Section 4. Information Technology and Education

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TAKE THE ADVANTAGES OF THE INDUSTRIAL REVOLUTION 4.0, USE INFORMATION TECHNOLOGY FOR INNOVATING TEACHING METHODOLOGIES IN VIETNAM UNIVERSITY NOWADAYS

Abstract: To be established and developed in 1950s, information technology has integrated into social activities, created the large changes in life and human thinking. In education and training, information technology gives us not only the large chances but also the big challenges. In this writing paper, the writer wants to talk about the advantages of the industrial revolution 4.0 and about the trend of its in innovating teaching methodologies in Vietnam University nowadays.

Keywords: the advantages of the industrial revolution 4.0, information technology, innovating teaching methodologies.

I. Introduction

In recent years, information technology has been one of the scientific area that has developed very fast. This scientific area assists many other trades in efficient development. In education and training, information technology boosts the open education, helps people to update information fast, to shorten the distance, to save the time, helps to innovate education and training. Moreover, it can help learners in their approach to self-study, solving of matters, organizing learning activities that are linked to realities in order to develop their abilities [3]. Understanding the position, role, importance and effectiveness of applying information technology in innovating teaching methodologies, recently, Universities in Vietnam have timely implemented lot of policies and solutions to take the advantages and effective application of information technology in improving teaching quality in the direction of development of learners' abilities [1].

1. The advantages of the 4.0 industrial revolution in Vietnam

The industrial revolution 4.0 has had a enormous influences on many areas of social life, with the arrival of robots which have the artificial intelligence, intelligent robots can memorize and learn endlessly while the humans' abilities are usually limited. Therefore, high-tech and intelligent machinery will provide for humans with opportunities to change the structure of the production system; to increase productivity and labor efficiency; to reduce costs, to increase profits; improves the working environment; enhance the quality of life by taking advantage of the industrial revolution 4.0 [5].

In Vietnam, inheriting and developing the achievements of the industrial revolution 4.0 from the world that help us to save lots of research time. Instead, we can focus on developing those

achievements that are appropriate and effective for the development of the Nation [2].

The educating and training is also heavily influenced by the industrial revolution 4.0. In Vietnam, the fundamental and comprehensive reforming of educating and training towards the development of learners' abilities are indispensable and suitable with the trend of the times.

With the efforts to apply information technology in innovation teaching methodology. Now, the advantage the industrial revolution 4.0 is effectively applied into the design of lecturing by lecturers in Vietnam Universities. They can search information for research, improve professional knowledge and use materials to support the preparation of lectures. They can use the software to support to do the test, examination and to evaluate the results of students in order to help the work carried out scientifically and save a lot of time. Beside, they can use that advantages for forum, email, social networking... aims at building electronic curriculum, electronic lecture, the more effective Website that becomes the linking between the teachers and students [4].

The material resources provided that helps teachers to innovate teaching methods confidently. By the development of various learning resources, the lecturers can apply positive teaching methods such as group discussions, reference guides, reading materials... The lecturers also focus on the important contents, instruct students to study the content left. Therefore, they have more time to design the learning activities to promote the positiveness of students. In the classroom, students just comment, supplement and conclude the content of the lesson to help themselves to understand the important content and also improve self-study skills. In the method of checking and evaluating, with a variety of questions and exercises, such as short questions, tests, etc., teachers can easily assess the students' comprehension and at the same time students can self-assess their ability ...

2. The Importance of Applying the Advantage of Industrial Revolution 4.0 for Innovating Teaching Methods in Vietnam Universities

Innovating Teaching Methods is the objective and necessary requirement for both short-term and long-term, is the significant factor to improve the quality of education and training in Vietnam.

Thus, the application of information technology in teaching is not only using the computer in the workings such as compiling and presenting the electronic lecture in the classroom, but also being the tools and supportive means in all activities related to training; related to research activities, lecturing; researching, exploring, exchanging experiences, orienting, guiding research, exploiting information resources, etc... And higher level, with E-Learning, the teaching and learning activities are taken place all the time and everywhere. Students can listen to lecturers and can be guided to do assignments and then submit their works, finally present their ideas without direct contact with lecturers [5].

As soon as the term "industrial revolution 4.0" emerged, the leaders in universities recognized that it was an opportunity to apply more powerful information technology to improve the quality of teaching. the leaders in universities took the immediate chance to invite leading experts in the field of technology to talk about the industrial 4.0; assign the lectures to conduct research and to report in front of the lecturing members about the applying of industry 4.0 applying in teaching. From the initial background of technology and the trend of innovating educational methodologies, the trend of industry 4.0 helps Universities to establish e-learning system for students.

E-learning is a digital learning and studying process that allows lecturers, students and digital content to cooperate each other on the Internet anytime. The purpose is helping students to learn independently without direct contact with the instructors [5]. E-learning helps students to be active, to visualize the any subjects effectively and save time. By the application of information technology, both

lecturers and students can use computers to discuss the ideas, solve any problem timely, search the old knowledge easily. Digital exchanging used between lecturers and students has become indispensable need.

