and included percentages, frequencies, means, and standard deviations. However, inferential statistics involved regression analysis and was used for testing hypotheses and drawing conclusion. Results from quantitative data analysis were presented using figures and tables. Qualitative data was analysed based on common themes and presented in narrative form.

Cronbach's alpha of the selected variables had ranged from 0.731 (acceptable) to 0.933 (excellent). Therefore, all the variables are in the required range. The Reliability Statistics for the entire questionnaire and the value is 0.947. Therefore, the internal consistency is «Excellent». In research, the Kaiser-Meyer-Olkin (KMO) test is used to determine the sampling appropriateness of data for Factor Analysis (Pfluggerer, 2020). The results of KMO values were 0.804 and it is excellent.

All the mean values of variables are very close to the Likert scale 4. Hence, responses with regard to the variables are in agree level. The highest variance belongs to «student feedback» as the minimum standard deviation is 0.61. Minimum variance belongs to «peer observation» as the minimum standard deviation is 0.54. All the coefficients of skewness are between -1 and +1 which indicates that the data are normally distributed. Abs. values of kurtosis are less than three (3) times of std. error of kurtosis that also represent that data are normal.

Coefficients of correlation between them are positive. Their values are more than 0.7 which means that staff development training, student feedback, and peer observation are having strong positive association with academic staff performance. Multiple correlations «R» is 0.920, which indicates that there is a strong joint association between the individual factors and academic staff performance. R-square is 0.846, this indicates that 84.6% of academic staff performance (dependent variable) has been covered by the model. As the value is more than 60%, regression model is nicely fitted. Adjusted R-square is also representing that 83.9% of the dependent variable has been covered by the model. Durbin-Watson test statistic is 1.918, which is very close to 2 and will be between 1.5 and 2.5. Therefore, residuals are independent, and model is valid.

Probability of F test statistics of the regression ANOVA is highly significant as the P value is 0.000. This means that the model is jointly significant and independent factors jointly influence on academic staff performance. Therefore, Model is appropriate.

Probabilities of Staff Development, Peer Observation, Student Feedback are highly significant (less than 0.01) with positive beta values and significantly influence positively on Academic Staff Performance. All the Variance Inflation Factors (VIF) are less than 10 and it indicates that independent factors are not highly correlated. Therefore, no multicollinearity problem in the regression model and the model is highly valid. Probabilities of Kolmogorov-Smirnov and Shapiro-Wilk test are respectively 0.2 and 0.282. As the p values are insignificant, residuals are normally distributed with zero mean. Therefore, results are highly valid.

It is a fact that there is a relationship between the independent and dependent variables. The relationship between Academic Staff Performance and Peer Observation (0.905), Staff Development (0.846), and Student Feedback (0.715) are «Strong».

By considering the significance level of factors in Table 4.3, it shows that the «p-value» of Staff Development Training (0.000), Student Feedback (0.000), and Peer Observation (0.000) which is less than 0.05 ( $P < 0.05$ ) means it is «statistically highly significant». Therefore, can accept all three alternative hypotheses (H1a, H2a, H3a) by rejecting all null hypotheses (H10, H20, H30).

Moreover, the study investigates the Administration Involvement, and the Pedagogy of Teaching. Those have taken as indicators to measure Academic Staff Performance. According to existing information it described 76% of academic staff of the NSHEIs involved in administration and 82% staff members went through the staff development training which cover pedagogy of teaching. Hence, both Administrative Involvement and Pedagogy of Training are in acceptable level.

Further it was attempted to understand how identified dimensions of the Internal Quality Assurance System are affected on Academic Staff Performance. Fact that the Staff Development Training, Student Feedback, and Peer Observation are influenced 87%, 72%, and 91%, respectively on Academic Staff Performance.

Regression emphasizes the strong positive relationship between independent variables and dependent variable. It indicates 85% of variance of Academic Staff Performance with the Staff Development Training, Student Feedback, Peer Observation.

### **Conclusion**

This study looked into how academic staff performance at non-state higher education institutions in Sri Lanka was affected by internal quality assurance systems. The researcher deduced some significant conclusions from the findings. The various views of IQA (Staff Development Training, Student Feedback, Peer Observation), and Academic Staff Performance have a significant positive association with respect to the main objective. Similar to the first particular purpose, IQA and academic staff satisfaction at NSHEIs in Sri Lanka are correlated. Additionally, there is a connection between academic staff performance at Sri Lankan NSHEIs and academic staff contentment, according to the second particular purpose.

The study also looked at how academic staff satisfaction influenced the relationship between internal quality control and academic staff performance at NSHEIs in Sri Lanka. Based on this goal, the researcher draws the conclusion that institutional support mediates the link between internal quality control and academic staff performance to some extent.

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## The Peer-Review Approach in the Internal Quality Assurance System: The ITMO University Case

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### **Abstract:**

*We present the practice of using the peer-review approach in the Internal Quality Assessment System (further referred to as IQAS). We demonstrate how this approach contributes to the professional development of teachers and fosters the creation of a conducive environment for continuous improvement of education quality within an educational institution, as well as the development of principles of openness and cooperation.*

*Peer review approach is the core of the IQAS. This approach can take various forms: evaluation of educational materials, completion of specific surveys, and attending open classes.*

### **1. Internal Quality Assurance (IQA)**

When attempting to determine the key quality indicators in the educational process, it becomes apparent that there is significant uncertainty and terminological ambiguity in this area. The European quality standard provides the following definition of QA in higher education: «the process of establishing confidence among stakeholders that input resources, processes, and outcomes meet expectations or minimum threshold requirements» [10]. It is important to note that this definition does not include elements of improvement, as it focuses on defining minimum threshold requirements.

In research dedicated to the quality of education, three paradigms of QA in education are proposed: internal, external, and future [3]. Internal QA focuses on improving the internal environment and processes, ensuring the effectiveness of teaching and learning to achieve planned goals. External QA guarantees that educational services meet the needs of stakeholders and are accountable to the public. QA in the future emphasizes the necessity of ensuring the relevance of goals, content, practices, and outcomes of education for future generations.

#### **1.1. IQAS**

The analysis of European approaches has highlighted the importance of achieving set goals in the field of education quality at all stages of the educational process, including: alignment of program goals with institutional strategy and the presence of clearly defined expected learning outcomes; comprehensive development of the faculty, transparency of procedures regulating the educational process, and quality assessment procedures; as well as student-centered approach through educational, scientific, extracurricular opportunities for students, and active learning [11].

Emphasizing the special role of transparency in QA procedures in higher education institutions, several components can be highlighted:

- Compliance of the educational process with specific state standards, as well as requirements of professional communities (professional-public association);
- Meeting the demands and needs of educational process stakeholders (sociological approach) [8];
- Development and formation of certain knowledge, skills, and abilities in students, which form the basis for the formation and development of competencies or the quality of educational outcomes (competency-based approach).

#### **1.2. The role of teachers in higher education**

When determining the quality of education in a university, it is necessary to consider that it depends on the involved stakeholders. Therefore, QA services may strive to build a «multidimensional quality space» [7]. When discussing QA, special attention is given to the work of teachers. On the one hand, teachers are experts in their subject areas and possess teaching technologies and methods. On the other hand, teachers in higher education institutions must have effective pedagogical skills to ensure student learning outcomes now. They also need to collaborate with students, colleagues from other departments, and external stakeholders as members of a dynamic educational community [6]. Therefore, evaluating a teacher's performance as a crucial component significantly contributes to the quality of the educational process.

#### **1.3. Peer review**

When analyzing works dedicated to peer review, there is a noticeable terminological ambiguity. In some cases, peer review is understood as the mutual evaluation of colleagues' materials, the assessment of teaching practices, or the evaluation of a teacher's performance based on certain criteria. It seems that each university should establish its unique peer review system that aligns with its goals and development strategy.

In the sphere of higher education, a key issue for teachers is their professional development. The dynamics of professional development can serve as justification for personnel decisions. Administrators make decisions regarding promotions, contract extensions, or bonuses. In a broad sense, peer review allows for a comprehensive review of a teacher's materials and the exploration of the «philosophy» behind their teaching. More specifically, peer review involves teachers observing their colleagues' classes [9].

Peer review approach includes defining the purpose, subject, and object of evaluation, as well as the outcomes [12]. According to the most common objectives, three variations of peer review were identified: evaluation, development,

or collaboration. Peer review is typically conducted by more experienced colleagues or those who have achieved significant results in the field of the selected course. Some teachers believe that experts compile reports to identify negative aspects of a colleague's work. However, when organized correctly, peer review is aimed at ensuring quality rather than defining weaknesses.

## **2. The ITMO University Case**

### **2.1. The ITMO IQAS**

The ITMO IQAS has been developed since 2016 [4]. Prior to this point, student surveys were conducted, and some aspects of peer review were implemented, but these activities were not systematic. There arose a need to create a comprehensive, regular, and all-encompassing system for evaluating the quality of education.

Quality of education at ITMO is understood as an interconnected structure consisting of three main components: quality of outcomes, quality of processes, and quality of conditions. The quality of each component influences the quality of the others [5].

The university's activities in the field of quality are aimed at preparing and implementing methodological recommendations to enhance the quality of developing and implementing measures for evaluating quality, improving and modernizing the educational process, collecting and analyzing feedback from students and teachers to ensure compliance with standards and quality indicators, as well as making personnel decisions based on data.

#### **2.1.1. Description of The ITMO IQAS**

The IQAS is set of evaluation activities conducted to obtain objective information regarding the quality of education at the university, based on the implementation of educational programs and analysis of the information obtained. The components of education quality that were mentioned above have also been developed in ITMO IQAS. Let's elaborate on each of them.

Quality of conditions consists of quality indicators used in training of enrolled students, as well as personnel, infrastructure, and educational-methodical support of the educational process.

Quality of the process implies indicators of student success (academic performance, dropout rates, transfers to other educational programs). The assessment of quality considers the professional development of students and the internationalization of the educational program.

Quality of results is evaluated through the final retention of students, innovative formats of their thesis, and the analysis of graduates' employment. The university operates the «Regulation on the IQAS of ITMO University». It contains normative references to the laws and regulations of the Russian Federation regulating the education quality assessment system. The document provides a detailed description of all activities within the IQAS (monitoring the quality of educational programs, teaching disciplines, quality of student training, their satisfaction with the quality of the educational process, educational-methodical materials, and material-technical support), as well as many other aspects of the education quality assessment system.

#### **2.1.2. The role of teachers**

The teacher plays a key role in the quality assessment system. Teachers have been participants in working groups involved in developing assessment activities and the competency matrix for ITMO teachers.

The competency matrix for ITMO teachers is a set of manifestations across 5 groups of competencies (subject-specific, pedagogical, cross-professional, digital, and values competencies). There are 3 levels of competency development: basic, advanced, and leadership. The matrix serves as a standard against which ITMO teachers are compared. Additionally, the competency matrix is a tool for teachers to self-assess their competencies, serving as a guide to strive towards.

Each university teacher could participate in the educational process quality assessment procedures. There are various ways to assess competencies, such as student ratings, graduate feedback, employer feedback, peer evaluations, teacher scholarships and awards, learning outcomes, teaching portfolios, etc [2].

Some data sources are used more frequently, such as student assessment, peer assessment, self-assessment, and dean assessment. Peer assessment of teachers can take various forms: assessment of materials, formative surveys, or classroom observations. A major drawback of peer review as an assessment method is the limited data available since experts can only observe each other's work for a very short period. The observation period can affect the expert's objectivity and increase the likelihood of random factors influencing the overall assessment, such as the teacher's mood or physical well-being during peer review.

Personal and professional qualities of the observer can influence assessment results. For example, conservatism or personal bias may prevent the observer from appreciating innovative teaching methods. A reasonable alternative to single-expert observations may be group observations involving two or more experts attending a class. Another goal of peer review is to find experts to assess the content of the lesson from a professional standpoint, as well as pedagogical and methodological aspects.

#### **2.1.3. Peer Review at IQAS**

The content of peer review includes defining the purpose, subject, and object of evaluation, as well as the results [12]. According to the most common goals, three options for peer review were identified — assessment, development, or collaboration. Peer reviews are usually conducted by more experienced colleagues or those who have achieved significant results in the field of the selected courses. Once university teachers learn about the implementation of peer review on a regular basis, they may approach the organizers with concerns about potential conflicts between teachers. That is why it is important to involve experienced teachers and thoroughly explain the purpose of the assessment when implementing peer review. At ITMO University, the peer review approach is used in teaching quality assessment activities — in the System 360.



**3. System 360 is a system of measures for comprehensive assessment of teaching quality**

The System 360 was implemented in the 2020/2021 academic year for the rapid collection of data on all teachers and mentors involved in the implementation of educational disciplines/modules at ITMO University. We are refining the system based on feedback from all stakeholders.

The System 360 is designed to address several tasks at once:

- Identify and reward the best educational practices of ITMO University teachers;
- Collect data for the development, assistance, and support of academic staff;
- Obtain an objective view of disciplines and teaching for making administrative and personnel decisions;
- Improve the quality of student education through systematic evaluation and implementation of best educational practices [2].

The basis of the System 360 is the matrix of teacher competencies. Teacher competency assessment is done through student surveys, expert visits to classes, self-assessment, and assessment by the teacher’s supervisor.

The System 360 allows achieving three goals: it helps evaluate and improve teaching quality through methodological recommendations that teachers receive based on their participation in assessment activities; it contributes to enhancing the prestige of teachers: ITMO holds the EduAwards competition to honor the best teachers and educational projects of the academic year; the information gathered within the system provides insights into the professional development needs of teachers, which are used in designing training courses and programs.

To implement the principle of comprehensive assessment, teachers, students, mentors, and heads of academic units (faculty deans, institute directors, etc.) are involved in assessment activities.

**3.1. Competence matrix of an ITMO teacher**

The competence matrix of an ITMO teacher is at the core of the quality assessment system. It consists of 5 groups of competencies: scientific-subject, pedagogical, interdisciplinary, digital, and values-based at the basic, advanced, and leadership levels of development. It is worth noting that the first level of development — basic — is a good indicator and of high value.

The matrix was created in 2020, along with the System 360. It contained 115 manifestations of competencies. The matrix was adjusted in accordance with current educational processes and data obtained over the previous three years. As a result, the matrix reflected 62 manifestations of competencies.

**3.2. System Activities**

The main principle of the activities is that every participant in the educational process can act as an expert and participate in the assessment of the educational process.

Four events are designed to collect expert assessments from each category:

- 1.Student surveys on the results of the implementation of educational disciplines/modules are conducted in the university’s information system (ISU). Surveys are assigned to each teacher indicated in the student’s personal schedule.
- 2.Class observation (peer review) is conducted by two employees: a faculty expert and a methodological expert. Each expert fills out a separate checklist, and the average score from the experts’ assessments is taken as the result.
- 3.Self-assessment of the academic staff member is conducted in a questionnaire format.
- 4.The supervisor’s evaluation of the academic staff member is requested only if there is data from student surveys, class observations, or self-assessment by the teacher.

Each event has a quantitative assessment scale, and in the end, an average score is calculated for each competency ranging from 0 to 3.

**3.3. Results of the Implementation of Activities**

The data is used for rewarding and developing university teachers, enabling the targeting of professional development courses, increasing the volume of feedback, and paying more attention to teaching at the university.

Academic years	Student survey	Attending classes	Self-assessment	Assessment by the teacher’s supervisor
2022/2023	1183	139	244	100
2021/2022	1279	126	263	90
2020/2021	677	139	202	119

Table 1 — The number of teachers who participated in the System 360 events over 3 academic years.

The System 360 processed 1,175 questionnaires for teachers in 2022/2023. Experts from faculties and methodologists attended 164 classes. 272 teachers completed self-assessment, and 152 of them received character references from their supervisor. In May 2023, based on the results of activities assessing the quality of implementation of System 360 disciplines, the winners of the EduLeaders, EduStars, ITMO.Mentors tracks, and the bonus track «EdTech of the Future» were awarded awards for achievements in educational activities.

We continued activities as part of the System 360 in the fall semester 2023/2024 and received 1,579 responses about the quality of teaching, which is 33.5% more than last year. Faculty self-assessment, attending classes, and assessment by the teacher's supervisor are underway.

The application of the System 360 allows for adherence to the principles of transparency, accessibility, personalization, and involvement of all participants in the educational process. The data obtained the System's 360 elements is used for making administrative and personnel decisions. The rating is used in the selection process of winners for awarding of ITMO.

### **3.4. System 360 Growth Zones**

During the implementation of the System 360 events, we receive feedback from students, teachers, and administrative staff. The most common concern is the lack of data, which results in an incomplete assessment of teaching. Currently, a task is being developed to create an alternative source of data that would complement the missing information.

When there are two expert methodologists present in a class, one of them may not be familiar with the subject area of the discipline. In this case, scientific-subject competencies are not evaluated, which creates the need for an alternative source of data.

### **Conclusion**

The peer review approach has proven its effectiveness as a tool for assessing the quality of education and can be successfully integrated into the IQAS of the university. The use of peer review promotes communication and exchange of experience, best practices among teachers.

There are certain risks associated with implementing peer review. It is necessary to develop clear evaluation criteria and create an open, understandable system of interaction among experts. Successful implementation of the peer review approach requires support from university leadership, as well as active involvement and motivation of teachers. However, peer review contributes to improving the quality of education and maintaining high academic standards.

Peer review allows you to demonstrate readiness for dialogue between students, teachers, and administrative departments.

Achieving high quality of personnel training, a high level of scientific research are part of ITMO's strategic development program until 2030 [1]. In accordance with ITMO's development goals, the peer review approach is the main quality system, and high-quality standards are ensured by the recognition of the brand «ITMO University Graduate» by domestic and foreign employers as a guarantee of quality training with zero adaptation period to work.

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## Establishment and Development of the Chinese-Russian Joint College: A Case Study on Collaborative Higher Education

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### Abstract

*This paper explores the establishment and development of the Chinese-Russian Joint College, a unique collaborative effort between the National Research Mordovia State University (MRSU) and Jiangsu University of Science and Technology (JUST). Initiated from a double diploma educational program in «Thermal Power Engineering and Heat Engineering», this partnership has culminated in the formation of the College enroll 1,000 students across four initial programs, with plans for further expansion. The collaboration is founded on numerous scientific, technological, and educational projects, highlighting the benefits and challenges of cross-border academic partnerships. The paper details the evolution of the double diploma educational program, the improvements made, and the intermediate successes achieved, such as joint research projects, student exchanges, and cultural initiatives. Emphasis is placed on the mutual benefits of the collaboration, including enhanced educational outcomes, increased scientific publications, and successful graduate employment. The project underscores the potential of international cooperation in higher education to create innovative and effective educational frameworks, fostering global competency and advanced research capabilities among students and faculty.*

### Introduction

Modern education development cannot occur without extensive interaction among the various stakeholders involved which are universities, employers who benefit from staff training, and of course, students. Leading global universities demonstrate a profound integration with industries, manifested in joint scientific research and targeted, specific staff training for certain tasks and technological projects. The increasing complexity and interdisciplinarity of certain technological and industrial projects force universities to collaborate in training personnel. This often occurs within the framework of consortia, through academic exchanges involving teachers, researchers, students, and others. Experience shows that double diploma educational programs and double degree programs have the greatest potential. Particularly strong educational outcomes are achieved when there is not just a merging of efforts by individual university teams working within the same sector, but also when they can significantly enhance each other's work.

