Forming a Culture of Improving Educational Quality in Vietnam Universities to Education 4.0

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Abstract: *In the Fourth Industrial Revolution, higher education is facing numerous challenges such as rapidly changing cultural diversity and evolving mental health needs of students, which contrast with traditional values. Moreover, the increasingly intense competition and the desire to establish a reputation and social responsibility for higher education institutions are driving the development of Education 4.0. Vietnam University 4.0 is an innovative and adaptable higher education model that centers on digital technology and innovation to meet the demands of employers and the digital age. Despite its critical importance, the culture of quality has not yet been widely acknowledged in the process of constructing and enhancing quality assurance systems in higher education institutions. This article examines global experiences to identify the essential elements and characteristics of a quality culture model, its relationship with quality assurance systems, and proposes solutions not only to foster a quality culture in Vietnam universities towards Education 4.0 but also to prepare human resources for the international integrated labor market.*

Keywords: Quality culture, Education 4.0, University 4.0, Quality improvement culture, Internal quality assurance

1. Introduction

Quality culture is one of the essential factors of developing and improving a quality assurance system within a university. External influences force higher institutions to continuously improve their teaching, learning, and scientific research methods to be in line with the national digital transformation and the Fourth Technology Revolution. Besides, the competition between quality assurance and university rankings is always a topic that piques the educational administrators to find solutions for universities to sustainably develop towards Education 4.0. Through the international experience of building a quality culture model and the relationship with the internal quality assurance system of higher education institutions, influencing factors and approaches to develop a quality improvement culture are problems that need to be researched and studied upon. The article proposes solutions to develop a quality improvement culture towards University 4.0 to contribute to training human resources to meet the requirements of the labour market and international integration.

2. International experience on the development of quality culture in higher education institutions

2.1 The concept of quality culture, quality improvement culture, and University 4.0

Quality culture (QC) in higher education is a combination of values, ideas, behaviors, and attitudes that has formed in the higher education community to ensure the highest level of educational quality. Quality improvement culture (QIC) in higher education is a combination of values, ideas, behaviors, and attitudes that improve quality in higher education through the continuous improvements and innovations.

During the Fourth Technology Revolution, the University 4.0 concept points out a new, suitable university model with the following main characteristics: (1) Trains for the future; Not only University 4.0 has basic knowledge trainings, it also pays attention to soft skills set, creative thinking, the ability to adapt to changes, quickly prepares students for the rapidly developing world; (2) student - centered learning: University 4.0 focuses on developing educational programs and provide learning support services that take students' needs into consideration; at the same time, lecturers and students are encouraged to interact with each other; (3) Digital technology usage: University 4.0 utilizes digital technologies to provide flexible and highly interactive learning methods such as online learning platforms, software, and mobile devices; (4) Innovations and developments: University 4.0 encourages innovations and developments in education, at the same time creates opportunities for students and lecturers to participate in research and development activities, thus improve educational quality and generate practical value for society.

2.2 The quality culture model of European University Association - EUA (2006)

The European University Association determined quality culture is based on 2 elements: (1) Technocratic element (quality management) is the symbol of actions in a quality management system, including tools, mechanisms, and measuring, evaluating, assuring, quality improving processes; (2) Cultural element (quality commitment) is the symbol of awareness, collecting general values, trust, expectations and commitments towards individual and collective quality. Quality culture values aim to achieve communication, participation, and trust from the above elements. Besides, the two elements can be seen as two symbols of quality culture: quality actions (quality management) and quality awareness (quality commitment).

Both symbols are closely linked together by 3 quality values, including: communication, participation, and trust.
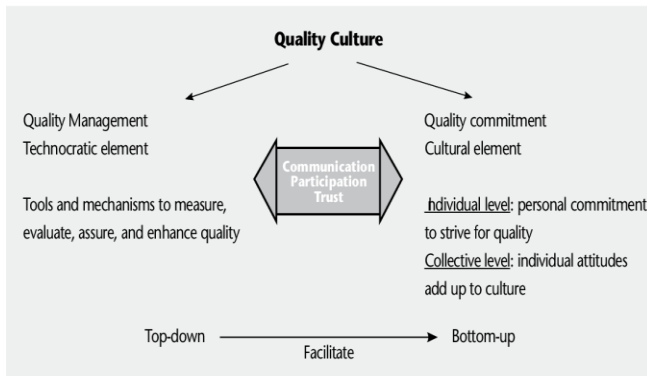

Figure 1: EUA's Quality culture model (2006)

2.3 Types of quality cultures byDaniellou (2009)

Daniellou (2009) proposed 6 types of culture in a working environment, including: (1) Disciplinary culture focuses on maintaining process, rules and regulations compliance; (2) Development culture focuses on creating, innovating technological developments in the working environment; (3) Employee - centric culture focuses on ensuring health and safety of employees, improving quality of life, and guaranteeing their growth and satisfaction; (4) Customer - centric culture focuses on satisfying customers' needs and improving product and service quality; (5) Innovation culture focuses on encouraging innovation and development, promoting creativity in a working environment; (6) Interaction - centric culture focuses on building a consensus working environment, increasing interactions between members within an organization and encourage cooperation. These types of cultures help build a high - quality working environment and improve productivity of the organization.

