

The role of e-learning in enhancing students' learning capacity in Vietnam

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Abstract: Currently, the world economy is entering the knowledge economy stage. Therefore, improving the quality of education and training will be a vital factor determining the existence and development of each country. Moreover, learning is not only confined to high school and university studies but also lifelong learning. E-learning is an effective solution to this problem.

Keywords: E-learning, Vietnam, self-study, students

I. Introduction

Electronic education (E-education) and distance learning (Distance learning), collectively known as E-Learning, based on computer tools (CBT - Computer Based Teaching) and Web environment (Website Based Teaching), was born as a new form of learning that has brought learners an effective learning environment with a spirit of self-discipline, positivity and initiative (Hoang, 2008). The e-Learning system is based on information and communication technology (ICT), more specifically (Hoang, 2008): network technology, graphic technology, computing technology and simulation technique. The effectiveness of e-Learning is higher than that of traditional learning methods because e-Learning is highly interactive based on multimedia tools, enabling learners to easily exchange information as well as providing learning content that is suitable for the abilities and interests of each individual. E-Learning has become an inevitable trend in the knowledge based economy. Currently, e-Learning is attracting special attention from countries around the world and more and more organizations and companies operating in this field are born (Hoang, 2016).

II. Overview of E-learning

1. E-learning system

An e-learning system (also known as an online education system) is a method that uses a network connection to serve learning process, searching for learning materials, exchanging and communicating between learners with each other and with lecturers (Hung, 2002; Giang, 2004). Devices connected to the network here can be computers, phones, laptops, tablets. These devices will connect to a server that stores electronic lectures and necessary software for students to raise issues and to ask questions while learning online and remotely. Teachers can transmit images and audios via broadband connection or wireless connection (WiFi, WiMAX), local area network (LAN). The development of online education has brought enormous opportunities for companies to promote the flow of knowledge in fastest, the most accurate and effective way (Phuong, 2009; Tan, 2002). Prior to 2002, there are not many research materials on E-Learning. From 2003 onwards, E-Learning research is more interested. Conferences and seminars on the application of ICT in education have more or less mentioned the issue of E-Learning and its applicability to the training environment in Vietnam. Universities in Vietnam have also taken the first steps to research and implement E-Learning, some schools have also deployed training support software with positive results. The Information Technology Department of the Ministry of Education and Training has deployed the E-Learning portal to systematically provide information on E-Learning in the world and in Vietnam. Besides, software companies in Vietnam have launched products to support online training. Although these products are not yet large-scale complete packages, they have initially contributed to promoting the development of E-Learning in Vietnam. Vietnam has joined the Asian E-Learning network – AEN, (www.asia-elearning.net) with the participation of Ministry of Education and Training, Ministry of Science and Technology, Hanoi University of Science and Technology, Ministry of Posts and Telecommunications. This shows that the research and application of this type of training is of great interest in Vietnam. However, compared to other countries in region, Vietnam is only at the beginning stage and there is still much work to be done to catch up with other countries (Moet, 1997, 2005).

The following are some commonly used tools in e-learning systems (Thuong & Tien, 2019, 2019a, 2019b):

a) Electronic writing tools - Tools to help create learning content easily. Web pages with all kinds of multimedia interactions are created just like PowerPoint presentation. With this type of application, we can import pre-existing learning materials such as text, images, audio, animation and video by simply dragging and dropping. It is worth noting that the content after composing can be exported to formats such as HTML, CD-ROM, or SCORM/AICC-compliant packages.

b) Simulation tools - Simulation is the process of imitating a real phenomenon with a set of mathematical formulas. Computer programs can simulate weather conditions, chemical reactions, and even biological processes. An animation is the simulation of a motion by representing a set of frames. There are tools perfect for creating animations and simulations in virtual environments. With such tools, it is possible to record and adjust events that occur on the computer screen. Animation is just a passive recording of events, that is, students can only watch the actions taking place but cannot interact with them. With simulation, tools students can interact with actions.

c) Test Creation Tools - Applications that help create and distribute tests and quizzes on the Intranet and the Internet. Often, features like reviews and reports are bundled together. Most applications now support exporting to SCORM, AICC-compatible formats, so the tests can be fed into different LMS/LCMS. We can use these tests in many different situations entrance tests, self-tests, official exams. Applications allow to choose many different types of questions such as multiple choice, fill in the blank, drag and drop.

d) Tools to create multimedia presentations - Most of us have used PowerPoint software. With this software we can create presentations quickly and easily. However, it will be difficult to include other multimedia materials such as audio and video (for example, the voice and image of the presenter). Currently, there are many software that support this purpose. Furthermore, the software provides live streaming of presentations over the network.

e) Electronic seminar tools - These tools are used to support synchronous learning in a virtual classroom, an expression of the environment in which we can simulate the classroom in the form of face to face with the help of advanced techniques. The virtual classroom provides an environment where we can access a wide variety of learning resources and have many options and methods for exchanging information.