A prime example, for instance, is the double master's degree program «Thermal Power Engineering and Heat Engineering» between National Research Mordovia State University (MRSU, Russia) and Jiangsu University of Science and Technology (JUST, China). Traditionally, MRSU, particularly its Department of Thermal Power Systems, excels in providing energy solutions for industrial enterprises, buildings, and structures, as well as specific technological processes and systems. Researchers from JUST's School of Energy and Power Engineering are globally recognized experts in the design of marine energy systems. As early as 2013, amidst a collaborative project on cooling power semiconductor components, it became evident that although both universities work in the field of developing autonomous energy sources, their approaches and competencies are different. JUST has consistently emphasized the importance of accounting for fluctuations and reducing noise in installations, crucial for marine applications, whereas MRSU has showed more flexibility in deploying combined heat and power systems. Based on these insights, we realized that we could significantly complement each other in the educational process, leading to the decision to develop and implement a double diploma educational program in energy engineering.

### 1. Analysis of Educational Program Development Indicators

The launch of the double diploma educational program was preceded by extensive preparatory work aimed at establishing a mutually beneficial collaboration between National Research Mordovia State University and Jiangsu University of Science and Technology (China). This collaboration culminated in the signing of a Cooperation Agreement in 2013, which extended beyond purely educational activities.

The double diploma master educational program with Jiangsu University of Science and Technology has been implemented since 2016. The program is set to celebrate its seventh graduation in 2024. Initially piloted as an experimental scheme for the first two years, it successfully obtained state accreditation in both China and Russia in 2018. This program operates in accordance with the educational standards of Russia and China, based on agreements for collaborative partnership and double diploma educational programs, as well as other regulatory documents.

In accordance with the signed agreement, the first year of the master program takes place at Jiangsu University of Science and Technology, while the second year is conducted at the National Research Mordovia State University. During the implementation of the first-year curriculum, two courses were taught by Russian professors in the form of an intensive series, typically over the course of one month with travel abroad. In the second year, Chinese colleagues made reciprocal visits. The final qualification paper (FQP) was completed in Russia, and Chinese students had the opportunity to continue their studies for an additional six months in China and defend a second FQP. Upon successfully defending their FQP before a joint examination board, Russian students receive two diplomas. Figures 1 and 2 show photographs of the first two graduations. The Chinese side pays meticulous attention to the educational process and the paper defense procedures.



Figure 1: Graduation of the double diploma Educational Program (2018).



Figure 2: Graduation of the Double Diploma Educational Program (2019).

Following a comprehensive two-year analysis of the educational program, significant updates were implemented. These updates included adjustments to credit allocations and the incorporation of new courses that address contemporary needs. Key differences in the curriculum are detailed in Table 1.



Former Curriculum	Revised Curriculum
Cogeneration Systems in Small-Scale Power Facilities (4 ECTS)	Management of Energy Flows in Cogeneration Plants (3 ECTS) Design and Calculation of Autonomous Energy Sources (4 ECTS)
Energy Conservation and New Achievements in Thermal Power Engineering (5 ECTS)	Energy-Efficient Technologies (3 ECTS) Instrumental Inspection of Small-Scale Energy Facilities (3 ECTS)
Algorithmization and Programming of Tasks for Small-Scale Power Facilities (3 ECTS)	Calculation and Design of Automatic Control Systems for Small-Scale Energy Facilities (3 ECTS)
Utilization of Alternative and Local Fuel Types (3 ECTS)	Application of Fuel Cells (3 ECTS)

Table 1: Key Differences in the Educational Program Curriculum Following Its Update.

The primary information on the student pool and the program outcomes are presented in Table 2.

Title	Year							
	2016	2017	2018	2019	2020	2021	2022	2023
Student pool:								
enrollment, including	11	11	14	13	17	20	21	25
Chinese students	6	6	9	9	13	15	16	21
students graduated	0	0	11	11	14	13	17	20
Diplomas with honours	0	0	11	11	12	10	10	10
Publications, total		5	8	14	18	21	25	25
Patents for inventions and utility models		2	3	4	2	1	1	1
Recommendations for the implementation of students' thesis results into real production			5	5	14	14	15	13
Recommendations for graduate school admissions			2	2	2	2	3	3
Number of postgraduate students	0	0	0	5	5	14	15	13

Table 2: Key Information on the Student Pool and Outcomes of the Educational Program.

The dynamics of the number of students enrolled in the double diploma educational program are illustrated in Figure 3, while the dynamics of scientific activity are depicted in Figures 4 and 5, and the annual trends in the number of post-graduate students are presented in Figure 6.

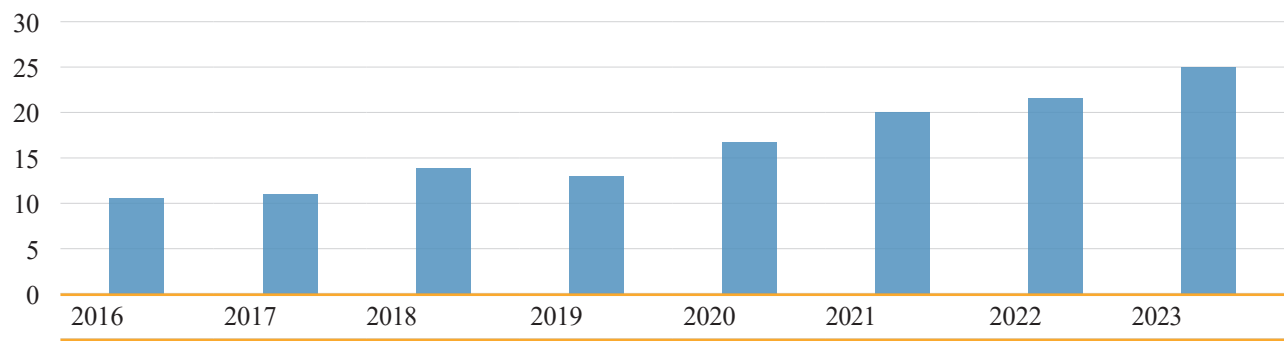


Figure 3: Total Number of Students (Enrollment).

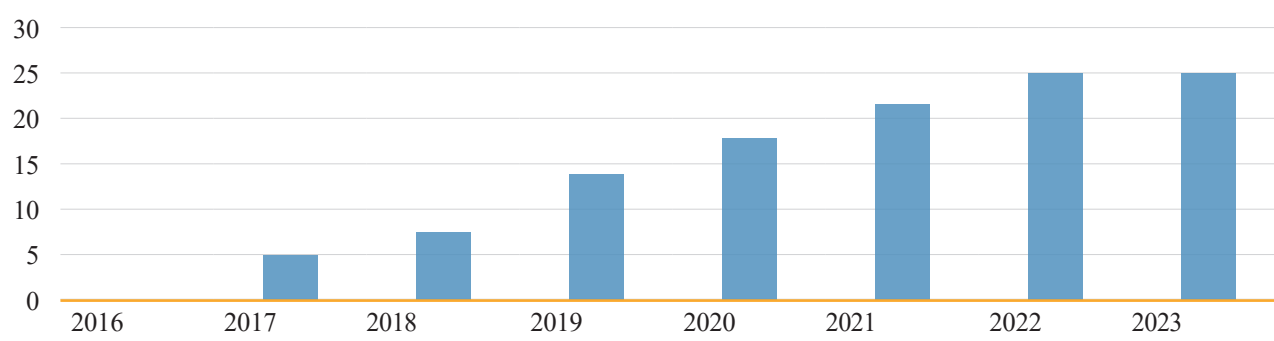


Figure 4: Number of Student Publications.

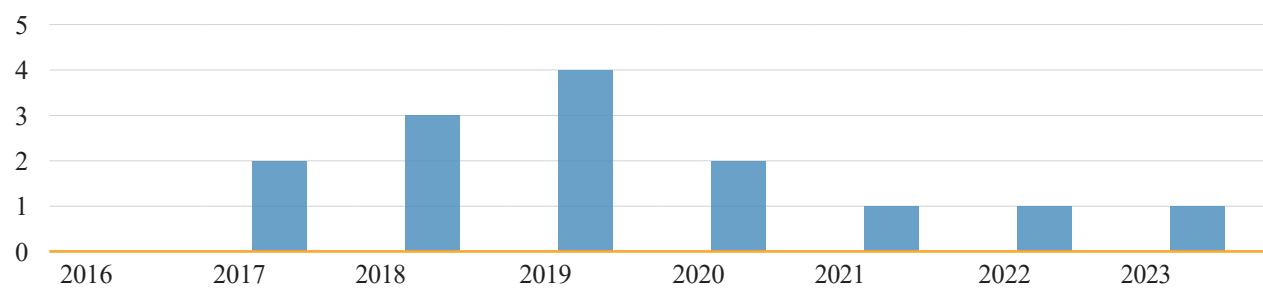


Figure 5: Number of Patents for Inventions.

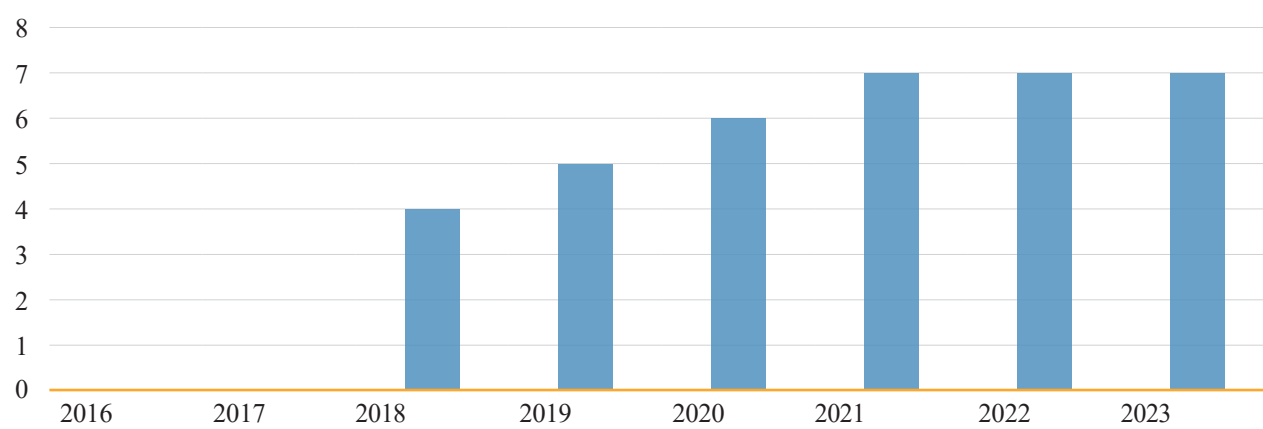


Figure 6: Graduate School Enrolment Continuation Rate.

The results demonstrate that the educational program has been successfully evolving. In 2024, the student pool increased by a factor of 2.28, and the number of implemented and recommended graduation projects rose by 2.6 times. There has also been a notable increase in scientific publications in international databases. Concurrently, several issues have been identified, both organizational and methodological, such as discrepancies in curricula regarding credit units, re-crediting courses not related to the department's profile, aligning course syllabi with the requirements of Russian Federal State Educational Standard, co-supervision of graduation projects, modernization of facilities, publication activity, academic mobility, and language training for students and teachers.

All these issues were discussed at the departmental and university administrative board meetings as they arose. Specifically, the discrepancy in credit units due to varying numbers of weeks per semester was addressed by aligning the academic schedule. Teachers from both universities were assigned to each course in the curriculum, ensuring that the course syllabi and teaching materials met the required standards. Consequently, the re-crediting of courses was conducted by teachers who were already well-versed in the key competencies, objectives, and goals of the courses, aimed at achieving these competencies. Throughout the implementation of the educational program «Thermal Power Engineering and Heat Engineering» (specialization «Management of Energy Flows in Small Power Engineering»), the topics of the final qualification papers were frequently discussed. For instance, the topics of the final qualification papers defended by students in 2021 are listed in Table 3.

FQP Topic	Student Name
Design of a Filter for Protecting a Centrifugal Pump in a Circuit with Pulsating Circulation of Coolant	Anton Kolgatov
Design of a Thermal Energy Storage System to Mitigate Peak Loads in a Building's Hot Water Supply System	Vladimir Kotkin
Development of an Experimental Prototype of a Regenerative Air Cooler for Residential Spaces	Alexander Pichushkin
Design of a Combined Heat Source with an External Chamber and an Intermediate Carbon Dioxide Circuit with a Capacity of 2 MW	Pavel Sunyaikin
Development of an Experimental Prototype of a Piston Pump with Pulsating Drive	Maksim Tyurin
Development of an Experimental Prototype of a Microchannel Heat Exchanger for Heating Ethanol in a Pulsating Mode	Yu Haize
Development of an Experimental Prototype of a Heating Device for Pulsating Circulation of Coolant	Zhang Xisun
Design of a Combined Heat Source Based on a 25 kVA Diesel Generator	Jin Jintao
Development of an Experimental Prototype of a Regenerative Air Preheater for a Heat Generator	Zhao Yunci
Design of a Combined Heat Source Based on a 5 kVA Ethanol-Powered Gasoline Generator	Hou Yu
Design of a Thermal Energy Storage System to Mitigate Peak Loads in a Building's Heating System	Zhang Yujian

Table 3: FQP Topics of Students Graduated in 2021.

As indicated in Table 3, the final qualifying papers are equally undertaken for both types of tasks which are design-engineering and scientific research. The master's theses in this field not only involve modeling but also physical experimentation. Based on the results of certain experiments, applications for inventions have been filed and patents obtained. For instance, Figure 7 shows the experimental setup of Liu Zhiunchen [1]. Such setups are customized for individual students.



Figure 7: Experimental Setup for Testing a Capacitive Heat Exchanger with an Oscillating Coil.

Based on these studies, scientific research collaboration between MRSU and JUST has expanded. For example, in 2017, a joint application was submitted for a Federal Targeted Program competition with the topic «Utilization of Vibrations of Heat Transfer Surfaces for Intensification of Heat Transfer during Heating of Fuel Oil in Storage Facilities». In 2024, an application was submitted for a Russian Science Foundation competition with the topic «Research on a Combined Energy Source Based on Solid Oxide Fuel Cells for Maritime Applications».

Regarding publication activity in international databases, a significant part of articles is published in English-language electronic journals such as «Bulletin of Science and Practice». Additionally, there is a positive trend of publishing two articles annually in the Scopus database. The Institute of Mechanics and Power Engineering also regularly hosts an online conference at least once a year with Jiangsu University of Science and Technology on the Zoom platform.

A significant advancement in the double diploma educational program was the integration of project activities into its structure, which alleviated the workload on the laboratories of the Department of Thermal Power Systems. This year, one-third of the students of the double diploma program have already completed their final qualification projects on topics related to the design of small-scale energy facilities. The projects focus on designing autonomous energy sources, such as diesel generators, fuel cells, and others.

Under the new agreement, academic mobility for faculty members is set to significantly expand to encompass five courses. Additionally, the number of faculty members has increased to four.

The primary inhibitory factor in the development of the program is language barriers. Currently, both universities have established all the necessary conditions for further professional training. Additionally, as noted earlier, graduates of this educational program are given priority for admission to postgraduate studies. Presently, there are five postgraduate students at the Department, all of whom have completed their master's degrees in this field.

The graduates of the program actively participate in events initiated by BRICS countries such as «Together Brighter» international festival. In 2020, Anton Golyanin, the captain of the team from MRSU, received a letter of appreciation from the Ministry of Energy of the Russian Federation.

## **2. Chinese Russian Joint College**

Based on the double diploma the educational program «Thermal Power Engineering and Heat Engineering» (specialization «Management of Energy Flows in Small Power Engineering») between MRSU and JUST, a decision was made in 2023 to establish a joint Chinese-Russian Joint College following the principles outlined above. The College will enroll 1,000 students and launch with 2 master programs which are «Communication Technologies» and «Optoelectronics (Photonics)», and 2 bachelor programs which are «Russian Language» and «Thermal Power Engineering and Heat Engineering». The first enrollment of students is planned for 2025. The medium of instruction will be English, except for the «Russian Language» program.

The project is unique for cross-border educational initiatives, as two universities from different countries will train students in several diverse fields simultaneously. It is also planned to expand the Institute's activity to seven degree programs. Such collaboration has been based on numerous scientific, technological, and educational projects. Although the negotiation process can be challenging, all participants are committed to achieving the final goal. The project on the College establishing will be defended in September 2024.

This collaboration has already led to very good intermediate results such as:

- a joint project for a power plant for unmanned systems based on hydrogen technologies under the RSF financing;
- annual internship of Chinese students studying Russian at MRSU (4 students are already coming in September 2024);
- a joint project for the translation of novels «Purgaz» and «Erzya Son» by Kuzma Grigorievich Abramov, a people's writer of the Republic of Mordovia, from Erzya language into Chinese under the «Russian World» financing;
- twinning between Saransk and Zhenjiang under the leadership of the Head of the Republic of Mordovia Artem Alekseevich Zdunov with significant prospects in tourism, economics, investments, and culture.

All these achievements were made possible by establishing mutually beneficial cooperation and signing a corresponding Cooperation Agreement between the two partner universities, providing a solid foundation for the successful implementation of the joint college project. The implementation process achieves a balance of interests, allowing both universities to address current tasks and develop. The project has proven attractive to applicants, with all graduates successfully employed in the energy sector or continuing their studies in graduate school. This program is also crucial for the university in terms of meeting key performance indicators and creating a platform for joint scientific projects.

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The Head of the Department of Thermal Power Systems at Ogarev Mordovia State University. He graduated from MRSU in 1989 with a major in farm electrification and earned his Higher Doctorate in Technical Sciences in 2005. He has extensive experience in academia, having served as an assistant, associate professor, and professor. His research focuses on heat and power engineering, with numerous publications and significant contributions to R&D projects. He holds several honorary titles, including «Honored Scientist of the Republic of Mordovia» and «Honored Inventor of the Republic of Mordovia».

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# Integration of quality management systems and lean production — the key of systematic development of strategic objectives of the Russian Federation

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## **Abstract**

*The article substantiates the relevance of improving product quality and labor productivity, which are urgent tasks faced by enterprises of the Russian Federation in the current geopolitical conditions. To solve these problems, lean production and quality management technologies are used, which involve the use of methods and tools aimed at maintaining promising areas of development of the Russian Federation, namely, economic growth and ensuring its stability. For the purpose of unambiguous and generally accepted mechanism of applying tools and methods of lean production and quality management, national standards are being developed, which can be used by enterprises to create management systems and integrate them in order to improve product quality and labor productivity. The article justifies the feasibility of applying lean production technologies in educational organizations and their integration with quality management systems, since it is educational organizations that solve the problem of training highly qualified personnel for industry (services) and increasing the knowledge-based capital of the country. It gives examples of creating infrastructure for training of experts in the field of lean technologies and quality management. The authors of the article are representatives of organizations — members of the Technical Committees for Standardization of Rosstandart, who participate in the development and discussion of national standards in various fields of activity.*

**Keywords:** *workforce productivity, lean manufacturing, educational organizations, higher education institutions, lean technologies.*

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## **Introduction**

The current geopolitical circumstances of the Russian Federation stimulate the process of transition from the policy of trade in resources to the organization of production of many types of products. Due to the urgent need to increase the pace and volumes of production while improving the quality level, Russian enterprises are massively faced with typical tasks that need to be solved:

- reducing raw materials consumption and decreasing reject rates;
- control of delivery times;
- improvement of labor productivity;
- increasing the volume of output products;
- reduction of available time to implement labor-intensive technical tasks;
- inability to perform a number of works manually.

This article will focus on proposing solutions to tasks 1 and 3. The essence of the first problem is to improve the quality of products, which will lead to a reduction in the level of rejects and reduce the consumption of raw materials. New managerial decisions and management methods can help in solving both tasks under consideration. One of such new management methods, which has gained particular popularity in recent years, is lean production.

## **Main part**

In order to promote lean production, which makes it possible to improve product quality, labor productivity and support one of the promising areas of development of the Russian Federation in terms of economic growth and ensuring its stability, organizational and administrative documents are issued at the highest level, stipulating the need to develop social and industrial economic areas. Thus, in order to address these tasks comprehensively, Presidential Decree No. 204 of May 7, 2018, «On National Goals and Strategic Objectives for the Development of the Russian Federation for the Period until 2024» has been issued [1].