2.4 The quality culture model of Ehlers (2009)

Figure 2: Ehlers's quality culture model (2009)

Ehlers (2009) proposed a quality culture model that consists of 4 factors: (1) Structures (represents an organization's quality management system), (2) Enabling factors (represents individuals and groups that unify quality mechanism into culture, (3) Quality cultures (represents symbols and rituals of an organization), (4) Linking factors (linking factors through participation, information and beliefs) and shaping values of quality culture within organizational culture. Individual and collective competencies factors are needed for internal structures and activities to form quality cultures. These factors also depend on the level of understanding and quality awareness of the organization members. Enabling factors is a crucial component in the process of forming quality culture; therefore, it is essential in the process of transforming quality assurance mechanic and measured actions into awareness (Figure 2).

2.5 Quality culture according to Lanarès J. (2011)

Lanarès J. (2011) defined quality culture as a set of values, norms, and action methods that an organization or a community can apply to form and maintain a positive working environment, encouraging continuous innovations and development, ensuring products, services satisfy customers' needs and international quality standards.

Some factors that are important to the building of quality culture in university, including:
- Vision, mission, and core values: these are essential in the building of quality culture. University needs a clear vision, specific mission, and consistent core values in order to strive and achieve success.
- Leadership: there need to be strong commitments between university leaders and quality culture to ensure the institution's values, vision, and mission are clearly reflected in all decisions and actions of employees.
- Quality management methods: university needs to have effective and scientific quality management methods to ensure the continuous refinement of teaching and research quality.
- Innovation and creativity: university needs to encourage creativity and innovation in all activities to enhance teaching and research quality.
- Knowledge sharing: encourage the knowledge and experience sharing across departments and among different universities to improve teaching and research quality.
- Staff training and development: university needs to invest in the process of training and developing staff to improve their competencies and ensure the institution's sustainable development.
- Global vision: university needs to have a global vision and interacts with other universities internationally to achieve its goals.

Table 1: Research on quality improvement culture in higher education

Content	Author	Research Title
Quality culture in universities, including factors such as employee commitment, respect customers, and creative thinking.	M. T. Brannick (2014)	Assessing Quality Culture in Higher Education Institutions
1. Encourage universities to focus on increasing employee commitment, forming positive relationship with customers, and utilizing continuously improved techniques to achieve quality goals.	J. E. Groccia (2015)	Creating a Culture of Quality Improvement in Higher Education
2. Factors such as commitment from leaders and employees, flexibility, and creativity play vital roles in building an effective quality improvement culture.	E. A. Roessler, (2016)	Culture of Continuous Improvement in Higher Education: A Case Study
Effects of quality improvement culture on implementing continuous improvement in universities. 3. Other factors such as employee commitment, respect customers, and creativity to help build an effective quality improvement culture.	M. F. Omar (2016)	The impact of quality culture on the implementation of continuous improvement in higher education institutions
4. Quality culture and employees play a vital role in promoting continuous improvement.	G. H. Hanna (2017)	Quality culture and continuous improvement in higher education: A case study of a private university in Lebanon
5. Building an effective and continuous improvement culture: employee commitment, interactive ability, and creative thinking to help.	L. Yıldırım (2018)	The impact of continuous improvement culture on quality performance: A study in higher education
The impact of continuous improvement culture on quality management practices in higher education. Continuous improvement culture has a close relationship with quality management practices such as quality inspection and evaluation, identification and settlement.	S. M. Mousavi (2019)	The effect of continuous improvement culture on quality management practices in higher education institutions

3. Discussion

3.1 Results achieved and challenges of Vietnam higher education

After more than 8 years of implementing innovation policies, Vietnam's higher education sector has made significant progress. The establishment of higher education institutions throughout the country has opened up equal opportunities for the population to access higher education. The autonomy of universities has been enhanced, and the quality of higher education has met international standards. In 2019, Vietnam was ranked 68th in the world out of 196 countries for higher education, representing an increase of 12 places compared to 2018. By December 31, 2020, 149 higher education institutions and 9 pedagogical colleges met the accreditation standards set by the Vietnam Quality Assurance Agency for Higher Education, accounting for approximately 55% of the total number of universities in the country, of which 7 universities have been recognized by international accreditation organizations.