3. Direction of taking advantage of the industrial revolution 4.0 in new teaching methodologies

The industrial revolution of 4.0 has had a tremendous and wide influences on all aspects of social life. For academic education, the industry 4.0 will have the new advanced progress in educating and training, will change training objectives and traditional training forming by transferring and training the new knowledge [5]. Traditional classes including the disadvantages such as high costs, limited services, which are unfavorable for some body... will be replaced by online classes, virtual classes.

Learning spaces will also be more diverse, no more traditional labs or simulation rooms. Learners can be experienced with virtual-space learning which we can interact with real-world conditions by software and network system. The digital learning resources in real and virtual space are extremely rich, and the library space is no longer one stable place to be; the library can be exploited everywhere.

In many areas of the industrial revolution 4.0, information technology with the main elements are artificial intelligence (AI), Internet of Things (IoT) and Big Data that will have the strong influences on the teaching process. Recognizing the advantages that the industrial revolution 4.0 brings to educating and training, it is necessary to promote the achievements in the application of information technology into innovating in teaching methods. At the coming time, it is necessary to identify some directions to take advantage of the achievements efficiently to improve the quality of teaching in universities in Vietnam [5].

Firstly, To continue to grasp thoroughly and implement effectively the Resolution No. 29-NQ/TU dated on November 4th, 2013 of the Central Committee of Vietnamese Communist Party on the renewal of fundamental, comprehensive education

and training [2]. Particularly, innovating in teaching method is the advanced step and applying of information technology in teaching is essential. To unify the perception of the benefits, opportunities and challenges of the industrial revolution 4.0 to education and training. Thereby, to develop a practical actioning plan to take advantage of the Industrial revolution 4.0 in improving of teaching quality.

Secondly, To innovate teaching organization methodology. The form of teaching organization will be flexible of time, space and be suitable with practical conditions of virtual classroom. E-learning or use of cloud computing technology allows teachers to provide learning materials, interact with students and collect the results of the learning process continuously and flexibly.

In order to apply information technology effectively, not only the effort from teaching managers but also the nonstop attempt from student. It is necessary to guide students to be more active in applying information technology to study. In fact, with the diverse information environment, collaborative exchanges no longer to be limited by space and time, students have to be active to learn and accumulate knowledge with the teachers' guidance. They have to learn not only from the book, the materials but also from virtual classrooms, interactive contact, project group [1].

Besides, To Focus on guiding the skill of doing teamwork, self-study, to know how to look for documents, know how to receive and process information efficiently.

Thirdly, To invest in developing human resources and information infrastructure technology in order to adapt to the training demand.

Most of lecturers in Vietnam have a good knowledge about information technology. Therefore, they will be enhanced and improved on more information technology skills for making materials resources and skills of virtual technology, simulation, intelligent connectivity [5]. To continue to choose the best people in information technology and then train them at domestic places and abroad so that they can

receive and apply the new achievements of information technology in teaching in each university.

In addition to researching into Internet of Things, Virtual Reality (VR), Deep Learning, etc., lecturers will be encouraged to write software that serves for teaching tools to teach. It is necessary to support the electronic educating activities for lecturers such as equipment synchronous, high-speed network, building experimental material resources, simulations, reference materials, model electronic lectures, electronic curriculum, teaching softwares, electronic forum.

The fourth thing, To establish a set of criteria for the lecturing which apply the technology. In order to improve the quality of information technology applications, it is necessary to establish a set of criteria for the lecturing which apply information technology well. A set of criteria includes the pedagogic lesson plans; the interactive lectures of learning through the use of software; the fluent use technologies of teaching; the role of the student in accessing and participating in the lecture; the ability to access online information to collect materials for teaching; the ability to communicate electronically with learners pre-lecturing, while-lecturing and post-lecturing.

Finally, To strengthen to cooperate in educating and training. The information is always a revolutionary field. In order to improve the effectiveness of teaching, to adapt quickly to the new demands of information activities at the new age, it is necessary

to exchange technologies and methods of applying information technology in teaching in universities and research institutes and to use information technology environment to link of training, transfer of technology [1]. With the large intelligent connection environment, it can be gathered the top people, good instructors for suitable training tasks.

II. Conclusion

The trend of using technology in education and training activities is inevitable and more popular to promote the effectiveness of the teaching and learning process and to improve the quality of education and training. Taking advantage of the revolution 4.0, the application of information technology for teaching and learning aimed at the innovating of teaching methods is a difficult and long-term task, also has to be required a lot of infrastructure conditions and the abilities of the teaching staff. Therefore, it is needful to exploit the advantages of the revolution 4.0, and also limit the disadvantages of this revolution. Investing should be made in facilities, furniture; specially, strongly invest in the abilities of innovating teaching method of the teaching staff. Information technology is a tool which support for the teaching process effectively and quickly. Therefore, the human is a decisive factor in improving the quality of teaching. Moreover, the success of application of information technology and its benefits depends on the ability of university lecturers of information technology application in Vietnam.

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