As part of the implementation of the Decree, national projects and development programs are being implemented, and various recommendations for enterprises are being created and issued:

1. Project «Labor Productivity» [2] consists of several projects designed to ensure that by 2024 the growth rate of labor productivity at medium and large enterprises of the basic economic sectors is not lower than 5% and to ensure labor productivity growth of more than 20% by 2024;

2.State Program on Industrial Development and Improving Industrial Competitiveness (2014–2024) [3] strives to achieve several objectives during its implementation:

- to meet the needs for products of the transport sector through domestic production of competitive equipment;
- to provide industry with the means of production;
- to expand the production of modern high-tech industrial products;
- to upgrade the technological and material base of civil industry sectors.

The targets of the Decree include the following:

- increasing the number of managers who have completed a management skills training program to improve labor productivity by 6 times;

- increasing the share of enterprises participating in the national project, where labor productivity growth will meet the targets up to 90%;

- development of standards for higher education programs in the field of «Lean Production» and «Scientific Organization of Labor», etc.

- Lean Production (LP) is a concept of business organization focused on creating attractive value for the customer by forming a continuous flow of value creation covering all of the organization's processes and their continual improvement through staff involvement and elimination of all types of losses [4]. Application of the LP concept allows to:

- produce products and provide services of the quality level required by customers in the shortest possible time and at the lowest possible cost;

- continually improve the satisfaction of customers, shareholders, and other stakeholders;

- continually improve the effectiveness and efficiency of the organization's business processes;

- simplify organizational structure, improve management processes;

- react quickly and flexibly to changes in the external environment.

The Russian Federation has developed and approved a number of standards on lean production: on terminology and audit of lean production management systems (LPMS); on LPMS tools, methods and training; on LPMS integration; sector specific standards.

Since the adoption of the Decree, the concept of lean production has begun a smooth implementation not only in manufacturing industries, but also in educational organizations. On November 28, 2018, the Association of Lean Universities (Association) was established in Belgorod [5]. This decision has been made at the round table on education held as part of the Forum «Project and Lean Synergy as a Factor in Increasing Labor Productivity». The Association was established on the basis of 14 Russian institutes and universities of different fields of study. Lean higher education institutions (HEIs) actively implement lean technologies into their management and educational system. The Association includes [6]:

- Belgorod State National Research University;
- Bashkir State Pedagogical University named after M. Akmulla;
- Belgorod State Institute of Arts and Culture;
- Belgorod State Technological University named after V.G. Shukhov;
- Kemerovo State University;
- Kirov State Medical University;
- Kuban State Medical University;
- Maikop State Technological University;
- Nizhny Novgorod State University of Engineering and Economics;
- Privolzhsky Research Medical University;
- Pyatigorsk Medical and Pharmaceutical Institute;
- Ryazan State Medical University named after Academician I.P. Pavlov;
- Siberian State Medical University;
- Udmurt State University.

Lean HEI is a special management scheme of a higher education institution based on the principles of optimal resource management, focus on the needs of students and academic teaching staff, on the problem of eliminating all kinds of losses and comprehensive use of the intellectual potential of the university staff. Lean thinking technologies allow forming a new outlook among students, new economic and social values [7]. The purpose of implementing the concept of «Lean HEI» is considered to be the improvement of the educational process, document flow, introduction of process management, optimization of time and human resources.

The following are proposed as functions of an educational organization as applied to lean concept:

- development of the methodology of the University's Lean production system;
  - research of problems of lean production implementation at the University;
  - coordination of activity of structural departments of the University on the issues of lean production implementation;
  - interaction with organizations and institutions on the issues of lean production implementation and development;
  - analysis of the results of implementation and formation of the base of standard solutions for lean production implementation;
  - training on principles, methods and tools of lean production.
- to implement the functions, it is necessary to solve the following tasks:

- to initiate, coordinate, provide organizational, methodological and information support for the improvement of production processes in the structural departments of the University;
- to organize attestation of structural departments of the University for conformity to the principles of Lean production;
- to organize and ensure continuous training of the University employees on Lean production principles, methods, tools;
- to ensure interaction and cooperation of the University with organizations and institutions on the development of Lean production;
- to ensure the development of interaction between the University and practical health care in order to promote methods and tools of Lean production in health facilities;
- to develop and implement educational projects on Lean production issues. To train employees of different economic sectors on Lean technologies;
- to promote the principles and methods of Lean production.
- Achievement of the objectives will allow educational organizations to obtain such advantages as:
  - forming an attractive image in the society and on the market of educational services;
  - increase of trust and loyalty from the state authorities and their own staff;
  - continuous improvement of the quality level of experts' training [8];
  - improvement of the educational process management system and the HEI management system as a whole;
  - reduction of unproductive costs and losses caused by imperfect organization of the educational process;
  - simplification of document flow and standardization of frequently repeated actions, etc.

### **Conclusion**

To obtain all of the listed advantages it is necessary to provide a systematic approach to change the level of quality. Standard GOST R 57522 «Lean production. Guidelines for integrated quality management system and lean production» [9], providing a systematic approach, can become such a tool. The standard takes into account the requirements of GOST R ISO 9001 Quality Management System. Requirements» [10] and GOST R 56404 «Lean production. Requirements for management systems» [11].

Changes in the internal system of educational organizations will make it possible to solve the problem of providing enterprises with personnel with a level of knowledge sufficient to solve the current tasks of enterprises to improve product quality and labor productivity. One of the places where an educational organization strives to increase the knowledge-based capital of the country is Saint Petersburg State Electrotechnical University «LETI» (SPbSEU «LETI»). At the Department of Management and Quality Systems, along with other Master's degree programs, the program «Lean Production Technologies» has been implemented since 2023. Developed in accordance with the methods of Skolkovo International School of Management, the program trains students in professional mastery of quality management and lean production tools, managerial thinking.

In addition to the educational Master's program, the Competence Center for Lean Manufacturing in High-Tech Industries (Competence Center) has been opened at SPbSEU «LETI» since 2022. The Competence Center was established to develop and promote modern methods of quality management and lean production to ensure the quality of educational and research activities of educational organizations, organizations of the national economy [12]. A Lean Production Laboratory and Office Process Factory with elements of digitalization, which conducts training, organizes business games online and offline, have been created on the basis of the Competence Center.

Apart from educational organizations, commercial organizations with vast experience in the field of training in the implementation of lean production tools can help enterprises in solving their tasks. One example of such organization is Certification Association «Russian Register». If the level of knowledge and understanding of the concept of lean production is insufficient, or if there is a lack of understanding of the order of actions to implement LPMS in a particular organization, PEI FVE «Plexus-Eurasia» [13] and the Competence and Lean Technologies Center [14], which are members of Certification Association «Russian Register», conduct training in such areas as:

- training on basic knowledge of lean production methods and tools;
- training on in-depth knowledge on application of lean production methods and tools;
- training on application of lean production methods and tools in organizations of different specialization;
- training on the main national standards of the lean production management system.

The level of qualification of SPbSEU «LETI» and Association «Russian Register» staff is confirmed by the membership of these organizations in the Technical Committees on Standardization of Rosstandart, participating in the development and discussion of national standards in various fields of activity.

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# Enhancing Internal Quality Assurance of QAAs: Innovations and Governance

*Strong internal QA mechanisms are vital for the credibility of Quality Assurance Agencies (QAAs) and higher education institutions. This section gathers research on internal governance models, peer-review methodologies, national qualification frameworks, and institutional self-assessment practices. The articles explore how internal audit findings shape policy decisions, the role of leadership in strengthening QA systems, and emerging trends in accreditation governance. The focus is on fostering transparency, accountability, and adaptability within QAAs to increase their operational effectiveness and impact on higher education.*

## National qualification framework, quality assurance, and qualification recognition alignment and development roadmap

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### Abstract

*Accreditation standards rely on educational objectives, curriculum, and learning outcomes as the main supporting criteria. It is essential to clearly define the range of knowledge, skills, and abilities related to learning outcomes for each qualification level. The use of learning outcomes as accreditation standards is fundamental for the development and implementation of a sound qualification system. The Convention on the Recognition of qualifications is also related to learning outcomes and accreditation. The National Qualifications Framework (NQF) is a primary external quality assurance system that focuses on defining learning outcomes and the means to achieve them. Higher education institutions must develop and refine their curriculum to meet the knowledge, skills, and attitudes specified in the NQF. Therefore, the NQF, quality assurance, and their road map are crucial components of the national education system.*

**Keywords:** educational convention, accreditation, learning outcomes, certification, equivalence, quality assurance

### 1. Introduction

Qualification systems are inherently interlinked with accreditation, quality assurance, and the recognition of qualifications. While the challenges associated with accreditation, quality assurance, and qualification recognition may vary, they all share a common focus on learning outcomes. Paramount among the accreditation standards and criteria are educational objectives, curriculum, and learning outcomes. The utilization of learning outcomes as accreditation standards is an essential prerequisite for the establishment and execution of a qualification system. The Regional and Global Convention on Qualification Recognition and Learning Outcomes of the Higher Education Institutions of Member States stands as a principal framework of external quality assurance, seeking to outline learning outcomes and establish methodologies for their attainment. Educational institutions at higher levels must refine their curricula to align with and enhance the knowledge, skills, and attitudes delineated in the NQF. Consequently, the National Qualification Framework, quality assurance, and qualification recognition collectively provide the roadmap for the execution of the educational convention and represent key components of significance.

#### 1.1. The national qualification framework, quality assurance, and qualifications recognition play crucial roles in fostering trust within the hierarchies of the education and training system

While quality assurance serves as the cornerstone of the NQF in many nations, in countries such as Australia, New Zealand, Indonesia, the Philippines, Malaysia, and Thailand, it has evolved into a relatively distinct, yet connected, system related to quality assurance and accreditation. However, in any given country, the primary entity responsible for implementing the NQF is the quality assurance and accreditation agency. In this context, the Mongolian National Council for Education Accreditation functions as the designated Quality Assurance-Accreditation Organization, its legal standing reaffirming its commitment to enhancing higher education systems through policy coherence across the development, implementation, quality assurance, and recognition of qualifications. Furthermore, we undertake institutional and program accreditation in accordance with approved standards and requirements, while also providing oversight of the National Qualification Framework and offering management and methodology for quality assurance.

Through the implementation of global and regional conventions, MNCEA endeavors to foster mutually beneficial international cooperation in higher education. This will be achieved by facilitating the mutual recognition of quality assurance and external evaluation organizations for accreditation, as well as establishing a national qualification framework and academic degrees. Our goal is to support interregional proposals, policies, and innovations while promoting a culture of quality assurance within higher education institutions and systems. Concurrently, we are creating a strategic roadmap for the development of higher education in alignment with the national hierarchical structure of qualifications, accreditation, and quality assurance activities.

### **1.2. The correlation between accreditation and learning outcomes**

The correlation between accreditation and learning outcomes is of paramount importance. It is imperative to acknowledge that quality assurance and the validation of educational degrees are inherently interconnected. Thus, it is incumbent upon us to recognize only those qualifications that have been certified by the pertinent national authorities. Given the varying accreditation approaches adopted by different countries, it is essential, at a minimum, that the qualification and/or degree-granting institution be accredited in accordance with the higher education legislation of the respective country.

Accreditation constitutes a formalized quality control procedure, conferring upon accredited organizations the privilege of accrediting their respective programs. Notably, certain countries operate solely with program accreditation systems, rendering the accreditation status of the organization relatively inconsequential. Paramount among the supporting standards and criteria for accreditation are the educational objectives, curriculum, and learning outcomes, the latter of which mandates the transparency of institutions and courses across all educational tiers.

In this manner, individuals can readily transfer between educational institutions, training facilities, and various occupational fields. The primary objective of the educational program is to effect change and enhance the knowledge, skills, and competencies of students and graduates. The National Qualification Framework serves as the most accessible means to comprehend, compare, and apply knowledge, skills, and competencies.

### **1.3. The correlation between national qualification framework and learning outcome**

The National Qualifications Framework (NQF) constitutes an integral element of the broader National Qualifications System. This system encompasses the entire spectrum of activities associated with formulating and executing policies and strategies for qualifications, quality assurance, assessment, as well as the establishment, recognition, and certification of learning outcomes, including educational degrees, diplomas, and certificates.

The NQF represents a comprehensive policy framework delineating the level, quality, and learning outcomes of all nationally recognized higher education qualifications.

Qualification is contingent upon the level of knowledge, skills, and attitudes requisite to substantiate a person's acknowledgement and proficiency in a particular professional domain.

The National Qualifications Framework (NQF) categorizes qualifications into levels grounded in prescribed learning outcomes; these outcomes are explicit documents articulating the knowledge, comprehension, and capabilities expected of certificate or diploma recipients. The global drive behind the establishment and execution of National Qualifications Frameworks (NQFs) is to fortify inter-country and inter-regional collaboration, and to guarantee global transparency and comparability within the educational sphere. Furthermore, this initiative seeks to catalyze the mobility of students, graduates, educators, and researchers. Fundamentally, the universal underpinning of almost all national and regional qualifications worldwide lies in the concept of learning outcomes.

### **1.4. The correlation between conventions and learning outcome**

Global and regional conventions have been established to address the challenges associated with the evaluation of the significance and validity of diplomas and degrees conferred by higher education institutions, both domestically and internationally. These challenges stem from the diverse nature of higher education and the intricate structure of the education system. As a response to these complexities, a regional convention focusing on the recognition of higher education programs and degrees in Asia and the Pacific has been enacted. The primary objective of this convention is to enhance the recognition of educational diplomas, offering transparent and equitable assessment of educational achievements, degrees, and titles of universities and higher education institutions within the participating countries. This endeavor will empower students to pursue advanced studies at universities and higher education institutions in other countries, engage in distance learning, and have their qualifications acknowledged for professional pursuits.

### **Conclusion**

The National Qualifications Framework (NQF) functions as a critical external quality assurance mechanism, emphasizing the articulation of learning outcomes and the methods to achieve them. The hierarchical structure of specialization substantially influences the quality of the curriculum and the educational standards upheld by higher education institutions.

Initially, the process of identifying knowledge and skills involves benchmarking the requisite knowledge, skills, and attitudes for undergraduate and graduate programs, thereby establishing general requirements for higher education curriculum standards.

Subsequently, higher education institutions are tasked with aligning their curricula with the knowledge, skills, and attitudes outlined in national qualifications. This process entails the development and periodic updating of curricula, followed by external quality assessment and verification according to the program accreditation standards and criteria stipulated by the accrediting body.

Finally, the use of determinants such as vertical and progress levels, along with levels of proficiency, enables the comprehensive assessment of specific curriculum learning outcomes across diverse educational levels and categories. This approach is integral to enhancing and refining the internal coherence of curriculum content.

Contributing to the achievement of the Sustainable Development Goals (SDGs) related to education quality will be predicated on the framework of national qualifications to realize the 3rd goal of SDG4, which seeks to ensure equal access to affordable, quality technical, professional, and higher education, including at universities, by 2030.

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## To The Quality of Education Through the Formation of a Complex System for Evaluating the Activities of the University

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### **Abstract.**

*The materials of the article are devoted to the issues of assessing the educational activities of the university. In the conditions of the modern labor market and intense competition between universities, it is extremely important to ensure the training of highly qualified specialists. This improves the image of the university and ensures an influx of applicants, and will also allow for mutually beneficial cooperation with employers. Currently, there is an acute shortage of qualified personnel in the labor market, so employers are interested in high-quality training of graduates. This will reduce the cost of adaptation and training of new employees. In order to meet the requirements of society, the state and the professional community, universities are introducing a comprehensive system for assessing the quality of their activities. This system allows taking into account not only state requirements, but also the requirements of the labor market, which makes graduates more competitive.*

**Keywords:** *professional and public accreditation, higher education system, quality of training of specialists, employers' requirements, objective assessment.*

### **Introduction**

The task of any educational organization of higher education is to prepare qualified specialists who are able to work effectively in the real conditions of any organization, taking into account current socio-economic, scientific, technical and sociocultural requirements.

In modern society, the requirements for the quality of education have increased, and educational technologies are actively developing and updating. The operating conditions of universities — organizational, economic — are changing very quickly. Competition is growing in the educational services market. The independence of universities is increasing, and along with it, responsibility for the results of their work is increasing. In order to adapt to new conditions, survive and develop, universities need to carefully monitor the situation in the educational services market and assess their position. It is also necessary to predict market developments and develop alternative behavioral strategies taking into account possible changes in the external environment. A big role in this belongs to the head of the university, the rector as the chief strategist. He must constantly experiment. That is, to find creative and non-standard solutions that will best suit the situation. He must be prepared to take a certain entrepreneurial risk, but at the same time try in every possible way to minimize it (Tlekhurai-Berzegova and Buller, 2019).

The client-oriented approach in systems and procedures for assessing the quality of education can be divided into two types:

- Internal customer focus is aimed at the educational organization itself and the production of educational services.
- External customer focus is focused on the consumer and the use of the services provided.

The main aspect of the competitiveness of the university is high educational results and a wide range of stakeholders (applicants and their parents, students, graduates, academic and scientific community, employers, government and public organizations) with a high level of loyalty.

For students, quality education, comfortable study conditions, as well as demand and competitiveness are of great importance. In turn, for an educational organization providing educational services, it is important to maintain a constant flow of applicants.

The professional community of employer representatives is more than willing to ensure that the results of studying at the university are closer to the competency profiles of their potential employees. The best scenario for the employer is to minimize the costs of training and adaptation of a new employee, which means that the educational organization should help the student develop the maximum competencies necessary for work. To achieve this goal, it is important to combine the efforts of the university and the professional community, to ensure greater involvement of employer enterprises in the training of new personnel and retraining of existing ones (Pimenova et al., 2017).

To remain relevant and successful in today's marketplace, educational institutions are forced to develop strategies that will help them stand out from their competitors (Azaryeva and Zvezdova, 2018). In such a situation, the university



bears more responsibility for management decisions, so the issues of risk management in an educational institution become especially relevant. An educational organization needs to identify risks and opportunities that may affect the quality system and work results (Borisova, 2020).

Higher education is a special field of activity, which is characterized by specific risks. From the point of view of the presence of risks, it is important to consider the work of a university in the context of the quality of training of specialists. This applies to both external and internal goals of higher education. It must comply with established standards and norms, be provided with the necessary resources: educational programs, human resources, applicant pool, logistics, finance, etc. If these conditions are met, not only the quality of educational processes that directly provide training plays an important role specialists, but also the results of the university's work that meet the needs of the labor market of the region and country (Petrovskaya et al., 2022).

One of the key tools for strengthening market positions, increasing brand awareness of an educational organization, attracting students and integrating into the global educational space is independent assessment of the quality of education (IAQE).

**Goals of independent assessment of the quality of education (IAQE):**

- determine the level of training of graduates who have mastered the educational program in accordance with the federal state educational standard and current labor market requirements for specialists in this profile;
- establish to what extent the content and quality of training meet the requirements of professional standards;
- analyze the competitiveness of the educational program in the regional market of educational services and suggest ways to improve it.

**The results of IAQE are important to two stakeholder groups:**

1. Applicants and their parents who choose the organization and training program so that the graduate can successfully find a job in the future.

2. Employers who need to attract highly qualified and competitive specialists.

Independent assessment of the quality of education (IAQE) has become more relevant in accordance with Article 95.1 of the Law «On Education in the Russian Federation». The objects of this assessment are both the quality of students' training and the conditions for carrying out educational activities.

Since 2022, a new Regulation on state accreditation of educational activities, approved by Decree of the Government of the Russian Federation No. 3 of January 14, 2022, has come into force. This document establishes the procedure for taking into account the results of an independent assessment when conducting state accreditation. The results of monitoring in the education system, independent assessment of the quality of education, professional and public accreditation, as well as information from the reports of the organization carrying out educational activities on self-examination of educational programs declared for state accreditation are taken into account.

