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Standardized Lecturers at University in the Context of Industrial Revolution 4.0: Highlights and Points Needing Improvement

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ABSTRACT: Industrial Revolution 4.0 has had a significant impact on our lives, which motivates the education sector to train human resources to adapt to society according to new trends. That is why universities always strive to improve their expertise and professionalism in a creative direction to adapt. The article focuses on the advantages and difficulties in improving the quality of lecturers to keep up with the new era.

KEYWORDS: lecturer quality, industrial revolution 4.0

1. PROBLEM STATEMENT

Industrial Revolution 4.0, also known as the digital revolution, is the trend of automation and data exchange in manufacturing technology. The center of the 4.0 industrial revolution is information technology and the Internet of Things (IoT), which erases the boundaries between the physical world, the digital world, and the biological world. The 4.0 industrial revolution is a new stage of industrial evolution, especially in the fields of manufacturing, connectivity, and data collection. The 4.0 industrial revolution is considered a significant step forward in which the combination of many new technologies such as artificial intelligence, the Internet of Things (IoT), machine learning, and other technologies will boost production efficiency and productivity. The 4.0 industrial revolution is named "revolutionary" because it marks the transformation of the economy from a traditional production model to an entirely new model. It is also considered one of the most significant industrial revolutions since the first industrial revolution in the 18th century. The fourth industrial revolution began to develop in the late 2000s when new technologies such as IoT, artificial intelligence, and machine learning began to emerge. This development reached the point of becoming a global trend around the mid-2010s. Companies and organizations around the world have started to shift to new production models and invest in technologies related to the fourth industrial revolution, which brings many benefits to companies and organizations, such as increased productivity, reduced production costs, improved product and service quality, improved operational management, and enhanced customer experience. However, it also creates some challenges, such as increased competition, changes in labor and skill requirements, and sometimes negative impacts on the environment.

The 4.0 Industrial Revolution also creates a substantial change in the distribution of production resources, the production method gradually shifts from "automatic production" to "smart production". This change is when machines and equipment are connected to the internet and linked together through a system that can automatically operate the entire production process according to a pre-established plan. "Smart production" requires a high-quality human resource to meet the requirements of the job. Therefore, the task of the education sector is to improve the quality of teaching, have specific orientations, and adapt to the human resource needs of the economy.

2. IMPACT OF THE 4.0 INDUSTRIAL REVOLUTION ON THE EDUCATION SECTOR

Up to now, the world has experienced 4.0 industrial revolutions. These industrial revolutions have impacted all aspects of social life at different levels and in different directions. The 4.0 industrial revolution can lead to the risk of disrupting the traditional labor market, threatening the jobs of low-skilled workers and workers with medium skills to move towards establishing a new labor market where there is competition between creative knowledge and high-quality education. Therefore, higher education is one of the sectors most strongly affected by the 4.0 industrial revolution because training products must meet the needs of the rapidly changing labor market.

The 4.0 industrial revolution is impacting many different fields, education being one of the fields with the most significant impact. New technologies such as artificial intelligence, virtual reality, machine learning, blockchain, and the Internet of Things have

changed the way we access and acquire knowledge and skills. This requires education systems to adapt to meet the needs of society. Schools, universities, and educational institutions must keep up with new technologies and incorporate them into teaching and learning. Teachers and students must be equipped with the necessary skills to use new technologies. Schools and universities also need to ensure that students and pupils are educated on how to use these technologies safely and effectively. The Fourth Industrial Revolution requires education systems to produce professionals and workers with technological skills and knowledge. Training courses and curricula also need to change to meet the needs of the labor market. In addition, education must adapt to changes in the labor market. New jobs will replace many traditional jobs due to the development of technology. Therefore, education systems need to help students and pupils develop the necessary skills to adapt to the changing labor market.

In short, the fourth industrial revolution is affecting education and requiring education systems to adapt to meet the needs of the labor market and society. This requires schools, universities, and educational institutions to change their curriculum, teaching methods, and training methods.

2.1. Impact of the fourth industrial revolution on teaching content

The fourth industrial revolution will change the picture of the labor market, dramatically changing the demand for resources, occupational structure, and qualifications. The current education process needs to meet social needs and train workers with new skills to adapt to the rapid changes in the production and business environment. If, in the past, training content only focused on conveying academic knowledge, now that knowledge is quickly becoming outdated. The 4.0 Industrial Revolution requires workers to have enough basic knowledge, skills, and abilities for critical thinking, conflict resolution, the ability to respond to change, teamwork, the ability to work creatively, language and communication skills, behavior, digital skills and internet connection, social skills, creating and maintaining relationships and excellent physical strength (Bui Van Dung, Tran Thi Thuy Truong, 2020).

That requirement has transformed the educational environment, which used to focus only on conveying academic knowledge. Still, it has now been innovated by providing efficient knowledge, learning through practice rooms, and virtual models to help students understand and grasp reality better. Universities are increasingly focusing on internship activities at businesses and construction sites. Through essays, harvest reports also force learners to change and be more proactive in their learning proactively.