In the development trend of ICT, teaching methods must be changed to be suitable. First of all, innovative methods towards modern teaching, which attaches importance to the application of E-Learning (Duc et al, 2019; Yen et al, 2019). However, no matter how developed, modern teaching methods still cannot be separated from traditional ones. The role of the teacher in the teaching process is towards the ultimate goal of the learner receiving and mastering knowledge, skills and attitudes. Therefore, the requirement for teachers in modern teaching is to have good pedagogical ability and to combine all traditional and modern elements to organize teaching activities with high results.

2. Forms of E-learning

a) Technology-Based Training (TBT) is a form of training with application of technology, especially based on ICT.

b) Computer-Based Training (CBT - Computer-Based Training). In a broad sense, this term refers to any form of training that uses computers. But usually this term is understood in a narrow sense to refer to applications that provide training on CD-ROMs or install on standalone computers not connected to the network, without communication with the outside world. This term is understood to be identical with the term CD-ROM Based Training.

c) Web-based training (WBT - Web-Based Training) is a form of training using web technology. Course content, course management information, and student information are stored on the server and can be easily accessed by users through a Web browser. Learners can communicate with each other and with the teacher, using the functions of direct exchange, forum, e-mail, or can even hear the voice and see the image of the person communicating with them.

d) Online training (Online Learning) is a form of training that uses a network connection to carry out learning such as obtaining learning materials, communicating between learners and teachers.

e) Distance Learning: This term refers to a form of training in which teacher and learner are not in the same place, not even at the same time. For example, training using video conferencing technology or Web technology.

II. Evaluate learners' self-study process through e-learning system

E-learning allows course participants to track their learning progress and results. In addition, through tests, teachers also easily assess the progress in the learning process of students in the course. E-learning is easy to create and allows students to take courses, track learning progress, and learning outcomes. With the ability to create competency assessments, teachers easily know which staff have attended, when they completed the course and their development level. In a broader perspective, E-learning is understood as a learning environment that combines data storage, encoding and transmission technologies. In this environment, in addition to learners and lecturers being able to interact with each other, with the online learning system, learners can also choose learning methods as well as learning support tools to achieve the highest efficiency. E-learning environment requires a very high self-study spirit of learners. However, with more and more equipped tools, integrated into the E-learning system, students can easily schedule self-study through the system of reminders to study and take tests, system of capacity assessment, or automated system that designs the learning process according to the goals (Hoang, 2018, 2018a, 2018b). In general, E-learning is a high-tech

and advanced educational solution, applicable to most agencies that want to automate the training process. The use of E-learning will bring a number of advantages over traditional education methods.

III. Deploying evaluation process on e-learning system to promote learners' autonomy and creativity.

Simulation exercises allow students to practice issues related to the knowledge they are learning, helping remember more knowledge; offering a variety of learning methods through audiovisual exercises, graphic displays, tests and printable exercises with downloadable PDF files for practice to add.

Convenient self-study is with optional speed, fast and saving time with a focus on important knowledge, ignore repetition to always control the space, time and method of learning with an unrestricted approach 24 hours per day, 7 days per week, 365 days per year.

In-depth complete course lessons, dictionary-free course glossaries, academic notes, quick reference links, and practice simulations help increase ability to remember and improve the use and update of these learning tools.

Tests helping assess student learning progress and attitudes can be used before, during or after the course ends. The results page has direct links to each unit, so if students don't pass a unit, they can go directly to retake the unit's test.