The issue of assessing the quality of education has always been one of the key issues in the development of the educational system and accreditation organizations. In a market economy, there are simultaneously more tools and paths for development and success, as well as competition and obstacles on the way to it.

The level of material well-being of a country is determined by economic achievements. The efficiency of enterprises directly depends on the professionalism of their employees — top and middle management, engineering and labor positions. The beginning of harmonization of the requirements of the goods-producing sector with the content of educational programs is reflected in the current Federal State Educational Standards and in professional standards prepared by communities of employers.

The acute shortage of personnel in industry and the lack of engaged, competent graduates ready to start working activities affect the expectations of all stakeholder groups from the activities of an educational organization. Higher education is now an investment tool, the answer to the request for obtaining practical, applied skills.

The task of professional and public accreditation is not only to use expert assessment to identify ways to improve the quality of the educational process. It also serves as a link between those who receive educational services (primarily employers), other participants and universities. This occurs through the participation of representatives of these parties in the examination process.

Also, the relevance of the procedure for professional and public accreditation is confirmed by the Order of the Ministry of Education and Science of the Russian Federation «On amendments to the Procedure for holding a competition for the distribution of target numbers for the admission of citizens by profession, specialty and area of training for training in state-accredited educational programs of secondary vocational and higher education for account of budgetary appropriations of the federal budget, approved by order of the Ministry of Education and Science of the Russian Federation dated July 15, 2013 No. 560». The presence of professional and public accreditation of educational programs in relevant specialties and areas of training significantly influences the results of the competition for the distribution of admission quotas.

Article 104 of the Law «On Amendments to Certain Legislative Acts of the Russian Federation in Connection with the Adoption of the Federal Law «On State Control (Supervision) and Municipal Control in the Russian Federation» establishes a risk-based approach applied to monitoring the quality of education. Since the state assessment of educational activities has become more general, it makes sense for universities to connect additional tools to establish and improve processes, receive feedback and expand information exchange.

The entry into force of new rules for accreditation of educational activities has a significant impact on the nature of the work of educational organizations. Thus, the accreditation of universities becomes indefinite, and accreditation monitoring will be carried out, which will allow for constant monitoring of the quality of education. The role of in-



dependent quality assessment, professional and public accreditation, and the participation of employer representatives in the educational process is significantly increasing. The new accreditation indicators still include the employment rate of graduates; thus, the relevance of this problem is preserved.

Professional and public accreditation (PPA) is becoming a key tool for monitoring and ensuring the quality of higher education in the country. The professional community, taking into account the current needs of the labor market, uses PLA data to assess the level of training of graduates. It is important to determine the extent to which organizations in this community are able to competently and objectively assess the content, conditions and results of student learning in specific professional educational programs in accordance with the requirements of professional standards and the labor market.

The source of information on these aspects is the mutually beneficial interaction between universities and employing organizations, given that employers and universities act as two sides of the educational process. Therefore, the degree to which graduates' training meets the employer's needs, and, consequently, the demand for young specialists, depends on the effectiveness of feedback. If a university has established cooperation with the industrial sector, then its prestige increases, the quality of training of specialists increases, educational programs are updated taking into account the necessary professional competencies, targeted training of students is an additional source of extra-budgetary income for the university.

Professional, public and international accreditation play an important role in shaping the image and brand of the university, making it more attractive to applicants from different regions of the country and from abroad.

Accreditation confirms the high quality of educational programs and their compliance with the requirements of the professional community and international standards. This allows the university to strengthen its reputation as a reliable and high-quality provider of educational services.

An attractive image and brand of the university contribute to an increase in the number of applicants, which, in turn, increases the investment attractiveness of the university. Investors see such a university as a promising place to invest, since it can provide training for qualified specialists in demand in the labor market.

Thus, professional, public and international accreditation not only confirms the quality of education, but also contributes to the development of the university, increasing its competitiveness and attracting additional resources.

#### **Materials and Methods**

One of the goals of QMS university is to identify those features and capabilities that best meet the needs of the professional community.

The use of a system of criterion indicators for the quality of training of future specialists makes it possible for QMS TvSTU to perform multidimensional measurements and analyze the effectiveness of the educational process of training future university specialists.

Evaluation of educational programs is divided into evaluation of actual learning outcomes and evaluation of guarantees of the quality of education. Assessment of actual learning outcomes is the main criterion for external assessment of the quality of programs; it is complemented by expert assessment of guarantees of the quality of education, which characterizes the ability of educational organizations to maintain the achieved quality of education over the coming years. The assessment of educational quality guarantees is based on the extent to which they contribute to the achievement of planned learning outcomes by students.

#### **Results**

Increasing the efficiency of Tver State Technical University is possible with the implementation of comprehensive risk management in the functioning of the university, the presence of effective risk management mechanisms, the development of scientifically based directions and practical recommendations that are adequate for the functioning of higher education in modern conditions.

The experience of TvSTU in the field of education quality management confirms that improving the quality of personnel training is impossible without using a workable and effective quality assessment system with the organization of feedback between education and its stakeholders: the state, enterprises and organizations, as employers — on the one hand, and — the internal environment on the other side.

The Quality Management System of Tver State Technical University covers monitoring and periodic evaluation of educational programs and academic qualifications, assessment of the level of knowledge, abilities and skills of students, qualifications and competence of scientific and pedagogical workers, the quality of educational resources, organization and management of processes and the educational organization itself. In addition, the QMS includes the collection and analysis of information on the implementation of educational programs and the activities of the educational institution as a whole and its use both for effective program management and for the most complete and timely informing of all interested parties about the progress of implementation and the quality of the programs being implemented and the compliance of assigned qualifications corresponding standards.

Feedback from students and graduates at TvSTU is implemented in the form of regular research (questionnaires) on the degree of satisfaction of students and graduates with the quality of education. Feedback from employers is carried out through an annual survey of employers, collecting opinions from their representatives and professional communities participating in the implementation of programs, receiving feedback from enterprises, organizations and institutions on the work of graduates; tracking their further career development after graduation. The information obtained is used by the university to assess the quality of education; identifying inconsistencies in ensuring the quality of education, carrying out preventive and corrective actions to promptly eliminate them; developing recommendations for improving all educational management processes

One of the goals of the QMS university is to identify those features and opportunities that best meet the needs of the social and professional community.

The use of a system of criterion indicators for social and professional examination of the quality of training of future specialists makes it possible for QMS TvSTU to take multidimensional measurements and analyze the effectiveness of the educational process of training future university specialists.

Evaluation of educational programs is divided into evaluation of actual learning outcomes and evaluation of guarantees of the quality of education. Assessment of actual learning outcomes is the main criterion for external assessment of the quality of programs; it is complemented by expert assessment of guarantees of the quality of education, which characterizes the ability of educational organizations to maintain the achieved quality of education over the coming years. Experts evaluate educational quality assurance based on the extent to which it contributes to students achieving their intended learning outcomes.

The development of the continuing education system is also aimed at supporting the competency-based development of the individual and the implementation of the concept of developmental education. The basis for professional training and improvement should be the principle of continuity, which implies a mandatory transition for a specialist from one educational level to another, subject to confirmation of the appropriate level of qualifications.

### **Discussion**

Expanding the sources of information support for the quality management system at Tver State Technical University allows for a comprehensive assessment of the results of activities and creates conditions for making adequate management and pedagogical decisions.

The use and implementation of various procedures, approaches and mechanisms for assessment and analysis, development and improvement of the quality management system (self-assessment, audit, rating, sociological surveys, participation in online exams and olympiads, accreditation of educational programs, creation of an educational cluster) allows TvSTU to diagnose areas activities and identify your strengths and weaknesses. This multi-criteria assessment makes it possible to analyze deviations and find solutions to detected problems. In order to prevent problems and improve the educational process (and other business processes), departments exchange experiences and compare with the best results achieved both within the organization itself and in comparison with other universities (benchmarking). In addition, they stimulate the growth of qualifications and professionalism of teachers and staff; increase the efficiency of all types of work of university departments.

### **Conclusions**

Any university can build its own specific management system. Assessments allow it to be in constant development; it can be modified. Data from a systemic assessment of the university's activities make it possible to predict and analyze criterion values. Individual assessments will help optimize resources; they can be aimed at effectively improving processes, carrying out the necessary structuring and increasing the professional level of university teachers and staff.

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# Striving for Dissolving Boundaries for a Quality Region: A Qualitative Research on APQN 20th Anniversary Celebration

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## Abstract

*Founded in 2003, the Asia-Pacific Quality Network (APQN), celebrated its 20th anniversary in 2023. On November 3, 2023, in Dhaka Bangladesh, APQN 20th Anniversary Celebration (20th AC) was held at the Open Session of the 2023 APQN Academic Conference(AAC). Adopting qualitative research method, this paper describes the 20th AC, tries to interpret the value of this celebration, to explore APQN's achievements and contributions in the field of global education quality assurance. It can be said that this celebration is an opportunity «to review the past, to observe the present and to look for the future», which has demonstrated APQN's achievements and spiritual legacies in the past 20 years. At the same time, it also demonstrates the value and significance in building platforms, standard setting and eternal pursuit.*

**Key words:** *APQN 20th Anniversary Celebration (the 20th AC); education quality assurance; spiritual legacy; sustainable development*

## Preface

In January 2003, the Asia-Pacific Quality Network (hereinafter referred to as «APQN») was officially founded with the full support of the United Nations Educational, Scientific and Cultural Organization (UNESCO) and the World Bank (WB). At the very beginning of its inception, APQN made its ultimate goal of «Dissolving Boundaries for a Quality Region» with its mission of «enhancing the quality of higher education in the Asia-Pacific Region through strengthening internal and external quality assurance in all kinds of organizations and extending the cooperation among them». APQN's inception has input new vitality and new impetus of education quality assurance to the Asia-Pacific Region and even to the world. The valuable financial support and technical guidance from various aspects provided by UNESCO and WB, made APQN a brilliant appearance to the world at a higher starting point at its initial stage. On November 3, 2023, in Dhaka Bangladesh, APQN 20th Anniversary Celebration (hereinafter referred to as «the 20th AC») was held at the Open Session of the 2023 APQN Academic Conference(AAC). We can see, during the 20-year development, APQN has never forgotten its original intention and embarked on a long and brilliant journey from «dependence to independence», from «obscurity to popularity», from «struggle for survival» to selfless contribution to the QA in the globe.

This research adopts qualitative research method such as observation, deep interview and text analysis, to analyze the significance of the 20th AC from multiple perspectives. First of all, by observation method, the paper sorted out the main activities at the 20th AC and the essence contained in the 7 celebration videos and the keynote speeches of the 2 former presidents. Secondly, it deeply analyzes 9 text documents delivered at the 20th AC by text analysis method. Finally, in March 2024, we virtually interviewed three former and current APQN presidents (Dr. Jaganath Patil, Prof. Dr. Jianxin Zhang and Pro.Dr. Galina Motova), three directors (Pingping Liu, Timur Kanapyanov and Nar Bahadur Raika), three participants involved in the 20th AC, and APQN Secretariat staff, in order to understand the interviewees' views on the importance and significance of the 20th AC promoting global quality assurance.

## 1. Tracing back APQN 20th Anniversary Celebration(AC)

On November 2–4, 2023, the APQN Academic Conference (AAC) was co-hosted by both APQN and American International University-Bangladesh (AIUB). About 200 participants from 40 higher education institutions (HEIs) and external quality assurance agencies (EQAAs) around the world attended the great event. At the 20th AC, «Happy Birthday, APQN» video was first shown. Secondly, 6 videos from peer QA organizations from the globe congratulated APQN on its 20th anniversary. Thirdly, Dr. Jagannath Patil (APQN fourth President) delivered a congratulatory speech. Fourthly, Prof. Dr. Jianxin Zhang(fifth and sixth President) gave the presentation to summarize APQN's achievements and contributions in the past 20 years. Lastly, APQN birthday cake was cut and shared by distinguished guests, Board Directors and local host with commemorative badges in order to memorize this unforgettable moment (Fig.1)



Figure 1: Birthday Cake was cut for APQN 20th Anniversary Celebration.

**1.1. Abundant fruitful results: APQN’s 20-year development history**

At the very beginning of the 20th AC, the video of «Happy Birthday, APQN» went straight to the theme of APQN 20th celebration, which brought the audience to look back on the eventful years in the past 20 years.

With the melodious singing, the opening words of «Happy Birthday, APQN» gradually appeared. APQN’s goal, mission, value, vision and principles are gradually presented one by one. The video consists of 6 parts: (1) birthday congratulations; (2) APQN characteristics; (3) the 20-year development process; (4) the strive to achieve the ultimate goal; (5) publications; (6) Conclusion (Table 1). In the past 20 years, the number of APQN members has greatly increased from 10 in 2004 to 268 in 2023, and the member distribution coverage has expanded to 47 countries/territories. (Table 1).

No.	Items	Content
1	APQN, Happy Birthday	«Birthday Song» for APQN 20-year-old anniversary
2	APQN characteristics	Logo, ultimate goal, mission, value, vision, and principles
3	20-year Development History	(1) APQN organizational structure; (2) seven boards; (3) six presidents; (4) four stage of the history development; and (5) five spirit legacies:
4	Effort to realize the ultimate goal	(1) 19 APQN Academic Conferences(AACs); (2) 3 Global Summits; (3) APQN Quality Award; (4) 14 actions during the COVID-19 (5) Asia-Pacific Quality Register (APQR); and (6) APQN Quality Label(APQL).
5	Publications	(1) APQNews; (2) APQN Annual Report; (3) publication of AAC anthologies; and (4) tools on QA
6	Conclusion	Best wishes for APQN’s sustainable development

Table 1: Main Contents of the Video of APQN 20th Anniversary Celebration.

With the upgrading of the organization’s capacity for sustainable development, APQN’s influence and discourse power has gradually strengthened in international education quality assurance, and more and more enthusiastic people with lofty ideals have joined the work of education quality assurance in the Asia-Pacific Region. Even during COVID-19 pandemic, APQN members also played a contributing roles. After physical communication and action were paused or stopped, APQN «broke the ice» and 14 practical actions to fight against the pandemic, and made useful suggestions and improvements. The achievements obtained from 20 years of theoretical research and practical project results aimed at quality assurance have been compiled into collections of papers, APQNews, and books. Time is speechless, only unchanging words record the glorious past of APQN from «a tender bud to a towering tree». At the end of the video, best wishes to APQN and its members were conveyed sincerely to all kinds of persons from HEIs and EQAAs. It can be said that since its inception, APQN has been ambitiously moving towards the ultimate goal of «dissolving boundary for a quality region».

The memories full of warmth and praise always evoke strong emotional resonance. Reviewing the achievements of the past 20 years enabled APQN members to clearly recognize their own value, and inspired their self-confidence and sense of belonging so that they are more motivated to face the challenges of the future.

**1.2. A celebration from the globe: congratulations from the global EQAAs**

The EQAAs who have cooperated with APQN also sent their sincere congratulatory message on this special occasion. Peer EQAAs such as INQAAHE, WFME, AUQA, ENQA, & EQAR, from different countries/territories expressed their heartfelt blessings and continuous attention to the development of APQN (Table 2 ).



Agencies	Representatives	Main content	Keywords
International Network for Quality Assurance Agencies in Higher Education (INQAAHE)	David Woodhouse	INQAAHE facilitated the founding of APQN; Congratulations on APQN 20th anniversary	founding of facilitation; congratulations.
International Network for Quality Assurance Agencies in Higher Education (INQAAHE)	Deborah Adair	APQN and INQAAHE share the same aspiration and have a long history of cooperation; Thanks for the numerous cooperation with APQN in strengthening global QA; Looking forward to continued cooperation and fruitful results in the future	cooperation; same goal.
Asia-Pacific Quality Network (AUQA)	Stella Antony	Thanks to APQN for building a cooperative QA platform to share experience; The experience in APQN; Wish APQN flourish	thanks; congratulations.
World Federation of Medical Education (WFME)	Ricardo Leon-Borquez	APQN great efforts in QA mechanism, theory and practice for the goal of «Dissolving Boundaries for a Quality Region»; Congratulations	recognition; efforts; congratulations
European Association for Quality Assurance in Higher Education (ENQA)	Douglas Blackstock	Expectation to maintain close cooperation with APQN; Wish APQN smooth future work	cooperation; blessings
European Quality Assurance Register (EQAR)	Stéphane Lauwick	Congratulations; APQN guidance and training for members; many challenges; high cooperation intention	contributions; challenges; cooperation

Table 2: List of the congratulatory messages from the global peer EQAAs.



The EQAAs from the world convey their gratitude and best wishes to APQN at this important moment of APQN’s 20th anniversary. David Woodhouse (founder and ex-President of INQAAHE) said «I am delighted to be able to send my best wishes and congratulations to APQN on its 20th Anniversary». President Ricardo Leon Borquez from World Federation of Medical Education (WFME) highly praised APQN’s efforts in creating APQR, APQL, consultation database and consolidating QA mechanism. Among them, 4 videos expressed praise and recognition for the past collaborative work, as well as a strong intention to cooperate in the future, which indirectly reflects APQN’s unique contribution and spirit of cooperation in the field of QA in the Asia-Pacific Region.

Behind the congratulation is the affirmation of APQN’s past practice of education quality assurance, as well as the good expectation of long-term cooperation in the future. In the face of a more uncertain future, good collaboration among the EQAAs has become more urgent. The exchange of opinions and guidance is an important measure to input «fresh blood and power» and activate ideas for all EQAAs with greater differences. As peers, the admiration and praise of the EQAAs also convey positive spiritual strength. It is expected that each EQAA can continue to shine and create more glory in the future. This expectation is not only an encouragement to individuals but also an incentive and spur to the whole QA world.

### 1.3. Thorough exploration: in-depth description of APQN case

After the congratulation messages from 6 videos, Dr. Jagannath Patil, APQN fourth President, and Prof. Dr. Jianxin Zhang, APQN fifth and sixth President, respectively delivered speeches on the 20th anniversary and conducted a case study on significant achievements of APQN 20-year development.

Former President Jagannath Patil noted that over the last 2 decades, APQN has done remarkable work in bringing together QA fraternity members across the Asia-Pacific Region on this unique platform. It not only helped in sharing good practices, the exchange of professional expertise ideas and resources but also it has immensely benefited in strengthening the bond of humanity among people across borders. He shared two thoughts for humanity and hoped each one as a responsible member of the APQN quality fraternity would contribute to the cause of quality and humanity.

Former President Jianxin Zhang gave a keynote speech entitled «The Pursuit of Quality Assurance of Higher Education without Boundary: A Case Study of APQN’s Striving for its Ultimate Goal for 20 Years». APQN’s efforts

over the past 20 years have made a significant contribution to the field of international education quality assurance. Continuing the topic of «Happy Birthday», she continued to narrate APQN development history over the past 20 years and outstanding achievements on the long QA journey. In the past 20 years, APQN has gone through 5 development stages (Jianxin Zhang, 2023): (1) Before 2004, it is an initiative development stage focusing on APQN goal, mission, vision, etc.; (2) from 2005–2011, it is a basic-construction development stage, focusing on website, constitution, etc.; (3) from 2012–2015, it is a self-sufficient development stage, focusing on APQN survival and growth because of the cease of funding; (4) from 2016–2023, it is a self-sustainable development stage, focusing on the idea of fourth generation of quality assurance (Fig.2). And (5) from 2024, APQN enters its new development stage, facing the era of information era and internationalization of quality assurance. On the long journey of ensuring education quality, APQN has firmly achieved its ultimate goal, no matter what difficulties it encounters.



**1.4. Abundant achievements: 20-years sustainable development**

The 20th AC means a review and summary of the development process of the past 20 years. On the long journey of pursuing «Dissolving Boundaries for a Quality Region», APQN has achieved outstanding achievements, mainly in the following six aspects (Jianxin Zhang, 2024):

**No. 1: serving the largest global cohort of quality assurance without boundaries.**

As of June 2023, APQN has 268 members from 47 countries/territories in Asia and the Pacific, accounting for more than half of the world’s total population.