2.2. Impact of the industrial revolution on teaching methods

In order to help learners quickly access new technology, the teaching and vocational training process also needs to apply the latest technologies of the 4.0 Industrial Revolution to turn lecturers into experts in the professional field. The teaching and learning process is not simply implemented on paper and pen in the form of traditional classrooms. The 4.0 Industrial Revolution has provided the education sector with new technologies to improve the quality of teaching. Lecturers can use these technologies to create online lectures, creating conditions for students to study remotely or online while helping to assess and evaluate learning outcomes more accurately and effectively. This allows lecturers to maximize their abilities, creating a favorable environment for students to self-study, self-improvement, and self-thinking. By improving the quality of work of teachers and students, with the support of audio-visual-digital devices, education in the 4.0 era helps to enhance continuous information and accurately supplement the authenticity of learning tasks and advanced information. The development of new technologies has allowed the education sector to provide students with new learning experiences, creating a better and more effective learning environment. Students can use learning software, mobile devices, learning websites, and other learning materials to enhance skills and knowledge, increase learners' motivation, promote independent learning and equip learners to control their learning; develop learners' thinking at a higher level, with the ability to apply knowledge and skills to analyze challenging problems, grasp broad concepts, can create ideas and come up with new solutions (Bui Van Dung, Tran Thi Thuy Truong, 2020). The Industrial Revolution 4.0 has created many opportunities for lecturers to improve the quality of their teaching. New technologies such as machine learning and artificial intelligence help lecturers search for learning materials, share experiences, and provide the best teaching for students. In particular, in the educational environment of the Industrial Revolution 4.0 era, lecturers also take on additional roles as catalysts, coordinators, and guides to help learners grasp new needs and trends, as well as prepare students with the necessary tools for self-study and self-training of essential professional skills. Faced with the vast amount of knowledge and information of the era, lecturers need to use many methods and means of internet connection to adjust the orientation of the quality and meaning of information sources, create positive interactions and effectively support learners, provide them with new knowledge and problem-solving skills, creative thinking, contributing to creating global citizens.

2.3. Impact on the capacity of teachers

Teachers must have the capacity to manage network resources, proficiently use technological means to serve the teaching and learning process and convert from traditional teaching methods to teaching methods that apply digital technology. Online learning methods E-Learning: learning through electronic devices; Mobile Learning: Learning through mobile devices; Blended-learning: a learning model that combines classroom learning and online learning; context-aware u-learning: learning in context, through

positioning devices; collaborative environments: learning in highly interactive environments; cloud computing: using cloud computing technology needs to be promoted (Phan Thi Thanh Hai, 2022).

In addition to fostering professional expertise, lecturers need to promote scientific research capacity. This is considered a key factor contributing to improving the professional quality of lecturers.

To access advanced scientific and technological knowledge brought about by the development of Industry 4.0, people cannot help but be fluent in foreign languages. Lecturers must integrate with the trend of global connectivity and integration with world university education. Therefore, lecturers need to improve their foreign language proficiency through various methods such as studying according to training programs, self-study, or books, newspapers, movies, etc.

3. ADVANTAGES AND DIFFICULTIES IN IMPROVING THE QUALITY OF UNIVERSITY LECTURERS IN THE CONTEXT OF THE INDUSTRIAL REVOLUTION 4.0

With the increasingly high demands of the labor market, university training activities must be increasingly linked with businesses to shorten the gap between training, research, and implementation. They are strengthening the connection between universities and enterprises on the basis of corporate social responsibility, aiming at enterprises becoming a natural bridge in the training activities of universities in order to effectively use equipment and technology of enterprises to serve and form professional capacity for learners during the training and internship process at enterprises (Tran Manh Hung, 2018).

Thus, it can be seen that the impact of the 4.0 revolution on education is enormous, creating both opportunities and increasing challenges for universities:

3.1. Advantages

University leaders are always aware of the impacts of the 4.0 revolution on the teaching activities of lecturers. Therefore, schools have focused on investing in facilities and innovating machinery and equipment to serve the learning and teaching of students and lecturers in the school.

Universities are always interested in training, fostering, and improving the qualifications and capacity of lecturers. Through professional training sessions, information technology serves teaching, applying advanced training forms and online models to lecturer training. The school is always interested in promoting scientific research, fostering research, and improving foreign language proficiency for staff and lecturers. The teaching staff is always active and enthusiastic about their work. Teachers continuously improve their self-study spirit and scientific research, are solid in their expertise, and promptly update new technologies in order to better meet the teaching requirements in the context of the 4.0 Industrial Revolution.

