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The Situation of E-Learning at Higher Education in Vietnam in the 4th Industrial Revolution Age

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Abstract: E-learning has changed strongly the process of self-learning due to the ability to personalize as well as satisfy demand of learners. E-learning has applied at many universities today, in the 4th industrial revolution era. Many application software has been used to replace human beings in imparting knowledge, testing and evaluating the quality of training. In this paper, the authors present some analysis and evaluation of the current online teaching and learning methods and recommend solutions to enhance the interaction and active in the teaching and learning process to improve the quality of online education in Vietnam for the next period.

Keywords: E-learning, 4th IR, quality, fact, solution, Vietnam.

INTRODUCTION

In recent years, with the rapid development of science and technology, online learning has been widely applied at many educational levels, gradually replacing and supporting traditional education and training methods. Especially, since the Ministry of Education issued circulars guiding the training and recognition of online training at universities, the schools have stepped up this training method in educational programs mine. In recent times, when the Covid-19 translation is raging on a global scale, the promotion of online teaching and learning programs is more applicable than ever. E-learning with many outstanding advantages in training has drastically changed the self-study process due to the ability to personalize as well as effectively meet learning activities. Online learning and building an online learning environment are currently paying attention and being deployed in many universities in Vietnam with different scope and levels. However, in Vietnam today, the output quality of these online training programs has not been highly appreciated compared to similar programs in the world. The cause of this situation is that the training, teaching, and learning are not effective. The question now is how to improve the quality of online training. Many studies have shown that teaching methods and methods greatly affect the quality of this type of training. Therefore, in this article, I will give some analysis, evaluate the current teaching and learning methods and propose solutions to enhance the interaction and initiative in the teaching and learning process of Lecturers and students to improve the quality of online training in the future.

E-learning is an indispensable trend during the 4^{TH} Industrial Revolution. In order to improve the quality of teaching and learning in online training, it is necessary to use rationally and combine various training methods to enhance the interaction and active participation of lecturers and learners in the teaching and learning process. In the process of teaching online, learners will develop their self-consciousness, actively and proactively when conducting their self-study activities. They decide on time, place and contents of

study. It does not, however, ignore the dominant role of the teacher (teaching activity). The role of teachers in teaching e-learning is reflected in the selection of content for e-learning system, the content of the order, the direction of learning for students, etc. It also demonstrates the interaction between teachers and learners through the e-learning system.

LITERATURE REVIEW

E-learning

Definition

E-learning is a process of training based on information and communication technology in order to achieve good learning objectives, in which learners can easily select the learning content suitable for their ability individual interests and the direct interaction between the learner and the learning community are facilitated.

Characteristics of E-learning:

1. Based on information technology and communication on the Internet and WEB technology
2. In essence, it is still the process of transferring knowledge from the teacher to the learner under the supervision of the management system. It therefore needs to adhere to the basic process of training and deploying the system. E-learning is always understood in terms of learning rather than teaching.
3. E-learning facilitates learners with their teachers or between learners' communities to exchange information more easily, as well as provide learning content that suits their abilities and interests.

E-learning Model

The e-learning model consists of four components:

1. Content: The content of training includes curriculum, lecture subject; Processes, mechanisms, policies, technology ... related to the teaching process. The most comprehensive component of e-learning training is the training program. The main courses are websites, e-books or other e-learning products. Courses include many lessons, such as a chapter in an e-book or some pages on the website. The pages or chapters that contain the image, audio, video ... help students find it easier, have more interest in learning. In addition, there are courseware in this floor.
2. Distribution: Distribution of training content is done through electronic means. Examples are documents sent to learners by E-mail, learners on the website or via CD-ROM multimedia ...
3. Management: The process of learning management, training is done entirely by electronic media. For example: register online or by SMS, tracking the progress of learning, test performance evaluation via the internet.
4. Cooperation: The cooperation and exchange of learners in the learning process also through electronic media. Examples of discussion through email, chatting, forum on the net ...