**No. 2: establishing a collaborative network of global quality assurance.**

APQN has established close relationships with national, regional and international networks/organizations in quality higher education. APQN has many partners including INQAAHE, WB, UNESCO, CHEA/CIQG and others. E.g. after the successful completion of the first global survey, APQN once again collaborated with INQAAHE to conduct the second global survey on «Global Trends in Higher Education Quality Assurance» starting from the end of 2023.

**No. 3: 19 international AACs were held focusing on the theme of «quality assurance».**

In the past 20 years, APQN has held 19 AACs with over 3500 attendees. Word Cloud analysis shows that the most frequently occurring keywords in the first level are «quality», «assurance», «education» and «higher». The secondary keywords are «Asia», «Pacific», «Global», and «Regional», which are broad concepts that dissolve quality boundaries.

**No. 4: conducting more than 50 QA projects.**

In the past 20 years, APQN has carried out over 50 borderless QA projects. For example, «GIQAC — Global Initiative for Quality Assurance Capacity (2007–2011)», «QACHE — Quality Assurance of Cross-border Higher Education» (2013–2015), «APQR — Asia-Pacific Quality Register(2015-present)», «MPU-APQN International Conferences on Quality Assurance(2015-present)», etc.

**No. 5: taking 14 QA actions in the COVID-19.**

During the COVID-19, APQN conducted 14 actions to fight against the pandemic, including 4 surveys, 1 interview to 7 Board Directors, 1 online forum, 3 international online conferences, 1 face-to-face international conference, 1 on-line-teaching standard, 3 books and other researches. Among them, the book entitled «APQN Research on the COVID Impact on the HE Quality in the Asia-Pacific Region» is the most outstanding, which describes the impacts of the COVID outbreak, narrate the uncertainty and challenges and QA results (Jianxin Zhang, 2022). This book is one of the earliest publications of the research results during the COVID in the globe.

**No. 6: issuing over 50 QA books/tools.**

In order to spread information, knowledge and opinions, APQN has taken a wide range of methods and actions to share information, experiences, theories, and practices of quality assurance. As of July 2023, APQN has released a total of 27 APQNews, 8 QA anthologies, 18 APQN Annual Reports, having published «UNESCO-APQN Toolkit: Regulating the Quality of Cross-Border Education», «Cross-Border HE: Road towards Capacity Building», «Assessing Quality in HE: Information Package for Reviewers» etc. (Jianxin Zhang, 2024). These projects have all achieved satisfactory results.

At the same time, APQN always adheres to the five spiritual legacies of «dedication, sharing, service, innovation and sustainable development», encouraging its board directors and members to «be willing to contribute, share for mutual benefit, be enthusiastic about service, continue innovation, and sustainable development». These spirits have been deeply imprinted in its development process, and become a powerful driving force for its continuous progress and sustainable development. In the future, APQN will continue to uphold these spirits, continuously move forward, innovate and make greater contributions to the QA cause nationally, regionally and globally.

The above 6 achievements demonstrate the dedication and collective efforts of APQN members in promoting excellent education quality without boundaries. It can be said that the 20th AC has become a window to showcase APQN to the world, demonstrating the achievements of the past 20 years through the activities and means such as videos, speeches, text documents, commemorative badges and birthday cake.

## **2. Interpreting the significance of APQN's 20-year development**

The 20th AC is a major moment, bringing together all kinds of stakeholders from all over the world to celebrate APQN 20-year development in the field of education quality assurance. As a cultural event, it is also worth interpreting the significance of APQN 20th AC.

### **2.1. Building a cooperation platform to promote exchanges and dialogues**

In the past two decades, APQN has made remarkable achievements in the field of quality assurance in the Asia-Pacific Region. Most of the achievements are attributed to the establishment of a broad international platform to gather APQN members as well as the colleagues of QA community, which has greatly promoted the improvement of the QA level in the entire Asia-Pacific Region. The QA experts and scholars from all over the globe share experiences, exchange ideas and jointly discuss the latest concepts and practices of theoretical and practical QA on the APQN platform.

APQN and the National Assessment and Accreditation Council (NAAC) co-organized the «Global Summit on Quality Higher Education» on 16–17 September in 2016 at Bengaluru, India. Together with 16 EQAAs from 16 countries/territories, «Bengaluru Statement on Next-Generation Quality Assurance of Higher Education: A Shared Vision and Commitment for Fostering Partnership Beyond Borders» was signed. It was the culmination of the global summit organized by NAAC and APQN and has been counted as the major landmark in the International history of higher education quality assurance.

APQN's strong intention is to have multiple collaborations at the three levels: organizational, national, and international. It not only stimulates its focus on calling for mutual cooperation but also actively promotes «capacity development» of the whole QA field. Capacity development (CD), is «a process that focuses on enhancing the skills, knowledge & social capabilities available to individuals, social & political systems» (United Nation, 1998). APQN's CD cooperation lies on 3 levels: (1) global level such as UNESCO and World Bank; (2) inter-regional level such as INQAAHE and AN-QAHE; and (3) inner-regional level such as APQN Members, EQAAs and HEIs. As of 2023, APQN has trained a total of 76 individual members from over 10 countries/territories, and conducted over 100 international academic conferences, summits, workshops, projects and online forums. QA colleagues and APQN members gather not only to share their research findings and practical experiences but also to greatly improve their capacity development on the latest topics and to face new challenges.

This cross-border cooperation not only helps to enhance the QA capacity of all members but also promotes the overall development in the globe. By establishing the cooperative relationships with QA organizations around the world, APQN has brought the experiences and practices of the Asia-Pacific Region to the global stage, and has also contributed its wisdom and strength to the development of global quality assurance.

### **2.2. Developing professional standards to guarantee both internal and external QA**

In the 20th century, with the continuous development of globalization, APQN keenly perceived the changes in the internationalization of higher education while QA standard is one of the important tool to guarantee education quality as well as internationalization.

Following the founding of the European Quality Assurance Register for Higher Education (EQAR), in 2015, APQR became the second QA register in the international QA networks. There are 11 criteria concerning «organization, operations, mission, independence, resources» and others. Among the 11 criteria, 7 are from «APQN Constitution» and 4 are from «Higher Education Quality Assurance Principles for the Asia Pacific Region (Chiba Principle)». (Jianxin Zhang, etc. 2016) APQR is one kind of QA mechanism based on self-evaluation and peer review. It is also one of the important means of self-management for the EQAAs.

With the continuous advancement of the internationalization of higher education (IHE) in the world, an effective accreditation system for IHE is becoming more and more important. Since 2013, APQN has focused on the theoretical and practical exploration of the APQN Quality Label (APQL) for internationalization, and in 2019 APQN conducted the first APQL site review for internationalization to Symbiosis International (deemed University) (SIU) in India. There are 5 Criteria, 12 indicators and 36 observation points, including (1) international mission and policy; (2) organization and administration; (3) international mobility; (4) student support; and (5) student learning outcomes (SLOs). The peculiarity of the APQL review different from others is to stress «internationalization at home», «to promote internationalization at home concerning campus, curriculum, teaching and learning, join program, intercultural and international competences and learning outcomes in the local country». (Jianxin Zhang, 2019) As a quality accreditation label, APQL provides reliable QA references for stakeholders, promoting the internationalization process of higher education in this region.

During the COVID-19 Pandemic, the online survey conducted by the APQN research team found that online teaching quality is urgently needed to improve. By factor analysis and the Delphi method, the team developed the «APQN Standard for Online-teaching Quality Assurance» (hereinafter referred to as «Standard»). The Standard consists of 5 criteria, 14 indicators and 46 observation points, including (1) online teaching environment; (2) teachers' online teaching; (3) learners' online learning; (4) presentation of online teaching outcomes; and (5) online-teaching quality assurance. It shows 6 characteristics: (1) scientific ideas; (2) diversified objects; (3) diversified evaluators; (4) comprehensive criteria; (5) dynamic process; and (6) effective results. (Jianxin Zhang, 2022). The process of developing the Standards fully

reflects the characteristics and unique style of APQN in improving and innovating existing standards. This major achievement has promoted the development of education quality standards in the information age, providing a basis for evaluating and comparing online education quality in various countries/territories.

### **2.3. Eternal pursuit to build a quality region without boundary**

«Without boundary», means to transcend the differences in nationality, ethnicity, race, religion and culture in order to unite for common development. In today's increasingly globalizing world, quality assurance is no longer the exclusive task of a certain country or region, but a common challenge for all mankind. However, due to the influence of history, culture, economic development level and other factors, there exist significant differences in QA standards and practices, which form «an invisible quality boundary». These boundaries not only hinder the dissemination and application of QA good practice but also limit the cross-border flow of products and services, which has greatly affected the coordinated development of high-quality education among countries and regions.

As a non-profit, non-governmental educational organization, the ultimate goal of APQN is «Dissolving Boundaries for a Quality Region». This hope has been rooted in the hearts of all members for more than 20 years. Since its inception in 2003, more and more experts and scholars have gathered together to discuss the most cutting-edge QA topics. Although they come from different places and have different cultural and economic backgrounds, members have the same aspiration to promote global quality assurance and to dissolve regional quality boundaries.

In order to achieve this ultimate goal, APQN advocates members to actively practice the following actions: (1) dissemination of information through APQNews, documents, journals, anthologies and books, whether in paper-based or electronic form; (2) training and development through seminars, workshops, conferences and staff capacity building; (3) developing and using databases of experts and good practices both in EQAA and international networks such as IN-QAAHE, CHEA/CIQG and other appropriate organizations working on accreditation and QA in education; (4) recognition and dissemination of good practices through Asia-Pacific Quality Register (APQR), Asia-Pacific Quality label (APQL) and APQN Quality Awards (AQA) and so on; and (5) other appropriate programs as determined by the General Council or the Board. (APQN, 2019) In addition, APQN also aims to further strengthen cooperation and connections among various EQAAs and HEIs, promote the best practices of organizational, national and regional quality assurance, and provide professional advice help to quality assurance. Under this ultimate and highest goal, APQN has continuously striven on the 10000-kilometer march to achieve its ultimate goal, mission, vision, value and principles.

### **Conclusion**

APQN 20th AC is not just a gathering place for APQN members to celebrate APQN's 20th birthday, but more importantly, this participation in «celebration cultural production» has conveyed information about the contributions of APQN, a non-governmental, non-profit education organization in the field of global education quality assurance over the past 20 years. Through qualitative research and analysis of the APQN 20th AC, this research describes and analyzes the entire content of the celebration, attempting to interpret the celebration's importance and significance for APQN and its contribution to the global QA world.

Overall, APQN 20th AC has profound significance and influence. It is not only a summary and review of the past achievements but also a careful examination of the current status, and a beautiful vision and blueprint for future development. It is a stage to showcase APQN itself to the world, as well as a key to inherit the 5 spiritual legacies and promoting the spirit of «dedication, sharing, service, innovation and sustainable development» within APQN as well as a window to observe APQN in detail from the outside world. After APQN 20th Anniversary Celebration, APQN will continue to play its leading role in the field of quality education in the Asia-Pacific Region, and do more contribution to APQN's ultimate goal of «Dissolving Boundaries for a Quality Region» with its mission of «enhancing the quality of higher education in the Asia-Pacific Region».



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# The System of Internal Quality Assurance Agency for the Assessment of the Quality of Tertiary and Vocational Education from the Point of View of the Student Community

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## **Abstract:**

*Quality assurance in educational institutions is a key activity aimed at maintaining and continuously improving the entire educational process and increasing the level of knowledge and skills of students by providing all necessary resources. International and professional and public accreditation are focused on assessing the quality of educational programs for compliance with national and international standards that ensure a high level of education quality, as well as meet and anticipate the requirements and expectations of consumers and stakeholders. However, in order to provide high-level accreditation with recommendations for improving processes, agencies involved in accreditation of educational institutions must develop, maintain and continuously improve internal and external quality assurance with the involvement of the student community. As the student is a key stakeholder in the education service and their point of view is important for the compilation of internal and external quality assurances.*

## **Introduction**

In recent years, educational institutions in Russia have shown interest in the development and implementation of new methods and mechanisms for quality management and self-control of the implementation of educational programs. They strive to improve existing and form new ways of ensuring the quality of education, as well as study successful practices of their application. The needs and requirements of the labor market in relation to qualified specialists and graduates have changed, as well as the desire of educational organizations to improve their reputation and competitiveness not only in the Russian market, but also in the international market. Quality assurance of educational accreditation agencies and organizations is of great importance to educational organizations, as accreditation is the process of assessing the quality of educational institutions and programs. One of such bodies for the procedure of external accreditation of education in the Russian Federation is the Agency for Quality Assessment of Vocational Education on the basis of the Certification Association «Russian Register».

Quality Assurance Agency (QAA), Agency for the Assessment of the Quality of Tertiary and Vocational Education was established in 2015 as a part of Certification Association «Russian Register». The Agency is a recognized authority in the Russian Federation and abroad, responsible for its stakeholders. The mission of the Agency as a part of the Russian Register, as a signatory of the UN Global Compact, is to contribute to the achievement of the UN Sustainable Development Goals adopted for the world and all countries: to provide inclusive and equitable quality education and promote the development of lifelong learning opportunities for all. In the context of growing international competition for the quality of education, the Agency, within the framework of expert and accreditation activities, strengthens the positions of Russian educational institutions of tertiary education, promotes effective investment in the educational system of the Russian Federation, improves the educational environment and the opportunities for self-fulfillment of the population. The Agency stimulates the formation of such human capital that can meet the needs of modern innovative production and the digital, knowledge-based economy of Russia.

The Agency's activities are aimed at creating public trust in the quality of educational services provided, the honesty and reputation of educational organizations through the dissemination of objective information about the quality levels of educational institutions, the quality of graduate training, as well as the best practices for assessing, monitoring and controlling the quality of education with stakeholders. One of the key features of the Agency is the involvement of the student community not only to the process of accreditation of educational programs, but also to the activities of the organization as employees. Such a policy of activity is due to the fact that the student community is an important stakeholder in the education system, and its opinion must be taken into account when developing a strategy for improving the quality of the educational process. Students can come up with innovative ideas, bring a fresh perspective on problems and ways to solve them.

## **1. Internal Quality Assurance System of the Agency**

An internal quality assurance system is a set of processes, measures and procedures developed and implemented by an organization to ensure a high level of service delivery. It includes quality control of the service at all stages of its life cycle, monitoring and continuous improvement in order to increase efficiency and satisfaction of all stakeholders. An internal quality assurance system ensures the achievement of goals, improves the reputation in the market and increases competitiveness.

Components of the internal quality assurance system of the Agency for Vocational Education Quality Assessment:

1. Quality policy and objectives aimed at continuous improvement;
2. Process approach;

3. Principles of external evaluation;
4. Professional coordination and evaluation;
5. Standard (model) and methodology for independent assessment of the quality of education and accreditation of educational programs;
6. Professional cooperation with stakeholders;
7. Professional qualifications;
8. Stakeholder satisfaction monitoring system.

### **1.1. Quality Policy and Objectives for Continuous Improvement**

Over the past few years, the Agency's Quality Policy has changed dramatically. Previously, the Agency extended to its activities the general policy of the Certification Association «Russian Register», after passing the first APQN accreditation and developing and carrying out corrective and preventive measures, according to the recommendations made, the Agency developed its own Quality Policy, which is published on the website and implemented in the organization as a regulatory document.

The Quality Policy complies with all aspects of Part 3 of the ESG standards, the requirements of sustainable development and best practices of the European Higher Education Area Agencies and contains the mission, values, as well as strategic vision that reflect the direction of the Agency in the field of quality assurance of its services and reflects the main goal of the Agency's activities — to ensure inclusive and equitable quality education, to promote the development of opportunities Training.

### **1.2. Process Approach**

The Agency has identified all the processes of its activities and documented the key and supporting processes and all persons involved in these processes in its regulatory documents, since it is possible to achieve the set goals and meet all the requirements of stakeholders only through a full understanding of its internal processes, which should be considered as a set of interrelated processes that allow for consistency, transparency and objectivity activities of the Agency.

### **1.3. Principles of external evaluation**

The key to a high-quality audit is the regulations for its conduct, which ensures transparency, objectivity, and also contributes to building correct and effective interaction between participants in the accreditation process. The developed and applied principles of external evaluation reduce the risk of errors and distortion of results, which is important for ensuring the quality of the service provided by the Agency and the achievement.

The principles that the Agency has defined for itself are open to all stakeholders and are published on the Agency's website, which ensures transparency and openness of activities.

Principles of external evaluation:

1. Consistency and integrity, strict adherence to accreditation standards;
2. Objectivity and construction of the report on the basis of objective data, facts and joint decision of all members of the expert group;
3. Impartiality;
4. Openness and transparency, all external evaluation procedures are available to stakeholders;
5. Confidentiality of external assessment data, restriction of access to a number of documents and information obtained in the course of external evaluation until the completion of the final report of the expert group;
6. The use of reliable sources of information and data to determine quality and performance indicators;
7. Compliance with the moral and ethical standards of the expert's behavior, strict compliance with the code of ethics of the external expert;
8. Fact-based decision-making
9. Teamwork of the members of the group of experts.

### **1.4. Professional coordination and evaluation**

To ensure the consistency of external audit procedures, the Agency appoints a coordinator (head of the expert group), who forms external audit groups, conducts a technical analysis of self-assessment reports of educational institutions, and controls external audits. The head of the expert group is necessary for the coordination and control of the activities of experts, is an intermediary between the experts and the accredited party, ensures effective interaction and information exchange. From the point of view of the student community, the head of the expert group plays an important role in ensuring an effective and high-quality review, since it is he who lays the «mood» of accreditation at the introductory meeting, resolves emerging questions and problems, coordinates accreditation, and is also the person who completes accreditation by speaking at the final meeting and consolidating the reports of experts into one final report.

### **1.5. Standard (model) and methodology for independent assessment of the quality of education and accreditation of educational programs**

From the point of view of the student community, the development of its own standard and methodology for accreditation allows the most effective and accurate assessment of the quality of educational programs, taking into account their specifics and features.

The Agency's own standard for independent accreditation integrates the priorities of the Russian approach to external quality control of educational programs and European requirements for their continuous improvement in accordance with the principles of ESG. In the process of piloting

### **1.6. Professional cooperation with stakeholders**

The Agency sets itself the task of developing, improving communication channels, developing high-quality relations and promotes the participation of stakeholders in the Agency's activities. Consultation with and collaboration with national and international stakeholders, research on quality assurance in education and communication of research findings are key activities of the Agency to achieve inclusive and equitable quality education, promoting the development of learning opportunities.

From the point of view of the student community, this vector of the Agency's activities ensures its development, improves the quality of services provided through feedback and recommendations, increases competitiveness and the level of trust of stakeholders. Each organization whose activities are related to education should be open to the exchange of experience, since this ensures the improvement of the quality of the education system, develops new approaches to learning.

### **1.7. Professional qualifications**

The professional qualifications of experts and the employees of the Agencies involved in the accreditation of educational institutions are of great importance for ensuring and improving the quality of the country's education system, because it is they who evaluate educational programs for compliance with the requirements of standards, assess the effectiveness of training and give recommendations for improving the educational process. The employees of the Agency for the Assessment of the Quality of Tertiary and Vocational Education fully comply with this parameter, since all employees and experts have related education and have all the necessary competencies in their field. The agency's management creates opportunities for continuous professional development and opportunities to acquire a high level of knowledge, skills and competencies through participation in national and international events and professional development. All experts have specialized education and experience in education, they undergo theoretical and practical training, and also have the skill of analyzing the quality of educational programs, are able to assess the effectiveness of teaching methods and techniques, as well as the results of student learning. The work of experts is not only to assess the compliance of the educational process with standards, but also to help educational institutions overcome problems in education and improve its quality, which ultimately contributes to the improvement of the educational system as a whole. Therefore, the Agency conducts re-certification of experts every 3 years.