IV. Advantages of e-learning in promoting learners' autonomy and creativity

E-Learning transforms the way of learning, and now learners play a central and active role in this process. They can learn anytime, anywhere, according to their personal schedule, at a pace depending on their ability and choose appropriate learning content, so it will be suitable for many training subjects. Although it cannot completely replace traditional training methods, E-Learning allows to solve a dilemma related to the training needs of employees and the number of students increasing, which is overloaded compared to capacity of training institutions. E-Learning attracts a lot of learners and is very suitable for those who are working but still want to improve their skills. Distance learning programs in the world today have reached a rich level of interface, using a lot of multimedia effects such as sound, images, three-dimensional animation effects, high interaction between the users, the users and the program, direct conversation over the network. This gives students interest, passion in the process of acquiring knowledge as well as guarantee the effectiveness of learning. E-Learning allows students to fully control their own learning process in terms of time, amount of knowledge as well as the order of learning units and lessons. Especially, it allows online look up knowledge related to the lesson, learn instantly, review lessons learned quickly, freely exchange with classmates or teachers during the learning process, which is not possible in traditional learning methods.

However, at present, E-Learning cannot completely replace traditional teaching methods for the following reasons (Hoang, 2004, 2016a, 2019):

- The traditional teaching method still have to be the main and popular method because it is suitable and attached to each learner. With traditional way of learning, learners feel safer when listening to lectures directly, solving problems directly with teachers, so it is suitable for many students. For students who are not self-disciplined, don't have the habit of working on their own, the traditional way of learning more or less has an impact when they learn directly with teachers in class. Teachers can also observe each student's learning attitude and ability via direct contact. Meanwhile, online training model is not suitable for everyone, it is only effective when learners have clearly specified needs, are highly independent and self-disciplined.
- Not all learning content is easily converted to E-Learning. There are many subjects and disciplines with highly practical content that make them difficult to use E-Learning to teach, for example: industrial manufacturing, medicine, dance, music, painting. But for subjects that tend to teach practice skills and operate according to processes, which change quickly and require timely updates, will be the appropriate content of E-Learning.
- E-Learning at present and in the near future cannot completely replace traditional way of learning, but it needs to be combined with each other to bring the best results for the teaching and learning process. A course that successfully uses E-Learning method requires the teacher to know how to combine both methods: E-Learning and traditional teaching to bring the highest efficiency to learners.

V. Conclusions and recommendations

1. Conclusions

E-Learning technology opens up a maximum interaction between learners and teachers and exploits the endless source of human knowledge. If this technology is well applied, it will help every single individual and organization to interact continuously with the rapidly developing modern science and create many opportunities to study anywhere, anytime and lifelong learning. For Vietnam now and in the near future, E-learning will be more improved in terms of interface, functions, high interoperability and broadband connection that will create the best conditions for this type of training. Each teaching method has different advantages and disadvantages and we need to combine these two methods to get the best training effect. Vietnam will introduce many policies to manage e-learning development along with creating a legal corridor and encouraging strong growth. In distant future, when Vietnam is deeply integrated with the world, as thoughts change, learners with positive spirit will be self-reliant, self-disciplined,

teachers' capacity and technical facilities will also be improved. If the quality of everything is improved to ensure that all subjects can participate in this process, e-learning can completely replace current traditional way of learning.

Advantages of e-learning:

- No restrictions on time and place
- Reaching students in remote areas
- Give students the opportunity to contact the teachers they need
- Make communication easier for some students
- Attractive to students who are motivated to learn
- Increase the adaptability of the school
- Increase the number of students without investing in classrooms and learning facilities
- Expanding into new education markets
- Create opportunities to experiment and to share resources
- Enhance the ability to accept risk

E-learning is a relatively practical tool for Vietnamese students to interact with professors from different countries around the world on a large scale. All projects on using overseas Vietnamese intellectuals for higher education in Vietnam have a low level of feasibility compared to gathering them in a so called remote university. Thus, this way the use of new overseas Vietnamese intellectuals is carried out quickly, systematically and well-organized.

Disadvantages of e-learning:

- Reduced opportunities to learn from friends and socialize
- It requires a lot of support for students to learn well
- Restricted for elderly people who are not proficient in using computers
- Limited credit for students (not always students of distance learning system get loans from banks or the government)
- Do not stimulate active learning environment
- Reduced ability to convey passion to students
- Increased workload of lecturers who are not familiar and do not like to teach online
- High costs (initial, maintenance, content, faculty incentives, equipment costs)
- Raises intellectual property problems
- Raised issues related to network security.