E-learning Object

Humans are considered the subject in the e-learning system. The people in the e-learning system include: learners, instructors and administrators. We can imagine the work of these three subjects in the e-learning system as follows:

1. Learners are the main subjects of e-learning, they directly participate in courses to gain knowledge provided by the instructor. Learners participating in the e-learning system must have the permission of the manager. They can directly monitor the teaching of the instructor, directly study the lectures on the e-learning system or take the lecture on offline learning. When researching a problem, if there are questions, the learner will put the question on the training system and wait for the answer of the teacher or other learners.
2. Teachers in e-learning not only provide knowledge to learners through learning activities, tasks, announcements ... as in traditional training that includes a team create a lecture. It is the script designer, e-learning designer, lecturer and lecturer in the e-learning system. In order to create a complete e-learning lecture, we need to cooperate smoothly between the works of three specialists: script designers take on script design for each lecture, assignment or test; Electronic materials designers undertake the creation of multimedia materials such as audio or video. In addition, the instructor also receives feedback, exchanges information with learners when they are having difficulty and monitors the whole learning process of the learner on the system.
3. The administrator is responsible for overall management of the entire e-learning system. They are responsible for managing both the instructor and the learner. For the instructor, the administrator is responsible for updating the list of lectures, creating and authorizing the instructor, managing the entire course program; determine the duration, schedule, schedule ... For learners, the administrator has the right to grant and delete accounts, view personal information and reports on their learning process.

Requirements for Facilities to Train E-learning

To participate in e-learning courses, in addition to be equipped with all necessary facilities such as computer with internet connection, documents, syllabus, etc. Students need computer skills. The learner must have the necessary computer and networking skills, such as installing and using software related to the lesson, and typing.

The 4th Industrial Revolution

Definition

"The first industrial revolution utilized water and steam power to mechanize production." The second revolution took place through the use of electricity for mass production. Information technology to automate production. Today, The Fourth Industrial Revolution is flourishing from the third revolution that combines technologies together, blurring the boundaries between physics, engineering digit and biology. Industry 4.0 revolution comes

from the "Industrie 4.0" concept in a German government report in 2013. "Industrie 4.0" connects embedded systems and intelligent manufacturing facilities to create technical convergence between Industry, Business, Function and Processes.

Design Principles of IR 4.0

There are three main principles in industry 4.0. These principles assist companies in defining and implementing the perspectives of industry 4.0. Specific content of the three principles are as follows:

1. Interoperability: The ability to communicate and connect the machines, devices, sensors and people connect and communicate with each other through the network of things connected to the internet or network of thousands of people connected to the internet. .
2. Transparency: The ability of information systems to create virtual versions of the real world by enriching digital factory models with sensor data. This requires the aggregation of raw sensor data to higher value context information.
3. Supporting Technology: First of all the capabilities of human support systems by gathering and envisioning information universally for making informed decisions and addressing critical issues. Take short notes. Secondly, the ability of cyberspace-physics syste ms to assist people in performing tasks that are unpleasant, too much energy or unsafe for humans.

Content and Evolution of the Industrial Revolution 4.0

Industrial Revolution 4.0 will take place on three main areas including Biotechnology, Digital and Physics. The core elements of Digital in IR 4.0 will be:

1. Artificial intelligence (AI),
2. Internet Connection of Things (IoT) and
3. Big Data.

In the field of biotechnology, the Industrial Revolution 4.0 focuses on research to create leaps in agriculture, fisheries, medicine, food processing, environmental protection, renewable energy, chemistry and materials. Finally, there is the field of physics with new robots, 3D printers, self-driving cars, new materials (grapheme, sky ions ...) and nanotechnology. Currently the Industry Revolution 4.0 is taking place in developed countries like USA, Europe, part of Asia. In addition to the new opportunities, the industrial revolution 4.0 also pose challenges for mankind to face.

Opportunities and Challenges from the Industrial Revolution 4.0

The fourth industrial revolution brings many opportunities and challenges for humanity. This revolution unleashes human labor, yields high productivity and productivity, and produces unprecedented material and spiritual values.

The downside of the Industrial Revolution 4.0 is that it can cause inequality. Especially can break the labor market. When automation replaces manual labor in the economy, when robots replace people in many areas, millions of workers around the world may fall into unemployment, especially those working in the field of security, insurance, real estate brokerage, financial consulting, transportation.

Then, the economic turmoil that has arisen from the Industrial Revolution will lead to life insecurity. Its corollary would be political instability. If governments do not understand and fully prepare for the 4.0 industrial wave, the risk of global instability is entirely possible. In addition, changes in the way people communicate on the Internet put people at risk for financial health. Personal information that is not securely protected will result in inconvenience.

RESULTS AND DISCUSSION

Legal Policy of Vietnam on E-learning

Currently, Vietnam has the legal provisions for online training model governed by Law on Education dated on June 14, 2005, amended in 2009 and the Education Law 2019 issued on June 14, 2019; Law on Vocational Education 2014; Higher Education Law 2012; Circular No. 10/2017/TT-BGDĐT promulgating the Regulation on distance education at university level.