Universities have focused on joint activities and partnerships with domestic and foreign universities. It not only creates conditions for students of the school to study foreign training programs without having to go directly to that country to study for a long time, thereby helping to save on study and living costs for students, expanding their study options and accessing advanced study programs quickly. Joint training activities also create conditions for lecturers to have the opportunity to exchange professional skills and expertise, expand their knowledge, improve their foreign languages, and help update advanced transportation technologies in the world.

3.2. Difficulties

However, in the context of the 4.0 Industrial Revolution, improving the teaching quality of university lecturers still faces specific difficulties:

The thinking and teaching style of some lecturers has mostly stayed the same in the context of digital transformation. Some lecturers are reluctant to change or teach on digital platforms superficially, with a lack of creativity. Some lectures are no different from traditional lectures despite the support of modern technology.

Although schools have focused on investing in facilities, the investment still needs to meet the research and teaching needs of lecturers in the context of rapidly changing technology. Many teaching equipment is outdated, and teaching models are obsolete, which has reduced the quality of teaching as well as the adaptability of students in the digital age.

Applied scientific research activities still need to be improved due to the lack of connection between universities and businesses. Especially for technology and engineering schools, the focus must be on connecting with companies to conduct research and development and improve the efficiency of exploiting scientific research topics, especially in creating patents.

The ability to use foreign languages in the research and teaching of lecturers is still limited. The educational environment not only takes place within the school domestically but also expands to a global scale.

Knowledge and ability to use information technology still need to be improved. Many lecturers are good at their profession, but their ability to use technology is not high; their skills in designing lectures and courses on digital platforms are not yet proficient. Designing teaching scenarios, creating images and videos, and integrating screen pages... are still new to many lecturers.

The mechanism of treatment, priority, creating material and spiritual conditions, and working conditions for lecturers and staff still need to be improved. It does not yet generate motivation for the teaching staff to strive to self-study and self-train to strengthen their capacity, as well as be dedicated and passionate about their profession.

4. SOME ESSENTIAL SOLUTIONS TO IMPROVE THE QUALITY OF UNIVERSITY LECTURERS IN THE CONTEXT OF THE 4.0 INDUSTRIAL REVOLUTION

Universities need to correctly and deeply perceive that digital transformation is inevitable for the survival of university training in the current context. Training and scientific research in the digital technology environment is not temporary but an objective trend. Only then can we arouse and promote the needs and efforts of the team itself in developing digital capacity. The teaching staff needs to constantly explore, self-cultivate, and establish digital capacity through the rich open data platform that is currently available. On the one hand, lecturers need to enhance communication and cooperation on the digital platform; on the other hand, they gradually build a culture of communication in the digital space, establishing effective and civilized academic cooperation relationships.

Focus on investing in infrastructure and technology for education through the development of mechanisms and policies, creating conditions for attracting non-budgetary resources for investment in education and lecturers, perfecting regulations in managing the teaching and learning process on the basis of considering this as the central and critical activity of the school, creating the best conditions, ensuring the highest benefits to promote and motivate the teaching staff to improve their digital capacity. In addition, it is necessary to build a framework for assessing the capacity of teachers and learners, especially the teaching staff, suitable for digital training methods to replace the current framework for determining the capacity of lecturers and promoting the development of digital science resources for teaching and scientific research on the basis of strict quality assessment and encouraging and having a transparent reward and punishment mechanism for lecturers in fulfilling their responsibility to contribute to the development of the school and society on a digital platform. Promote scientific research activities and technology transfer, improve the quality of scientific research at schools, and closely link research with technology transfer at the facility. Expand cooperative relationships, link with organizations and businesses, create more opportunities for applied research, and increase the effectiveness of mobilizing funding sources.

Foster professional capacity with modern and advanced methods: Currently, many lecturers still need to access new teaching models, which will limit the training of vocational skills for pedagogical students. Therefore, professional training for lecturers should combine advanced training models 4.0 and online and distance training so that pedagogical lecturers can both improve their professional qualifications and access new teaching models. These teaching methods will help lecturers supplement their professional knowledge, enriching their teaching methods.

Universities need to research and develop policies to ensure income for lecturers, research and build welfare for lecturers such as housing arrangement, bonus regime, travel, vacation, health care, personal development... so that lecturers can work with peace of mind and contribute to their career.

5. CONCLUSION

The 4.0 industrial revolution requires human resources to be dynamic, capable of self-study, self-research, and creative. That requires the education sector, significantly higher education, to make appropriate changes. Universities need to continue to innovate their thinking about education and training development; innovate goals, content, methods, and forms of teaching organization, methods of assessing learning outcomes; innovate the training and development of lecturers in the direction of practical learning and practice; enhance the ability to use information technology applications in teaching; have policies to attract talents; Strengthening links, cooperation, and expert exchanges in teaching activities; investing in infrastructure and technology for education. In addition to studying to improve professional qualifications, lecturers also need to focus on fostering the ability to proficiently use information technology and foreign languages to meet the requirements of education and training in the context of global connectivity to access scientific knowledge brought about by the 4.0 Industrial Revolution.

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