### **1.8. Stakeholder satisfaction monitoring system**

From the point of view of the student community, stakeholder satisfaction monitoring is an important tool for improving quality and the Agency fully ensures the effectiveness of this internal quality assurance: it has developed and implemented a system for monitoring the satisfaction of all stakeholders for the continuous improvement of internal processes. The monitoring system includes surveys among experts, filling out a questionnaire of satisfaction with educational institutions after accreditation, workshops and round tables.

### **Conclusion**

The development of an internal quality assurance system and their effective functioning is the key to the success of any organization. The analysis of the system of internal quality assurances of the Agency for the Assessment of the Quality of Tertiary and Vocational Education from the point of view of the student community made it possible to identify the strengths and weaknesses of the developed system.

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## The EFQM model as a tool for innovative development of MPEI

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### **Abstract:**

*The new model of higher education integrates three key processes: educational activities, scientific research and the practical application of their results in innovation. Successful solution of this set of problems requires, on the one hand, the management of innovative projects, and on the other, the formation of a management system for all innovative activities of the university. Success in innovation is a consequence of the introduction of innovations in management, new ways of leadership, coordination and motivation of personnel. The article presents approaches to planning, diagnosing and managing innovation activities at the National Research University «MPEI» based on the EFQM innovation «lens» using RADAR logic.*

### **Contents:**

1. Introduction
2. Systematic approach to organizing innovation activities
3. General concept and structure of criteria in the model of innovation
4. Innovation «lens» of MPEI
5. Self-assessment of innovative activities
6. Conclusion

### **Referencing**

The MPEI target model integrates three key processes: education, science and the practical application of results in innovation. To successfully solve these problems, on the one hand, the management of innovative projects is required, and on the other hand, it is necessary to form a system for managing all innovative activities of the university. Success in innovation is a consequence of the introduction of innovations in management, new ways of managing, coordinating and motivating personnel.

The presented project of the MPEI innovation «lens» is an innovative solution that supports the development of an innovative culture and environment in an educational organization. It can also be seen as best practice to support organizational change processes in education.

### **Introduction**

Innovations in ideology and management processes give the university a competitive advantage in the long term, the implementation of the target model «University 3.0» and sustainable leadership in the educational environment.

The use of modern models of successful business [1] contributes to the creation of a model of a modern innovative university, including:

- goals and strategy in the field of innovation;
- innovative culture and environment;
- implementation of processes, projects and initiatives to transform this strategy into the creation of innovations;
- achieving results of innovation activities, their impact on strategy and stakeholders;
- operational control of processes and projects,
- implementation of innovative products in practice.

The university implements this model according to a three-level scheme (university — branch — department) using two approaches at the university level, focused on innovation and the implementation of the concept of sustainable development [2].

In relation to innovation management, this logic was implemented in the EFQM innovation «lens» [3] as a holistic and focused approach that ensures systemic integration of all management tools used in the organization. At the same time, the «lens» allows not only to assess the level of maturity of working with innovations, but also to manage corporate actions. The practical implementation of this approach at the National Research University «MPEI» (hereinafter — MPEI) made it possible to systematically approach the solution of the entire complex of strategic tasks. This is a key point in the university's transition program to a target model based on the «University 3.0» concept, in which the development of the innovation subsystem is considered one of the key success factors.

### **1. Systematic approach to organizing innovation activities**

A systematic approach to working with innovation is implemented through the use of project management tools and the formation of an integrated innovation management system based on the EFQM innovation «lens» model.



Through project management, an object-oriented approach is supported with a direct focus on supporting innovative projects and disseminating best practices in this area. Evaluation of innovative projects is widely used in well-known international competitions in this area [4, 5], and MPEI has successfully used this opportunity over the past five years.

A systematic approach to innovation management should provide opportunities for their generation both as a result of R&D carried out by departments and their educational and methodological activities, as well as in management and key processes. In a strategic perspective, this will allow us to take leadership positions among technical universities in Russia and the CIS in innovations, including scientific research and engineering services, training of highly qualified personnel in the energy sector, IT technologies and related fields of technology, as well as in innovation management.

**2. General concept and structure of criteria in the model of innovation**

The task that was set when developing the innovation «lens» of MPEI was to ensure planning and monitoring of the implementation of goals in the field of innovation, disseminating a holistic approach to all aspects of activities and projects deployed at the university. The model includes three groups of criteria that focus on the activities, processes and culture that stimulate innovation; provides ample opportunity to generate innovation, allows you to measure tangible impact on business and stakeholder results, as well as the strategic results of the university. Through an innovative model, we ensure the involvement of research and teaching staff, departments, institutes and employees of specialized university services in the creative process. By implementing the model, we set tasks:

- help employees understand what innovation is and focus on developing new products, solutions and working methods;
- support the sustainable development of the university;
- provide a system for assessing innovation maturity in the long-term aspect of the work of the university and its departments.

The university innovation model focuses on the activities, processes and culture that stimulate innovation, and also supports a system for monitoring the impact of innovative development on achieving strategic results, including for key stakeholders (Figure 1).



Figure 1. Criteria Model of Innovation «Lens».

Criteria	Components
<b>DIRECTION</b>	
1. Vision and Strategy	1.1. Vision and Leadership in Innovation
	1.2. Strategy
2. Leadership and Culture of Innovation	2.1. Innovation culture and organizational environment
<b>EXECUTION</b>	
3. Collaboration with stakeholders	3.1. Engagement Opportunities
	3.2. Collaboration with stakeholders
4. Creating sustainable value in innovation	4.1. Knowledge Management
	4.2. Creation of innovative products and solutions
5. Processes and resources	5.1. Processes
	5.2. Resources
<b>RESULTS</b>	
6. Influence on Stakeholders	6.1. Customer Satisfaction
	6.2. People perception and engagement
	6.3. Impact on partners and other stakeholders
7. Business and market impact	7.1. Impact on Stakeholders
	7.2. Impact on the economy and market

Table 1. Criteria and sub-criteria.

The model includes three groups of criteria: Direction, Execution and Results. Their structure is presented in table 1. Let us highlight three main stages (levels) of achieving innovation maturity:

- vision in innovation;
- growth of innovation;
- leadership in innovation.

At the first stage, close attention is paid to defining the conditions, innovation culture, processes and management systems necessary to initiate and develop innovation and creativity.

The second stage is characterized by the fact that systemic factors that support innovation become an integral part of everyday work. This is manifested in the updating and improvement of indicators, an increase in the number of employees participating in innovation activities, and the development of partnerships.

At this stage, the innovation value chain is formed thanks to:

- integration of innovative culture, conditions, processes and management systems;
- active involvement of employees in innovation activities;
- broad cooperation and partnerships in innovative projects with key stakeholders, including partners, customers, consumers of the results of educational and scientific activities.

The goal of the third stage is to ensure the university's leadership position through outstanding achievements in innovation. This should be facilitated by a developed innovation culture, supported through a system for managing end-to-end processes with the participation of stakeholders. Dissemination of best practices, internal and external recognition, achievement of outstanding results and leadership play an important role.

### 3. Innovation «lens» of MPEI

An innovation «lens» is a tool that ensures a systematic transition to a model of innovation quality management. The expected result in the long term is achieving leadership:

- in the field of training highly qualified personnel for high-tech companies in the fields of energy, radio engineering, IT, robotics;
- in terms of the volume of R&D, engineering services and innovation implementation for industrial partners in the field of energy, IT, radio engineering, robotics;
- in the field of quality management and innovation management among other Russian universities and universities in other countries.

The innovation «lens» model of MPEI (Fig. 1) is considered as a tool that allows you to conduct a self-assessment of existing processes, develop a plan of activities and modernization of processes, support the implementation of developed activities and processes, carry out constant analysis of results, and adjustment of activities and processes based on it.



Figure 2. Structure and approaches of the MPEI Innovation «Lens».

The structure and approaches of the MPEI innovation «lens» are presented in Fig. 2. In the Direction section, one of the key approaches is the Vision and Strategy of MPEI in innovation. In turn, this has an impact on the formation of the MPEI innovation ecosystem, the concept of which is aimed at integrating and achieving synergy from the participation of all key stakeholders, including departments, other divisions of MPEI, industrial partners, existing and potential customers and other ecosystem participants. The implementation of the Strategy requires the formation of a new type of innovation culture that supports successful work with innovation at all stages of the innovation process from initialization to implementation and implementation. The importance of the approach to innovation is associated with the strategic positioning of MPEI as University 3.0 (education, science, innovation).

Innovation ecosystem. When deploying the structure of key processes that support innovation, the priority is the integration of efforts with industrial partners from among the leading Russian systemically important energy companies in order to create an innovative ecosystem of the university. MPEI pays special attention to the formation of the internal structure of competence centers, departments and interdepartmental teams of employees, graduate students and students, the development of a motivation system and stimulation of innovations, and their promotion to the market. The innovative «lens» of MPEI solves the problem of systemic integration of the efforts of all its participants through the management of processes and procedures, holding events, briefings, as well as the creation of digital platforms for managing processes in this system. Let us highlight the digital platforms combined into the information and analytical complex «Turbo.University»:

- «situational-analytical center» (information and analytical activity);
- «Platform:« Researchers and developers on the Web» (Pier — Coordination of Research);
- «KW of ideas» (management of innovation);
- «Effectiveness and management of risk — a program of integrated development» (planning, control of activity, assessment of the effectiveness of departments and scientific and pedagogical workers) and others.

Leadership in Innovationx. The target model supported at the university is based on achieving leadership in training highly qualified personnel, conducting research and providing engineering services in the energy sector and other high-tech industries in Russia, the Eurasian Economic Union (EAEU) and the CIS, as well as leadership in innovation.

Seven principles of innovative culture of MPEI. They are the foundation of MPEI's innovative culture:

- leadership in determining the goals of innovation;
- customer orientation through interaction with industrial partners and understanding of their needs and requirements for graduate training, research results and innovative activities;
- involvement of employees and students in innovation activities and commercialization of research results;
- systematic approach to innovation management;
- improvement and development of the innovation ecosystem;
- making management decisions based on facts and analysis of the effectiveness of the implementation of innovative activities;
- synergy from innovative activities for the university, partners, society, people and consumers.

Project management. Management of innovation activities and projects is carried out centrally through the Center for Innovative Development (CDI), which serves as a project office, combining work on all strategic innovation projects and initiatives of the university.

The Execution section includes a series of approaches, projects and initiatives aimed at creating an innovative university ecosystem. Particular attention is paid to the training and involvement of specialists through network partnerships, the work of the information platforms «kW of ideas» and «PIRS», the introduction of a systematic approach to innovation management, resource support and performance monitoring.

Information System «kW of ideas». A key role is played by the «Turbo» information and analytical complex, introduced in April 2022. University IP «kW ideas». The system has created personal user accounts that allow all parties involved in the process to fully work with innovations directly in the system from the moment of submitting an application to the moment of its acceptance; technical improvements have been made to ensure remote work with submitted applications, and other innovations for the convenience of users.

Scientific Research Programs (SRP). SRP are initiative scientific research programs that promote the involvement of MPEI students in innovative activities and create scientific foundations for creating innovations. This approach has been in effect for several years, and there are examples of innovations successfully created within the framework of SRP.

Student Design Bureau (SDB). SDB plays an important role in involving youth in innovation and career guidance. This allows, for example, to resolve issues related to personnel training for the largest manufacturer of power equipment, JSC Power Machines.

Financing of innovation activities. The budget for financing innovative projects is formed from external, attracted funds; funds are also allocated to stimulate heads of departments and activities for the development of innovative activities.

Promotion of innovation. Innovations are promoted to the market both with the participation of industrial partners and through the creation of small innovative enterprises (SIEs). In particular, SIEs make it possible to support the training system for entrepreneurs involved in innovation activities while studying at MPEI.

4. Self-assessment of innovative activities

For self-assessment, RADAR logic is used using a developed questionnaire on seven criteria of the innovation model.

For the Direction and Action criteria, the following assessments are accepted: for the level of Vision in Innovation — up to 40%, Growth of Innovation — from 40 to 80%, and for Leadership in Innovation — above 80%. The results of the 2022 self-assessment are presented in table. 2.

Criterion	Maturity level	2023
1. Vision and Strategy	Growth of innovation Support level	60%
2. Culture of Innovation and Leadership	Growth of innovation Support level	60%
3. Collaboration with stakeholders	Growth of innovation The Innovation Creation Chain has been built	65%
4. Creating sustainable value in innovation Growth of innovation	Growth of innovation Support level	60%
5. Processes and resources	Growth of innovation Support level	50%
6. Impact on stakeholders	Growth of innovation Support level	45%
7. Impact on business and market	Innovation Vision Preparatory stage	40%

Table 1: Cluster Analysis List of Keywords and Author Countries/Regions in English Educational Evaluation Literature.

Presented in table. 2, the results of the 2022 self-assessment assess maturity according to most criteria, corresponding to the transition from the level that supports the development of innovation to the level of building a chain of innovation creation.

The innovation «lens» allows you to implement a systematic approach to innovation management, including:

- setting goals and creating an innovative culture;
- managing relationships with stakeholders, creating innovations and supporting innovation activities with processes and resources;
- determining the impact of innovation on stakeholders, the economy and the market.

To support the innovation management system, the information and analytical complex «Turbo.University» is used, which presents all components of the university's innovation ecosystem.

### **Conclusion**

The approaches to managing university innovation activities presented in the article cover both an object-based approach through a detailed study of individual innovation projects, and a subject-based approach, which examines key innovation processes and their participants. The integration of such approaches within the framework of an innovation «lens» allows us to study both best practices in innovation and the organization of innovation activities at the university. Application of the model provides a systematic and holistic approach to innovation management, supporting the implementation of the «University 3.0» strategy at MPEI.



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# Practice and Prospect of the Construction of the «Five-in-One» Higher Education Quality Assurance System with Chinese Characteristics

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Abstract

Higher education evaluation is a vital measure to ensure the quality of talent training. Over 40 years since the beginning of China’s reform and opening-up, a «Five-in-One» higher education quality assurance system has been developed to suit the nation context, effectively unleashing the full potential of higher education. Embarking on a new journey, China will accelerate the establishment of a world-class higher education quality assurance system with Chinese characteristics, providing Chinese solutions to global educational governance.

1. An overview of higher education in China

1.1. General condition of higher education in China

China has consistently laid emphasis on higher education development, and achieved noteworthy accomplishments over the past decade. Firstly, the scale of higher education has seen continuous expansion. China has established the world’s largest higher education system with 47.63 million students enrolled, constituting approximately 19% of the global total, with a gross enrollment ratio of 60.2%, exceeding the global average. Secondly, there has been sustained optimization of the higher education structure. Based on national strategies and industry development, China has arranged disciplinary and professional structure, promoted interdisciplinary collaboration, enhancing the adaptability of talent training to new technologies, and industries. Thirdly, the overall strength of China’s higher education has seen consistent enhancement. A number of universities and disciplines have reached the world advanced level. Notably, the development of massive open online courses (MOOCs), online education, and innovation and entrepreneurship education is pioneering on a global scale, contributing to improvement of China’s comprehensive higher education strength.

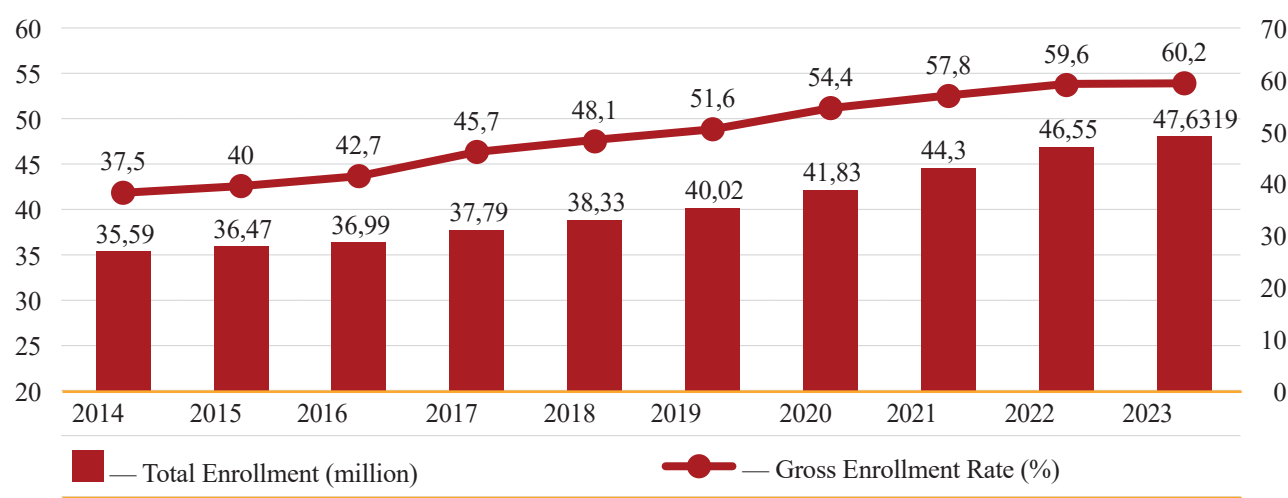


Figure 1: Enrollment scale and gross enrolment ratio of China’s higher education in the past decade.



Figure 7: Experimental Setup for Testing a Capacitive Heat Exchanger with an Oscillating Coil.

1.2. Focal points of reform in China’s higher education

Quality is pivotal to higher education and a shared pursuit across global higher education systems. UNESCO has proposed to construct a more resilient and inclusive high-quality education system. In the new era, China’s higher education has further enriched the connotation of «high quality», which is, to build a world-class-level higher education with Chinese characteristics. «Chinese characteristics» means the development of higher education should be suitable for China and be a strong support for A Chinese path to modernization. «World-class level» means to pay attention to international commonalities and comparability, to establish an independent paradigm of higher education. This aims to propel China’s higher education into the forefront globally, continuously improving its international contributions and influence.

2. The Construction of the «Five-in-One» higher education quality assurance system

China’s higher education quality assurance system has always been closely developed with the reform and development of China’s higher education. Through 40-year practice, a «Chinese solution» for quality assurance suitable for the Chinese condition has been formed, being an important support for bringing out the full potential of Chinese higher education.

2.1. 40-Years practice of China’s higher education quality assurance

China’s higher education evaluation began in the 1980s and has been developing for 40 years, generally experienced 4 stages of development, including starting, practice, development and innovation. Each decade witnesses a step forward, ensuring and improving the quality of higher education.

The first decade (1980s)

witnessed initial explorations. Focused on whether to conduct higher education evaluation in China, through research and pilot, the Ministry of Education(MOE) established relevant systems, outlining the fundamental principles and implementation framework for conducting undergraduate evaluations in China.

The second decade (1990s)

emphasized various evaluation practices. MOE organized evaluations of more than 200 universities by various forms, which accumulated valuable experience on how to conduct evaluation.

The third decade (2000s)

was characterized by the comprehensive promotion of the first round of nationwide evaluation. With the transform of China’s higher education from «elite education» to «mass education», MOE conducted a nationwide evaluation of nearly 600 universities for the first time, which ensured the overall quality of China’s higher education after enrollment expansion. The first round of evaluation played a pivotal role in improving the general teaching conditions and enhancing educational development in universities, as well as the establishment of a quality assurance awareness in universities.

The fourth decade (the recent decade)

is characterized by innovative development of the «Five-in-One» evaluation system tailored to China’s conditions. Based on the previous experience and with the popularization of higher education, MOE systematically planned higher education evaluation and established a «Five-in-One» higher education quality assurance system, which includes university self-evaluation, institutional evaluation, program accreditation and evaluation, regular monitoring, and international evaluation. This system has promoted the development of Chinese higher education in the past decade.