The organization of e-learning training must also comply with the training regulations issued by the Ministry of Education and Training. Websites providing content and online training services must comply with the Decree 72/2013/ND-CP on the management, provision and use of Internet services and the above information network. The information technology system related to online training must ensure the relevant laws on information safety and security. Electronic lectures and electronic learning materials must ensure that learners can self-study easily and conveniently.

In order to ensure the quality of online training results, the examination and evaluation of the end of a subject or a course must be organized centrally, with direct supervision of the training institution, based on the charter and decision, regulations of each school... Basic conditions for organizing online training of training institutions include: Web-portal or online training website; Server system and Internet connection infrastructure with bandwidth to meet user needs, not to cause network congestion or overload; human resources to ensure the deployment of online training activities; Online learning management system (LMS); The content management system is compiled in the direction of self-study materials and is built into an electronic lecture system, packaged according to SCORM standards, ensuring the requirements of electronic learning materials by the Ministry of Education and Training. Issued in accordance with Circular 12/2016/TT-BGDĐT; Regulation on online training, online training activities are subject to inspection and examination by education management agencies, state inspection agencies, relevant specialized inspection agencies and administrations at all levels.

From here, it can be seen that the online education model has been allowed by the State by regulating a series of laws and regulations, requiring only online teaching and learning in compliance with the provisions of law. There will be no violation of law.

Current Vietnam's Situation of Education According to

The online education market in Vietnam is estimated to be in billions of US dollars, but there are too many barriers to this potential revolution. Currently, online training is considered as a means of support, helping the classroom teacher to convey to students the amount of information that white chalk, blackboard and other traditional teaching facilities cannot do and learn. Online is an exciting new option that is expected to dramatically accelerate the educational environment. The online university is considered a competitor of the traditional university. The question now is whether online education can completely replace traditional education in the current period. In some famous universities in the world, combining e-learning with traditional direct education in lecture halls is a quite effective solution. The awareness of the learners as well as the professional ethics of the instructors is also a matter of current attention if you want to improve the quality of training in both traditional and online ways.

The advent of the internet, online education can remove all barriers. Anyone with good knowledge and communication skills can become a teacher and anyone who needs it can go to school. Despite the high production costs, online courses have the opportunity to be highly profitable. According to a study by Global Industry Analysts, the global online education market reached more than US $ 100 billion in 2016. According to The Economist, the number of people enrolled in online learning in the world in 2016 reached 60 million and the forecast was reached 70 million people this year. The US is currently the country with the most popular MOOC (Massive Online Open Courses) services. These include Coursera, edX and Udacity. More than 17 leading universities in the US and other countries offer free online courses through Coursera Online Education Company, including famous universities such as Harvard and Massachusetts.

Online education has also been introduced to Vietnam quite early. As of 2010, there have been pioneers seeking business opportunities with this model such as Violet.vn, hocmai.vn, TOPICA..., mostly following the e-learning model. By 2012, the Ministry of Education and Training launched a virtual university project but did not leave much mark on the market. In August 2013, Giap School was the first unit to open MOOC portal with many courses in different fields. About 2 years later, FPT participated in another MOOC project called FUNiX. By 2016, Vietnam has about 150 start-up projects in the field of online education. These units provide curriculum from children, university to working people. With 40% of the population connected to the internet, mostly young people, the demand for education is high. Each year, Vietnamese people spend 3-4 billion USD to send their children to study abroad. Therefore, the online education and training market is full of potential with large scale and revenue growth of over 40% per year, estimated market size of not less than 2 billion USD. Therefore, not only domestic enterprises invest, Vietnam is also an attractive destination for investors in Asia such as Japan, Korea or Singapore. Currently, there are 5 leading units in the market: Topica, FUNiX, Kyna, Tienganh123 and e-Group. In developing countries, online education is a great opportunity to accelerate education and training reforms. Thereby, improving the quality of human resources for economic growth and social development.

In Vietnam, many other technology projects, online education companies in Vietnam develop spontaneously. Digital education has online learning models, including: Video Streaming, person-to-machine interaction and person-to-person interaction. So far, the interactive online learning model between students and lecturers has been more selected.

However, most programs in Vietnam still focus on exam preparation, English language training or soft skills courses. The way of doing business is the same, lack of innovation and innovation in education. There are a lot of obstacles for online courses such as distance between teachers and learners, study habits, technology infrastructure... Domestic investment enterprises mainly come from information technology group. News and group of teachers who want to participate in the field of online training. As for foreign investors, they are inclined to bring the successful programs in the world to Vietnam, but the localization is not attractive enough, so there are many investors and providers of online training services to create a vibrant and competitive market. Currently, online courses are growing and have to look for new sources of revenue. With MOOC, lecturers no longer need to work directly with a university, but create e-books or sell lessons.