Vietnam's higher education sector has made notable progress in recent years. In 2020, three universities in Vietnam were ranked in the top 1000 universities globally, and eight universities were included in the list of top universities in Asia. This achievement is a result of efforts to improve the quality of faculty to meet international standards. In the past, academic titles and doctoral degrees did not require publication in prestigious international journals, but since 2018, new regulations mandate candidates to have publications in reputable journals such as ISI or Scopus. Vietnam's total number of scientific articles published on the ISI/Scopus system in 2019 was 12, 475, ranking 49th globally, and this figure has increased by 2.7 times compared to 2015. In addition, 6% of the entire Vietnamese education system consists of professors and associate professors, and 22.7% of lecturers hold a doctoral degree. The use of information technology and digital transformation in universities has also been implemented to serve teaching and learning. Despite the COVID - 19 pandemic's impact, all universities in Vietnam conducted online teaching for the 2020 - 2021 academic year, ensuring the quality of education and completing courses on schedule.

However, despite notable achievements, higher education in Vietnam still faces limitations compared to other countries in the region and globally. It has not kept pace with requirements and tasks, nor has it met the learning needs of students. The quality and effectiveness of education and training remain low when compared to the socio - economic development demands of the country, and it lacks connectivity with the labor market. In 2020, Vietnam saw 225, 000 graduates with bachelor's, master's, or engineering degrees who were unable to find jobs or had to accept jobs unrelated to their training. A survey of 60 service industry businesses in Ho Chi Minh City revealed that only 5% of the students evaluated had a good level of theoretical knowledge, practical skills, language proficiency, work attitude, and professional skills, with 15% rated as moderate, 30% as average, and 40% as non - achieving.

Vietnamese higher education currently lacks a connection between domestic and international standards, resulting in most countries not recognizing degrees or university certificates issued by Vietnam. This makes it difficult for Vietnamese individuals to pursue education, work, or settle abroad. In the context of international integration, the quality and quantity of publications in international scientific journals are important indicators of the quality of higher education in countries. Despite having around 9, 000 professors and associate professors, 24, 000 PhD holders, and over 100, 000 Master's degree holders, Vietnam's number of international publications is still limited, with less

influence on scientific research papers than some Asian countries such as Singapore, Malaysia, and Korea. While university autonomy is a major policy, there remains uncertainty in the distinction between state management and administrative operations in universities. Additionally, other limitations of higher education in Vietnam include the commercialization of education, inadequate infrastructure, and inadequate treatment of university staff.

3.2 Relationship between Quality culture and Quality assurance system of higher education

Ensuring internal quality and higher educational quality improvement culture are inseparable and must be executed simultaneously to achieve the highest educational quality:

Table 2: Abstract of the relationship between Quality culture, Quality improvement culture, and Quality assurance system of higher education

Quality assurance	Quality culture	Quality improvement culture
• Build an education system that meets the requirements of the labor market, ensure the teaching staff is capable of instructing and training students. • Ensure facilities and equipment meet the quality standards of education. • Apply quality assessment methods to measure the efficiency of education programs and propose improvements. • There must be an inspecting and evaluating system to ensure the quality of education. Ensure this process is carried out according to standard procedures and closely monitored to ensure objectivity.	• Build a friendly and active educational environment, encourage creativity and continuous learning. • Develop a sense of responsibility and commitment to quality in work of all staff, teachers, and students. • Encourage joint activities with the university and businesses to strengthen the link between education and actual demands of society.	I - s the acceptance and formation of a cultural foundation in higher education to improve the quality of education. • Establish new policies and procedures, encourage creativity and innovations, promote cooperation and interactions between units in schools. • - This process will be smoother and more effective if everyone agrees.

3.3 University 4.0's Quality improvement culture model's features

University 4.0's Quality improvement culture model is a new approach to manage and improve higher education quality which uses digital technologies and incorporates cultural factors to achieve the goals of improving educational quality.
This model has the following features:
1) *Improve management system*: use digital technologies to improve universities' management system, this includes artificial intelligence, virtual reality, blockchain, web and mobile applications. By using these technologies, universities can increase management and educational quality evaluating efficiency.
2) *Develop innovation culture*: encourage developing innovation culture in universities through a learning environment that promote creativity and innovations. With the usage of digital technologies and incorporation of online learning and extracurricular activities, the learning environment has become diverse and interesting.
3) *Building a learning community*: By creating online forums, learning social networks, and other extracurricular activities, there can be an increase in interactions between students, teachers, and staff.