Figure 3: 40-Year practice of quality assurance in China’s higher education.

## **2.2. Effects of «Five-in-One» quality assurance system with Chinese characteristics**

### **2.2.1. Institutional evaluation: classification guidance to promote distinctive development**

Institutional evaluation is a comprehensive evaluation of in colleges and universities, focusing on the strengths and weaknesses of talent training and giving suggestions for improvement. There are two forms, including Eligibility Evaluation and Audit.

Eligibility evaluation is a basic evaluation conducted for newly established undergraduate colleges and universities. It is a one-time evaluation that focuses on whether the school's basic conditions meet national standards, whether teaching management established basic norms, and whether the quality of talent training is basically guaranteed. Meanwhile, different eligibility evaluation indicator systems are set, including research-oriented, applied, vocational and technical oriented, and Sino-foreign cooperative education, to promote characteristic development. Almost 400 universities nationwide have undergone this eligibility evaluation, effectively urging new institutions to meet the national baseline of talent training. Audit is a diagnostic and developmental evaluation conducted for institutions passed the eligibility evaluation, arranged with a 5-year cycle. Different evaluation categories are set based on the target positioning, mission, development stages, and service orientation of different universities, aiming to guide universities to develop its characteristics.

### **2.2.2. Program accreditation and evaluation: integration between industry and education to jointly improve the quality of professional talent training**

Program Accreditation and Evaluation aims to ensure the quality of talent training at the program level. In China, the employment department of the industry participates in the accreditation work throughout the entire process, jointly formulates accreditation standards with the education department, organizes accreditation implementation, selects accreditation experts jointly, determines accreditation conclusions jointly, and collaborates to promote the cultivation of undergraduate professional talents in universities to meet industry needs.

Since 2006, China has carried out engineering, medical, and teacher training accreditation. More than 2000 engineering programs, almost 400 medical programs, and over 200 teacher education programs are accredited.

### **2.2.3. Regular monitoring: speak with data and providing consultation for central and provincial government and institutions**

Relying on the National Database of Basic Educational Status of HEIs with more than two million HEI's educational status, regular monitoring of HEIs quality can be implemented. Firstly, National Reports on Quality Monitoring and Evaluation are annually published, presenting key focus and hot issues in the development of Chinese higher education. Secondly, Analysis of data on the state of undergraduate teaching, Analysis of data on professional accreditation, and a series of monitoring reports are developed to provide to administrative departments, institutions, and relevant industry organizations as reference.

### **2.2.4. International evaluation: active participation in global governance**

Over the past decade, China's evaluation program and quality have gradually been acknowledged by the world. Firstly, China has actively integrated into the global community of higher education. In 2016, China Engineering Education Accreditation Association became a full member of the Washington Accord, and in 2023 it passed the periodic review of the Washington Accord unanimously. In 2020, Working Committee for the Accreditation of Medical Education has been formally certificated by the WFME, which means we achieve international multilateral recognition in engineering and medical professional accreditations. Secondly, China has deepened educational cooperation. China has undertaken quality evaluations for local universities in Macau, and majors at high-level universities in China and Russia have passed the Sino-Russian joint accreditation. China's evaluation models and standards have been internationally recognized, significantly enhancing the international influence of China's higher education quality assurance.

### **2.2.5. Self-evaluation: cultivating quality culture**

The practice of regular and institutionalized internal quality assurance has become a globally accepted approach and is a «standard feature» for world-class universities to build the cohesion of a quality culture, which is also a core aspect of their governance. However, for a long time, most Chinese universities have a certain gap in quality assurance concepts and quality culture, compared to institutions of developed countries. Therefore, the EQEA, as a national quality assurance institution, has conducted an applied research on «the construction of the internal quality assurance system in HEIs». This helps HEIs to build an internal quality assurance system that aligns with their mission and educational positioning, and to achieve effective interaction of international and external quality assurance.

## **2.3. Six characteristics of the «Five-in-One» higher education quality assurance system**

The «Five-in-One» higher education quality assurance system represents an institutional framework for ensuring the quality of talent training in Chinese universities. The above five programs are organically integrated with different focuses. There are six characteristics of this system: unified standards combined with categorized guidance, regular monitoring coupled with periodic evaluation, qualitative analysis complemented by quantitative measurement, balanced the dimensions of both specialty and institution, integrated internal and external quality assurance, integrated Chinese characteristics and international advanced concepts.

## **2.4. The foundation for the construction of the «Five-in-One» higher education quality assurance system**

The construction of the «Five-in-One» higher education quality assurance system with Chinese characteristics benefits from unique work resources. Firstly, there is a vast data resource base. the National Database of Basic Educational Status of HEIs has now covered over 1,200 institutions nationwide, encompassing over 70,000 professional points, and has collected teaching and research status of over 1.7 million teachers, the learning status of more than 20 million



students. Secondly, there is a diverse pool of expert resources. A team of over 30,000 experts has been accumulated to serve the evaluation, covering various fields such as higher education research and management, educational teaching evaluation, and physical education, aesthetic education, and labor education, involving various academic categories including science, engineering, law, and medicine. Besides, more than 4,000 experts have work experience in industry and enterprises. The massive data resources and the experts are conducive to a comprehensive review of the quality of education of institutions.



Figure 3: 40-Year practice of quality assurance in China's higher education.

**3. Case study: four innovations in audit**

MOE initiated the national program of HEIs Audit in 2021, addressing the needs for diversified development in higher education. This round of HEIs Audit makes further progress in promoting the development of university classification. Specifically, there are four innovations of the HEIs Audit.

**3.1. Program design: highlights characteristic development by flexibly classified evaluation**

HEIs Audit adopts a flexibly classified approach, offering «two categories and four types» evaluation package and several modular indicators. It no longer uses the same set of indicators to measure all universities. HEIs can make autonomous choices and modular combinations to form «one HEI, one case» based on national and local economic and social development needs, their own mission and tasks, current development stage, and future development goals. Over 800 institutions should participate in this round of HEIs Audit. Among them, a minority of universities with the goal of being world-class universities chose to participate in the first category evaluation (about 12%), focusing on cultivating talents independently and exploring a new path to build world-class university with Chinese characteristics. The majority of local universities chose to participate in the second category evaluation (about 88%), aiming to better serve the local economic and social development needs and upgrading industrial structures. Through this flexible classification approach, we hope to optimize the structure of higher education featuring well-positioned institutions.

**3.2. Organizational implementation: highlights collaboration between central and provincial government to achieve substantial equivalence**

HEIs Audit is carried out by central and the provincial departments, respectively. Specifically, MOE is responsible for conducting the first and second category audit of institutions affiliated with the central government, as well as the first category audit of local institutions. Provincial education administrative departments are responsible for the second category evaluation of colleges and universities in their respective regions. In the process of ministerial and provincial collaboration, a unified working mechanism and team are established to achieve substantive equivalence in quality assurance. This approach not only adheres to the unified national requirements but also encourages local characteristics: Firstly, the unified plan is utilized by both central and provincial government. Based on the fundamental national audit framework, local areas are encouraged to add characteristic indicators, providing more diverse options for local HEIs. Secondly, a shared team of experts is utilized by both central and provincial government. MOE establishes a national shared team of expert, who both familiar with national standards and local conditions, to support the implementation of audit nationwide.

**3.3. Evaluation methods: highlights multiple perspectives by promoting the supply-side reform of talent training through demand-side support**

HEIs Audit explores the establishment of a multi-dimensional evaluation system, with a self-evaluation report, three teaching process reports and three employment outcome reports. The evaluation perspective shifts from a single focus to multiple dimensions and expands from internal to external aspects of universities. Beyond focusing on «what the intuition has done», it places greater emphasis on «what the institution has accomplished». This reporting framework evaluates the educational teaching and talent training quality of colleges and universities from various angles, including the National Database, teachers, students, graduates, and employers. It strengthens the evaluation of teaching effectiveness and learning experiences, forms a closed-loop quality evaluation and continuous improvement mechanism



for the «enrollment — training — employment» chain, and prompts higher education institutions to reflect on talent training from the perspective of stakeholders. It aims to transform universities' focus from «teaching well» to «learning well» and achieving «good development».

### **3.4. Evaluation results: highlights the use of evaluation results by paying equal attention to standardizing and incentives**

HEIs Audit evaluation insists on strengthening the application of evaluation results and motivating colleges and universities to comprehensively enhance the quality of independent talent training. On one hand, through comprehensive «dragnet-style» investigations, it identifies the «problem list» that impacts and constrains the reform and development of colleges and universities, strengthens the establishment of rectification mechanisms to promote continuous improvement of education and teaching reform in universities and the enhancement of talent training quality. On the other hand, through evaluation and inspection, it discovers and assists colleges and universities in refining «exemplary» cases, recommending and promoting distinctive practices and practical cases in undergraduate education, teaching, and talent training reforms, aiding institutions in addressing similar issues.

## **4. Prospects for the construction of quality assurance system for higher education with Chinese characteristics**

The world is facing drastic changes unseen in a century, the scientific and technological revolution and industrial transformation are developing in depth, and higher education in all countries is facing unprecedented opportunities and challenges. In the next 5 to 10 years, China is also dedicated to building a leading country in education. With this process, we comprehensively summarize the experience formed over 40 years of practice in higher education evaluation. Concurrently, we are proactively addressing the shared concerns in global higher education quality assurance, contributing to establish a higher education quality assurance system that is more equitable, open, and inclusive, one that embodies Chinese characteristics and meets the advanced world level. This system will not only offer foundational and pioneering support for China's modernization, but will also contribute Chinese solution to the global governance.

### **4.1. Innovate the governance system and build a quality assurance community**

China's higher education quality assurance system has incorporated national needs, social needs, and industry standards, forming a multi-party governance pattern. In the future, we advocate for the concept of a «Quality Assurance Community», and make efforts in enhancing collaborative governance between the central and provincial governments, to improve the central government's guidance on local education evaluation and to effectively mobilize the enthusiasm of both sides. We will strengthen the interaction of internal quality assurance with external evaluation, and internalize the quality culture into a shared value pursuit for all entities involved. We will enhance mutual support and assistance among multiple parties, working together with universities, governments, and industries to collectively achieve the high-quality education, and establish a co-governance framework.

### **4.2. Follow the trend of digital development and explore intelligent evaluation**

The rapid iteration and application of cutting-edge technologies, such as cloud computing, big data, and AI, reinvent of higher education. In the digital age, relying on a massive data resource, our higher education evaluation will actively make transformation. In terms of functional positioning, we will pay more attention to «service», providing intelligent, personalized, and visualized service for colleges and universities and experts; in terms of methods, we will pay more attention to «intelligence», realizing the transition from experience-driven «evaluation made by human» to data-driven «evaluation made based on data» and «human-computer collaborative evaluation», thus promoting the overall strength and competitiveness of China's higher education with intelligent evaluation.

### **4.3. Advocate global cooperation and contribute to the evaluation with China's solutions**

Faced with global educational governance, China will steadfastly advocate for the «building of a community with a shared future for humanity», actively engaging in the global governance of higher education. We will learn from other countries, deliberating on the development of global educational regulations, standards, and evaluation frameworks, to foster a new order that is equitable, mutually beneficial, and cooperative. We will be proactive to address domestic issues while also offer solutions for the shared challenge in the world with Chinese approaches in higher education quality assurance.

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## The Challenges to Improve On-time Graduation as An Internal Audit Findings

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### **Abstract**

*According to IAAHEH, Indonesian Accreditation Agency for Higher Education in Health, on time graduation is one of the important outcomes. Yearly internal audit performs in our institution in 2023, found that in some programs, the percentage of on time graduation is need to be improved. Since 36 programs are running in our institution, it is becoming our challenges to improve. The aim of this study is to analyze our strategy to improve internal audit finding on graduation time. This is a retrospective descriptive study using internal audit data of the programs in our institution followed by qualitative study with small group discussion. Data of graduation time 2022 were available on 34 programs, with on-time graduation only 68%. This is below the target, which is 80%. Using group discussion, root analysis was found the problems as: thesis, publication, achievement of competences, and poor monitoring evaluation. Based on the identified causes, the program designed some strategies for improvement. In the following year, the progress and results of the improvement will be monitored.*

**Keywords:** *internal audit, graduation time, small group discussion, improvements*

### **Introduction**

Quality Assurance system in higher education consist of internal and external quality assurance. According to the policy of Indonesian minister of education, all of the institution and program of education have to be accredited by national agency of accreditation. BAN PT, National Accreditation Board for Higher Education will accredit the level of institution and program level will be accredited by Independent Accreditation Institution. For programs related to medicine and health, accreditation by, Indonesian Accreditation Agency for Higher Education in Health (IAAHEH). The older system only had 7 criteria with focused on the process rather the outcome. Since 2018 it has 9 criteria from input until outcome, where the outcome criteria have the most weight on assessment. The result of accreditation is unaccredited and accredited as Excellence, Very Good, and Good. As having large weighing in assessment, the output of the program or institution have to be strictly monitored to get the excellence level.

Internal quality assurance system has a cycle of Plan-Do-Check-Act (PDCA). This system is actually not just only cycle, but there is an increase like a ladder that is always increasing. One of internal quality implemented in our institution is internal audit, which performed once in a year. The audit instrument followed the IAAHEH, 9 criteria. It very important for continuous quality improvement, always monitored that PDCA is well implemented in our institution. The aim of this study is to report our best practice in internal audit, especially the identified problem in 2023, which is on-time graduation of the programs.

### **1. Methods**

This is a descriptive retrospective study on graduation time, using the data of internal audit 2023 in our institution. Totally 34 programs were involved in this study. Graduation time of the year of 2022 was evaluated according to the target. The identified problems had to be improve properly based on the root causes, which had performed by small group discussion.

### **2. Results**

Our Institution has 36 programs, and 2 of them is new program which still have not graduated student. On time graduation of the 34 programs in our institution as the results of internal audit in 2023 using data in 2022, is shown in table 1.

No.	Level	Program	Ontime Graduation (%)
1	Undergraduate	Medicine	71%
2		Ners	63%
3		Bachelor Dietician	37%
4		Profession Dietician	17%
5	Magister	Magister of Public Health	17%
6		Magister of Biomedical Science	90%
7		Magister of Tropical Medicine	47%
8		Magister of Clinical Medicine	83%
9		Magister of Medical and Health Education	42%
10		Magister of Nursing	79%
11	Specialist	Dermatology and Venereology	25%
12		Pediatric	86%
13		Forensic Medicine and Medico legal	100%
14		Ophthalmology	53%
15		Pediatric Surgery	100%
16		Anesthesiology & Intensive Therapy	21%
17		Neurologic surgery	83%
18		Urology	100%
19		Surgery	52%
20		Orthopedic and Traumatology	63%
21		Obstetry & Gynecology	75%
22		Internal Medicine	96%
23		Psychiatric	67%
24		ENT and Neck Surgery	93%
25		Neurology	95%
26		Clinical Pathology	91%
27		Clinical Microbiology	0%
28		Radiology	45%
29		Pathological anatomy	83%
30		Cardiology and Vascular	100%
31		Doctorate	Doctoral program of Health and Medicine
32	Subspecialist	Subspecialist of Internal Medicine	100%
33		Subspecialist of Obstetry and Gynecology	100%
34		Subspecialist of Pediatric	20%
Total Average			68%

Table 3: FQP Topics of Students Graduated in 2021.

Based on the results of internal audit in 2023, root causes and improvement strategies had designed using small group discussion with the program coordinators. The problems can be categorized into: thesis, publication, competence achievement, and the lacking of the monitor and evaluation in the programs.

The strategic plans for improvement were made based on the cause. Thesis problem, might be caused by the complicated administration procedure including ethical clearance. Action to this condition was then the administration procedures were modified, so the procedure become simpler and faster. The fact that proposal and research process of the thesis was taken longtime, making some program changed the curriculum by shifted the thesis into earlier semester. Other problem is difficulties of the student to find the title of thesis. For this reason, the faculty provide research grant for the lecture to make research umbrella involved 3–4 students.

International publication is one of the qualifications for graduation of doctorate program and some magister program. Some strategies have been planned, such as conducting a manuscript preparation course, English proofreading, statistical counselling, which also provided for all of the student level including also the teacher. Another course is writing systematic review, for publication.

For the profession, specialist and subspecialist program, the problem was found is the achievement of the competence. This problem made the coordinator program with faculty level have to find more satellite and or affiliated hospitals which have more cases suitable for them according to the national standard of competences.

The last problem is the lack of monitoring and evaluation of the student by the program coordinator. For this reason, some strategies have been made, such as provide electronic logbook for student, portfolio as one of assessment for the student. In the faculty level had changed the policy of judicium, from 4 month to monthly.

### **3. Discussion**

PDCA is the basic of quality assurance. in the earlier phase when the internal audit was implemented in our institution, many of the programs rejected. They said that the audit is wasting time, because preparing the data according to standard criteria is very complicated. However, time by time, after several cycles of internal audit, the program aware that is very important. Utilizing science and information technology is very helpful in integrating the data. Internally driven for internal quality assurance is very important. Actually, with the internal audit, they program are prepared for accreditation. As the results is all of the programs, excluding the new program, accredited in level of excellent.

One of the internal audits finding in 2023 is very crucial, it is about the outcome of the program. The outcome is reflected the process. We are lucky that we always have high quality input of student, since our institution is famous and is one of the best campuses in our country. This audit finding indicated serious problem in the teaching-learning process. Thesis, publication, competence achievement, and lacking of monitoring — evaluation in the program have to be improved.

The thesis needs long time to finished. Usually, the program put the thesis in the last year of study, so when there is problem, the student will need more time to finished and longer time to graduate. Why the thesis become difficult for students, is need to be explored to find the root cause. From small group discussion, there some problems, such as difficulty to find the title topic of the thesis. This situation needs the thesis counselor to be actively help the student to find the title, writing proposal, performed the research, and writing the final thesis. Many cases that the teacher, thesis counselor is very busy and does not have time for their student. Thesis monitoring does not well do, log book was empty, then the student become frustrated. This worsened the situation. So, the program has to solve the problem by approaching according the cause.

International publication is one of the problems found in doctorate and some magister program. Part of the thesis or dissertation results has to be published in reputed international journal. Publication in some journal take several stages, from submission, revision, until final decision, and each stage need certain time, varying from 1–2 month until years. If it is rejected, the student has to repeat the process to another journal. It is really time consuming. To solve the problem, the program/faculty conducting some course such as writing the manuscript, finding the appropriate journals, English proof reading, clinic for statistic-methodology, provide comfort coworking space, many e book and e journal for references, etc. Another strategy is, writing a systematic review for publication. This does not need the results of thesis/dissertation research, so the student can write a systematic review while of he/she doing the research, and have international journal publication not from the result of the research.

Every college of the medical/specialist/subspecialist, has determination the standard competences. Before graduation, the student has to conduct board examination, consist of knowledge and skill. Examination of knowledge usually as an oral exam, presentation, or Computer Based Test (CBT). The skill usually tested by Objective Systematic and Comprehensive examination (OSCE) (Panduan UKMPPD, 2015). The more patient the better skill gets by student. Since the National Health Insurance began, the referral system has been strictly implemented. As a result, type A teaching hospitals, which are widely used for the education of doctors and specialists, have experienced a decrease in the number of patients. The patients came to the referral hospital is not the competence of the medical student and specialist program, but for the subspecialist. So, the faculty have to find more affiliated and satellite hospital which have more appropriate case for medical and residential student.

Different problem was found in forensic medicine. The national police chief, made a policy where all of the autopsy has to be sent and examined in the police hospital (Peraturan Kapolri no 12 , 2011). After that, our teaching hospital, as a referral hospital, had decreased significantly autopsy cases. Since that the competence of the medical student and residen on dead body are never been reached. We cannot send all of the student to police hospital, because all of medical student in our province, with 5 medical school, also send there. The installation of forensic became crowded, and the ratio student: teacher and student: case became very low.