Teaching Methods for E-learning

Method of Discussion

Discussion is the method by which the trainer poses problems, situations, and organization for students to discuss and discuss. The nature of the method of discussion is to use the intellect of the students together to find truth, this is one of the trends of innovation in modern teaching methods. The advantages of the discussion method are:

1. Create a dynamic learning atmosphere, everyone involved in learning the content.
2. The most important part of the discussion method is that students form cooperative skills in thinking and in practical action to solve the problem, which is an extremely precious quality of the workers in the commune. Modern "learning to cooperate, living together."
3. The method of discussion can be done in the whole class, or in groups. In the first case, the lecturer is the one who raised the issue, instructed, encouraged the students to discuss, debated, lectured as advisors to the parties, was the arbiter in the case of critical issues and made conclusions. Discussion methods can be conducted in groups.
4. Implementing the teaching process by means of discussion makes the learning of students become light, exciting class. Students are competing, helping each other to study together, issues are discussed thoroughly, so knowledge is long and can be applied in practice.

Teaching Methods Raise the Issue

Teaching methodology is the teaching method, in which the teacher creates problematic, contradictory situations, bringing students into the psychological state to explore, from which instructors instruct, encourage students seek to solve. The key point of teaching methodology is to collect situations that are conflicting, realistic, and consistent with the contents of lectures and disciplines, which make students try to find solutions. There are many types of problems that teachers should exploit:

1. The situation is not consistent with conventional wisdom, contrary to experience.

2. The conflict between theory and reality, between reality and place.
3. Situation of conflict, opposing.
4. Case selection scenario.
5. Incidental mutation, unusual fast-growing events.
6. Hypothetical situations, predictable situations, assumptions need to prove.

On the basis of creating scenarios, instructors lead students to answer with the following options:

- The lecturer mentions the conflict, brings the conflict to a climax and then presents the problem.
- Organize the student discussion and find solutions and teachers to help students confirm the results.
- Organize students to do experiments that prove or deny the situation.

The ultimate goal of teaching is to maximize the wisdom of students and the student body, to help them find their own knowledge, to form a flexible and creative thinking method.

Methods to Improve the Activeness of Faculty and Students in Online Training

Method of Lecture

Discourse is a teaching method in which the teacher uses words to describe, explain and prove the contents of the lesson in detail to help students listen, understand and remember. Teaching is the oldest method in university teaching history and is still in widespread use in our country and in many other countries around the world.

Advantages of Methodology:

- For easy-to-do unit instructors, there is no need for any technical means, and for students to hear, analyze, explain and quickly understand complex problems. Much information should have been spent a lot of work, more time to explore, research can be collected.
- Lecturers take the initiative to conduct a large-scale program that can teach a large student population.
- Speech methods, in addition to the provision of scientific information, can also guide students in thinking, logic, and problem solving, which can create a feeling for students.

The Method of Using Textbooks, Materials and the Internet

The method of using textbooks, learning materials and the Internet is a method of instructing students to self-study and self-study in order to master the contents of lessons and subjects in order to deepen the knowledge. The quality of learning is improved.

University textbooks contain the knowledge and skills required by the curriculum for each subject, majoring in study. University study materials include workbooks, reference books, monographs, and scientific, literary, and artistic materials that help students expand and deepen their knowledge.

The Internet is a rich, updated source of information that can support student participation.

CONCLUSION AND RECOMMENDATION

The 4th Industrial Revolution gives people the opportunity to change and grow in all areas, including change in the field of education and training. To succeed in an e-learning course, teachers must not only develop new pedagogical skills but also acquire new skills in management and e-learning technology. Includes a number of key skills:

1. Proficiency in pedagogy: As discussed above, the e-learning environment is a different form from the traditional classroom environment. Proficiency in pedagogy will help teachers understand the learning object, the content of learning. From there, helping the teacher design a structured course, effective learning activities help guide learners how to learn, where to start and in what way. Therefore, Refer to other e-learning sciences from your peers or from the Internet. In addition, the instructor should be willing to invest the effort and time to answer the questions of the learner, to build information exchange forums and to support learners after completing the course.
2. Pure e-learning is not a perfect solution, it requires the combination of both e-learning and face-to-face teaching to bring high results to learners. Teachers need to be creative in planning how to use and coordinate modern technology with other forms of teaching so that instructional processes can be more effective.
3. Management skills include the development of their own principles, the requirement for the learner to follow those principles, and the persistence of the principles set forth; Frequently contact for support from information and communication technology specialists.

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