3.4 The assurance principles of developing quality improvement culture towards University 4.0

• *Ensure proactiveness and creativity*: in University 4.0, educational quality improvement culture requires proactiveness and creativity of teachers and students. The members of the community should be able to identify and solve problems, finding innovative solutions and breakthrough approaches.
• *Ensure consensus and cooperative spirit*: educational quality improvement culture requires cooperation and

consensus of the entire school. Members need to work on projects together, share experience and knowledge, and together create better solutions for educational problems.
• *Ensure technology innovation*: in University 4.0, the usage of technology and application of their new advances are essential in educational quality improvement culture. Universities need to invest in advanced technologies, come up with solutions for technology applications in order to improve the quality of education.
• *Ensure management and leadership competencies*: educational quality improvement culture requires managers and leaders to be competent in management, capable of creating suitable strategies for the new age, and can assist other members reach the common goals of the university.
• *Ensure transparency and effective evaluation*: transparency and effective evaluation are important factors of educational quality improvement culture.

3.5 Approaches to developing a quality improvement culture in higher education institutions

• *Development approach towards quality standards*: develop processes, standards, and quality management system to ensure educational quality is continuously being improved in accordance with international standards such as AUN - QA, UPM, QS Stars.
• *Development approach towards students and users' feedback*: collect and analyze feedback from students and users on the quality of education to improve educational activities and meet the labor market's needs. For example, from conducting quality assessment surveys, we can periodically poll students and businesses.
• *Development approach towards educational innovation*: innovate teaching and learning methods,

utilize new technology and create interactive learning experience to develop students' competencies and skills. For instance, the application of online learning methods and technology - integrated teaching techniques.

- *Development approach towards automation culture*: create an automation culture in educational activities, processes and activities are automated to increase efficiency and reduce cost. For instance, the usage of automatic education management system.

4. Proposals for the development of quality improve - ment culture towards Education 4.0

Quality improvement culture towards Education 4.0 is a continuous process and requires the focus and efforts of the entire educational community and universities, therefore, higher education institutions need to pay attention to improvement according to the following process:

1) *Identify the university's vision and goals*: the university's administrators and teachers need to identify the institute's goals, ensure that they are in accordance with the development trend of Education 4.0 and meet the needs of the labor market.
2) *Develop suitable strategies for Education 4.0:* the university needs to develop a directional strategy for implementing the newest technologies, designing effective teaching methods, and promoting the development of Education 4.0.
3) *Design and implement suitable training programs for Education 4.0:* training programs need to be designed with the combination of theories and practices, applying the newest technologies and creating interactive learning experiences.
4) *Creating a suitable learning environment for Education 4.0:* the university needs to create a friendly and diverse learning environment, using the latest technologies to promote the interactions and cooperation of teachers and students.
5) *Ensure the quality of education:* the university needs a strict quality management process to ensure the quality of education and it is in line with the Education 4.0 educational standards.
6) *Create opportunities for research and innovation:* the university needs to invest in research and innovation to create new products and services, improving teaching and learning methods, and meet the needs of the labor market.

Therefore, the process of establishing a quality improve - ment culture in University 4.0 requires changes and focus on the following solutions:

1) *Create consensus on the goals of quality education*: in order to establish quality improvement culture in University 4.0, related parties need to agree on the goal of quality education, especially on the implementation of digital technologies and innovative cultural developments to increase the effectiveness of education. Set specific and feasible goals to improve the quality of education (i. e., enhance, strengthen the ability to train soft skills for students).

2) *Increase training and raise awareness*: a university teachers, students, and staff need to be trained and raised awareness on the usage of digital technologies and innovative cultural development to improve the quality of education. This can be done through training courses, seminars, and other educational programs. Members of the university need to understand the importance of quality improvement and their contribution in this process.
3) *Create an innovative learning environment*: create an innovative and creative learning environment, encourage students and teachers to participate in extracurricular activities and use digital technologies to increase the effectiveness of education. Create a well - rounded learning environment, encourage students to develop skills, creative thinking, and self - learning. Encourage individuals and organizations in the university community to come up with new ideas, innovate activities to improve the quality of education. Use technology to create new solutions to the current educational problems such as online learning and smart learning platforms.
4) *Increase interactions and innovations:* there can be an increase in interactions and innovations by creating online forums, learning social network, and extracurricular activities. Encourage the university community members to actively participate in the quality improvement process and make suggestions to promote the development of education. Establish processes, standards to ensure the quality of education and conduct continuous evaluation and improvements on activities.

5. Conclusion

The development of the quality improvement culture model towards University 4.0 needs to be done through comprehensive and continuous approaches to ensure the quality of education. Quality assurance is a part of quality culture, hence is closely linked to both aspects action (ensure quality) and awareness (quality culture). The quality improvement culture model in University 4.0 focuses on the usage of digital technologies and the development of innovation culture to create a diverse, interactive, and effective learning environment. From the general picture of international experiences of the world's quality culture models, the proposed solutions for developing quality improvement culture are (1) create consensus on the goals of quality education, (2) increase training and raise awareness, (3) create an innovative learning environment, (4) increase interactions and innovations

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