PDCA cycle have to be continuously running for improvement. It is very important that all of the internal audit finding have to be improved. Many cases, program routinely conducted internal audit, however, the stop in the designing of the action, no action was made. Monitoring of the action (improvement) of internal audit, will be check in the next following year. Since the result of improvement of on time graduation need certain time (1–2 years), it needs 1–2 year to assess the effectiveness of improvement.

According to the newest policy about quality assurance in higher education, the external quality assurance system is not mandatory to have national accreditation like before. There will be system called automation by National Accreditation Agency, using the certain data base of the program and institution. No visitation of assessor to the program or institution. The results is accredited or unaccredited. For this automation, no fee is needed for the process. However, when the program needs an excellence status, they might have reaccreditation from independent accreditation body. Even though it is costly however it not a mandatory (Permendikbud no 53 tahun 2023).

#### **4. Conclusion**

The problem of on-time graduation of the program was identified by internal audit. By small group discussion, the root causes of the problem had identified as thesis, publication, achievement of the targeted competences, and lacking of the monitoring and evaluation in the programs. The programs then have to planned the improvement strategy properly, and the improvement will be checked in the next internal audit. However, in case of on time graduation problem, the effect of improvement may not be seen soon, but it might 1–2 years. Internally driven is crucial in the consistency of quality assurance implementation.

#### **5. Acknowledgment**

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# APQN Annual Academic Conference (AAC) and Annual General Meeting (AGM) 2024

Schedule  
Quality Assurance and Global Tertiary Education:  
Navigating Challenges and Embracing Innovation

26th–29th September 2024, St. Petersburg, Russia

**Organizer:**  
The Asia-Pacific Quality Network (APQN)  
**Local Host:**  
Russian Register Certification Association, Russia  
**Conference Venue:**  
CORT INN ST-PETERSBURG HOTEL & CONFERENCE CENTER, Russia

Day 1	Thursday, Sep 26th, 2024 Venue: CORT INN ST-PETERSBURG HOTEL & CONFERENCE CENTER	
Time	Pre-conference Events	
13.00–16.00	Registration	<b>Registration</b> Venue: CORT INN ST-PETERSBURG HOTEL & CONFERENCE CENTER, Conference Hall Turgenev <b>Chair:</b> Local Organizer, Russian Register, Russia
16.00–16.30	The Finance Committee Meeting	<b>The Finance Committee Meeting</b> <b>Topic:</b> 2024 Finance Report and 2025 Budget <b>Venue:</b> CORT INN ST-PETERSBURG HOTEL & CONFERENCE CENTER, Conference Hall Turgenev <b>Participants:</b> All the Members of APQN Finance Committee <b>Chair:</b> Chair of the Finance Committee: Prof. Galina Motova
16.30–17.30	The 1st Board Meeting	<b>The 1st Board Meeting in 2024</b> <b>Topic:</b> 2023 Annual Report and Preparation of 2024 AAC & AGM <b>Venue:</b> CORT INN ST-PETERSBURG HOTEL & CONFERENCE CENTER, Conference Hall Turgenev <b>Participants:</b> 1) all Board Directors of the 7thBoard; 2) the local organizer (RR); 3) special guest(s) from the host of 2024 AAC. <b>Chair:</b> APQN Board Director, Chair of the Conference Organizing Committee, Dr. Timur Kanapyanov
17.30–18.30	APQR Council Meeting	<b>APQR Council Meeting</b> <b>Topic:</b> APQR Report in 2023 and Plan for 2024 <b>Participants:</b> all the members of APQR Council <b>Venue:</b> CORT INN ST-PETERSBURG HOTEL & CONFERENCE CENTER, Conference Hall Turgenev <b>Chair:</b> APQR Chairperson, Dr. Jagannath Patil
18.30–19.15	APQL Council Meeting	<b>APQL Council Meeting</b> 1) all members of APQL Council and APQN Secretariat; 2) special guest(s) from the RR, Aleksandra Zvezdova and Olga Safonkina <b>Venue:</b> CORT INN ST-PETERSBURG HOTEL & CONFERENCE CENTER, Conference Hall Turgenev <b>Chair:</b> APQL Chairperson, Prof. Dr. Jianxin Zhang

## Day 2

Friday, Sep 27th, 2024

Venue: CORT INN ST-PETERSBURG HOTEL & CONFERENCE CENTER

Conference Day 1

Time			Chairperson
8.00–9.00	<b>Registration for the APQN 2024 Conference</b> Venue: Open Space Before Auditorium		
9.00–10.00	<b>Opening Ceremony</b>	<p>Opening Ceremony  <b>Venue:</b> Conference Hall “Tolstoy”  <b>8:50–9:00</b> Invitees take their seats  <b>1.</b> Welcome Remark and Theme Address by APQN President: Prof. Galina Motova (Russia) (15 min.)  <b>2.</b> Welcome Remarks by General Director of the Certification Association «Russian Register»: Arkady Vladimirtsev (Russia) (10 min.)  <b>3.</b> Recorded Welcome Speech by Genady Voronin, President of All-Russian Quality Organization QA, National Partner of Asian Networks for Quality — ANQ (10 min.)  <b>4.</b> Release of the Anthology of 2023 AAC Selected Papers by AIUB and APQN Board members (5 min)  <b>10:00</b> End of opening Ceremony</p>	<b>Master of Ceremony and Commentator:</b> Irina Dolgikh, Head of the International Activities Department at the Certification Association «Russian Register»
10.00–10.20		<b>Group Photograph:</b> Venue: Conference Hall «Tolstoy»	
10.20–10.40	Morning Tea Break: Open Space Before Auditorium		

Time	<b>Keynote Speeches; Plenary Sessions 1–4</b> Venue: Conference Hall «Tolstoy»		
10.40–11.40	<b>Keynote 1</b>	<p><b>Keynote Topic 1:</b> QA for Cross-Border Higher Education: International Standards, Challenges and Solutions  <b>Keynote Speaker 1:</b> Dr. Wesley Teter, Senior Consultant for the Section for Educational Innovation and Skills Development (EISD), UNESCO Asia and Pacific Regional Bureau for Education (UNESCO Bangkok)</p>	<b>Chair and Commentator:</b> Ms. Umankulova Onolkan, APQN Board Director, President of the Agency for Quality Assurance in the Field of Education «EdNet», Kyrgyz Republic
11.40–12.30	<b>Keynote 2</b>	<p><b>Keynote Topic 2:</b> Transforming Engineering Education: Modern Strategies for Quality Assurance and Emerging Trends  <b>Keynote Speaker 2:</b> Dr. Aleksei Kurlov, Head of the Educational Programmes Department, Moscow State University of Geodesy and Cartography (MIIGAiK), Russia</p>	<b>Chair and Commentator:</b> Pavel Stepanov, Development Director (RR), Russia
12.30–14.00	Buffet Lunch: Restaurant-Poema		

14.00–15.20	<b>Plenary Session 1</b>	<p><b>Topic of Plenary Session 1:</b> QA for Cross-Border Higher Education: International Standards, Challenges and Solutions</p> <p><b>Panel Speakers:</b></p> <p><b>1. Striving for Dissolving Boundaries for a Quality Region: A Qualitative Research on APQN 20th Anniversary Celebration by</b> Prof. Dr. Jianxin Zhang from Yunnan University, China</p> <p><b>2. Joint Accreditation as an Instrument of Enhancement of Quality Assurance Policies by</b> Dr. Oksana Tanikova from National Centre for Public Accreditation (NCPA), Russia</p> <p><b>3. Innovative Activities of HEIs as the Basis for the Developing a New APQN Quality Label (APQL) by</b> Aleksandra Zvezdova, Olga Safonkina, Arkady Vladimirtsev, Evgeniya Korneva from Certification Association «Russian Register», Russia</p> <p><b>4. «Lens» Approaches Based on the Model EFQM 2020 to Assess QA Systems in Education by</b> Dr. Anatoly Safonov, Director ROQ Center for Expert Programs, Chief Manager Excellence Model Department from All-Russian Quality Organization QA, National Partner of Asian Networks for Quality, Russia</p> <p><b>Venue:</b> Conference Hall «Tolstoy»</p>	<p><b>Chair and Commentator:</b> Ms. Umankulova Onolkan, APQN Board Director, President of the Agency for Quality Assurance in the Field of Education «EdNet», Kyrgyz Republic</p> <p><b>- 5-min.</b> intro. in total - 1 presenter: <b>12-min.</b> <b>- 10-min.</b> Q&amp;A in total</p>
15.20–15.40	Afternoon Tea Break: Open Space Before Auditorium		
15.40–16.30	<b>Plenary Session 2</b>	<p><b>Topic of Plenary Session 2:</b> QA in Higher Education Institutions and Embracing Digitalization for QA: Innovations and Future Trends</p> <p><b>1. Online Courses Quality Assurance Based on International Standards: SPbSEU Experience by</b> Dr. Yulia Kiseleva, Prof. Veronika Shubayeva, Daniil Antoshechkin from St. Petersburg State University of Economics, Russia</p> <p><b>2. Quality Assurance in the Digital Age: Charting New Paths for Global Tertiary Education by</b> Dr. Vishnu Mahesh K R, Dr. N. R. Mohan from National Assessment and Accreditation Council (NAAC), India</p> <p><b>3. Effects of Input, Management, and Process on Student Outcomes: A Structural Equation Modeling of Undergraduate Study Program Accreditation in Indonesia by</b> Prof. Muchlas Samani, Prof. Aceng Hasani, Prof. Sofia Hartati, Prof. Pratiwi Retnaningdyah, Prof. Ekohariadi from Accreditation Council for Education (ACE), Indonesia</p> <p><b>Venue:</b> Conference Hall «Tolstoy»</p>	<p><b>Chair and Commentator:</b> Prof. Nadia Badrawi, President of ANQAHE, Member of Advisory Board of CIQG &amp; NARIC-TNE, Prof. Emeritus of Pediatrics Cairo University, Egypt</p> <p><b>- 5-min.</b> intro. in total - 1 presenter: <b>15-min.</b> <b>- 10-min.</b> Q&amp;A in total</p>
Afternoon Tea Break: Open Space Before Auditorium			



16.30–20.00	<b>Networking time</b>	<b>Networking time for the participants</b>	
20.00–23.00	<b>Gala Dinner</b>	<b>Venue:</b> Conference Hall «Tolstoy» <b>APQN Quality Award Ceremony and Gala Dinner</b>	<b>Commentator:</b> <b>1)</b> Dr. Olga Sa-fonkina, Associate to Vice Rector for International Cooperation, Ogarev National Research State University, RR Member of IAB — Master of the Ceremony from the host <b>2)</b> Prof. Dr. Galina Motova, APQN President
Afternoon Tea Break: Open Space Before Auditorium			

Time	Parallel Sessions 1–3	
09.00–11.00	<div> Parallel Sessions 1–2 </div>	<div> <div> Session 1 — Conference Hall «Chekhov» </div> <div> <b>Sub-theme 1:</b> QA for Cross-Border Higher Education: International Standards, Challenges and Solutions </div> <div> <b>Moderator:</b> Ms. Umankulova Onolkan, APQN Board Director, President of the Agency for Quality Assurance in the Field of Education «EdNet», Kyrgyz Republic </div> <div> <b>Speakers:</b> </div> <div> <b>1. How Accreditation Impacts Qualification Recognition by</b> Anna Ishutkina from National Centre for Public Accreditation (NCPA), Russia </div> <div> <b>2. Understanding Academic Integrity: Stakeholders’ Perspective by</b> Marina Kurdiumova from National Centre for Public Accreditation (NCPA), Russia </div> <div> <b>3. The EFQM Model as a Tool for Innovative Development of MPEI by</b> Ilya Rusakov from Center for Expert Programs of the All-Russian Quality Organization, Russia </div> <div> <b>4. World Population Trends and Quality Higher Education by</b> Prof. Dalkhat Ediev from North-Caucasian State Academy, Russia </div> <div> <b>5. Internal System for Assessment of Quality of Educational Activities: Content, Structure, Key Tools (Case UNECON) by</b> Prof. Shubaeva Veronika, Shapovalova Irina from Saint-Petersburg State University of Economics, Russia </div> <div> <b>6. The Role of Information Technology in the Internal Quality Assessment System of Universities by</b> Yulia Bogomolova from Institute of International Economic Relations, Russia </div> </div> <div> <div> Session 2 — Conference Hall «Dostoevsky» </div> <div> <b>Sub-theme 2:</b> Embracing Digitalization for QA and Enhancing Internal Quality Assurance of QAAs </div> <div> <b>Moderator:</b> Dr. Oksana Tanikova, Deputy Head of the Accreditation Department, National Centre for Public Accreditation (NCPA), Russia </div> <div> <b>Speakers:</b> </div> <div> <b>1. Digitalization to Improve Quality: Innovations and Prospects by</b> Natalia Ivanova from IPR MEDIA Group, Russia, Vita Kutueva as a presenter </div> <div> <b>2. The Challenges to Improve On-time Graduation as An Internal Audit Findings by</b> Dr. Yudha Nurhantari from Universitas Gadjah Mada, Yogyakarta, Indonesia </div> <div> <b>3. Quality Quest Alongside Data Management in Higher Education Institutes with Digital Frontier by</b> Dr. Raghu Ram Achar, Dr. Supreeth M, Dr. Prashant M Vishwanath, Dr. Madhusudhan N Purohit from JSS Academy of Higher Education &amp; Research, India </div> <div> <b>4. The System of Internal Quality Assurance Agency for the Assessment of the Quality of Tertiary and Vocational Education from the Point of View of the Student Community by</b> Kulebakina Yulia from LETI University, Russia </div> <div> <b>5. To the Quality of Education Through the Formation of a Complex System for Evaluating the Activities of the University by</b> Dr. Petropavlovskaya Victoria from Tver State Technical University, Russia </div> <div> <b>6. Training of Highly Qualified Staff in Quality Management for the Purpose of Digitization by</b> Dr. Golovina Elena from Irkutsk National Research Technical University and Maria Turovskaya as a presenter, Russia </div> </div>

09.00–11.00	<b>Parallel Sessions 3</b>	<p><b>Session 3</b> — Conference Hall «Tolstoy»</p> <p><b>Sub-theme 3:</b></p> <p><b>QA in Higher Education Institutions:</b> Fostering Excellence in Teaching and Learning in all Stages of Life</p> <p><b>Moderator:</b> Dr. Olga Safonkina, Associate Vice Rector for International Cooperation, Ogarev National Research State University, RR Member of IAB, Russia</p> <p><b>Speakers:</b></p> <p><b>1. Ensuring Excellence:</b> Quality Assurance in Higher Education for Lifelong Teaching and Learning by Dr. Nayer Fardows from Forman Christian College (FCCU), Pakistan</p> <p><b>2. QA in Higher Education and Education in Foreign Language(s):</b> Insights from RUDN University by Prof. Anastasia Atabekova from Peoples' Friendship University of Russia named after Patrice Lumumba, Russia</p> <p><b>3. Promotion of Quality in Teaching and Learning in Higher Education Institutions:</b> Case Study of Randomly Selected Colleges Accredited by NAAC Parameters by Dr. Vishnu Mahesh K R, Dr. Ruchi Tripathi from National Assessment and Accreditation Council (NAAC), India</p> <p><b>4. Internal and External Quality Assurance in Russian Higher Education Institutions:</b> Breaking the Chains of State Control by Evgenii Puchkov, Szymon Jankiewicz, Nadezhda Knyaginina from HSE University, Russia</p> <p><b>5. The Peer-Review Approach in the Internal Quality Assurance System:</b> The ITMO University Case by Kristina Tishkina from ITMO University, Russia</p> <p><b>6. Establishment and Development of the Russian-Chinese Institute:</b> A Case Study in Collaborative Higher Education by Dr. Anatoly Lysyakov and Dr. Olga Safonkina from Ogarev Mordovia State University, Russia</p> <p><b>7. Quality Assurance and Teaching Learning in Higher Education by</b> Professor Dr. Mesbahuddin Ahmed from Bangladesh Accreditation Council (BAC), Bangladesh</p>
11.00–11.30	Morning Tea breaks: Open Space Before Auditorium	
11.30–12.30	<b>Keynote 3</b>	<p><b>Keynote topic 3:</b> Practice and Prospect of the Construction of the «Five-in-One» Higher Education Quality Assurance System with Chinese Characteristics</p> <p><b>Chair and Commentator:</b> Prof. Dr. Jianxin Zhang, APQN fifth and sixth President, General Secretary of Yunnan Association of Higher Education (YAHE) &amp; professor of Yunnan University</p> <p><b>Keynote Speaker 3:</b> Jiang He, Deputy Director of the Education Quality Evaluation Agency of MOE (EQEA), China</p> <p><b>Venue:</b> Conference Hall «Tolstoy»</p>
12.30–14.00	Buffet Lunch: Restaurant-Poema	
14.00–15.00	<b>Keynote 4</b>	<p><b>Keynote topic 4:</b> Opportunities and Risks of Using Artificial Intelligence in Quality Assurance</p> <p><b>Chair and Commentator:</b> Dr. Timur Kanapyanov, APQN Board Director, IAAR Deputy General Director, Kazakhstan</p> <p><b>Keynote Speaker 4:</b> Prof. Nadia Badrawi, , President of ANQAHE, Member of Advisory Board of CIQG&amp; NARIC-TNE, Prof. Emeritus of Pediatrics Cairo University, Egypt</p> <p><b>Venue:</b> Conference Hall «Tolstoy»</p>

15.00–16.00	<b>Closing Session</b>	<b>Closing Session</b> <b>Venue:</b> Conference Hall «Tolstoy» <b>Chair:</b> Prof. Dr. Jianxin Zhang, APQN Immediate Past President <b>1.</b> Announcement of the Next Host of 2025 AAC by APQN President and Presentation by the Local Host (15 min.) <b>2.</b> Agreements, MoUs, etc. (10 min.) <b>3.</b> Closing Remarks by the APQN Board Director, Chair of the Conference Programme Committee: Dr. Timur Kanapyanov (5 min.) <b>4.</b> Comments, feedback, acknowledgements and survey (5 min.) <b>16:00 End of APQN Academic Conference (AAC) 2024</b>
16.00–16.20	<b>Venue:</b> CORT INN ST-PETERSBURG HOTEL & CONFERENCE CENTER <b>1.</b> Afternoon Tea Break <b>2.</b> Registration for the Annual General Meeting (AGM)	
16.20–17.10	<b>Annual General Meeting (AGM)</b>	<b>Annual General Meeting (AGM)</b> <b>Venue:</b> Conference Hall «Tolstoy» (APQN members only) <b>Chair:</b> The APQN President: Prof. Galina Motova <b>1.</b> Welcome to new members in 2024 by awarding the Certificates & their short introductions by APQN Secretariat (10 min.) <b>2.</b> Report from APQN President by Prof. Galina Motova (15 min.) <b>3.</b> Report on APQN finances by Chen Taohong (5 min.) <b>4.</b> Report on APQR by Prof. Dr. Jianxin Zhang (5 min.) <b>17:10 End of Annual General Meeting (AGM)</b>
17.10–18.00	<b>The 2nd Board Meeting</b>	<b>The 2nd Board Meeting in 2024</b> <b>Venue:</b> Conference Hall «Tolstoy» <b>Topic:</b> The Sustainable Development of APQN <b>Chair:</b> The President of APQN: Prof. Galina Motova <b>Participants:</b> (1) All Board Directors of the 7th APQN Board (2024) (2) Special guest(s) from the host of 2025 AAC

<b>Day 4</b>	<b>Sunday, Sep 29th, 2024</b>
<b>Time</b>	<b>Post-Conference Events</b>
9.00–12.00	<b>Guided City Tour of St. Petersburg, Russia for Participants Who Signed Up</b>

Notes: The AAC and Excursion are open to all participants while AGM is for APQN members only.

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