2. Recommendation:

In the current context of Vietnam, it can be seen that young people get used to the Internet quite quickly. Some studies have shown that Vietnam's Internet penetration rate is much faster than that of other Asian countries such as China, Thailand and the Philippines. Many young people use the Internet proficiently (blogs, forums) for communication and learning purposes. E-learning will have specific methods and measures to overcome the above disadvantages. For example, school will use graduate students as teaching assistants to coordinate group activities online or in person with students living in the same city. Universities will find ways for banks to treat distance education students equally as other students in granting academic credit. For teachers who do not have experience in teaching online, school will have very detailed and specific instructions on how to use teaching software, and will assign teaching assistants and staff to design learning materials and support in all technical aspects. Therefore, we have absolutely all reasons to believe that distance learning universities, with a team of Vietnamese intellectuals, are teaching and doing research everywhere in the world, will be an attractive place for Vietnamese students.

Firstly, reforming mechanisms and policies towards universities. Enhance autonomy in training activities and university management to create flexibility to adapt to the trend of Industry 4.0. E-learning should be identified as an important strategy in education towards a learning society. It is necessary to deploy, propagate and replicate not only in the education sector but also in the whole society.

Second, perfecting mechanisms, policies and legal systems on E-learning in line with the reality of teachers, students, universities, employees and enterprises participating in training; perfecting mechanisms and policies on allocation and use of finance in the education sector. It is necessary to complete the study of documents and instructions for using the E-learning system; specific training for each type of audience: educational and system administrators, lecturers and students to understand the E-learning system. Lecturers not only grasp new learning methods but also actively participate in composing electronic lectures, case studies, and exercises for learners' self-study. Therefore, there must be a form of investment in technical equipment, financial support, training, and experience exchange in using technology for the teaching staff to meet the most modern teaching requirements such as methods, skills, ability to apply IT in teaching, good quality e-lesson design and most importantly, the ability to research and

self-study. It is necessary to strengthen the E-learning management team in terms of quantity and quality, especially it is necessary to train them so that they can not only operate well and promptly handle any incidents, but also have strategies to develop and expand the scale and scope of E-learning system application in teaching, learning and educational management. In the Industrial Revolution 4.0 environment, training methods need to change on the basis of student-centered, maximum application of ICT in the design and delivery of lectures. Along with that, there is a fundamental innovation in the form and method of examination toward the direction of meeting the working capacity and creativity of students.

Third, in terms of technology, State and universities need to invest in modern and synchronous technical facilities that can meet the requirements of Industrial Revolution 4.0 such as high-speed Internet transmission, cloud computing, Intranet, artificial intelligence software, E-learning software, website, electronic library, online training system, multimedia interactive classroom, software to simulate the real teaching environment. Besides, we need to promote teaching activities and application of ICT in teaching and training management

Fourth, in terms of learning materials, teaching units need to focus on building a good quality electronic lecture system by creating optimal conditions for the teaching staff to compile learning materials and provide high quality lectures, factual reports from leading experts in the field; organize contests to design electronic lectures, exchange experiences on learning methods using E-learning at training institutions, listen to learners' feedback and promptly complete lectures.

Fifth, the combined solution is to use E-learning (online) and traditional teaching in the lecture hall (offline) which needs to be coordinated in parallel. Learners can perform all learning activities on E-learning, participating as if they are studying on a real course. Except for practical hours, the experimenter will have to go to the laboratory to approach the actual work, in addition, he or she can meet the lecturer in some sessions to discuss, exchange and solve some problems for the purpose of training and enhancing social communication skills.

Sixth, to build a close relationship between universities and enterprises; at the same time, promote the formation of training institutions in enterprises to share common resources: facilities, finance, human resources, more importantly, to shorten the time to transfer knowledge and skills to practical life. Creating favorable conditions in terms of legal and social environment for foreign investors to open high-quality universities, both traditional and online in Vietnam.

Seventh, universities that do not want to organize and operate E-learning by themselves can cooperate, outsource services with professional E-learning technology units, which is also a quite successful model. In fact, online learning is not new in all countries around the world. But in Vietnam, it has only started to develop in recent years, and broadband internet connection has been deployed strongly to all schools and institutions. But to achieve success, management levels need to make reasonable decisions. The policy of the Ministry of Education and Training is to actively implement activities to build learning society, in which all citizens have the opportunity to learn towards: learning anything at anytime, in anywhere and lifelong learning. To achieve the above goals, E-learning plays a key role in creating a virtual learning environment. Vietnam has joined the Asian E-learning Network (AEN, www.asia-elearning.net) with the participation of the Ministry of Education and Training, the Ministry of Science and Technology, Ministry of Post and Telecommunications. This shows that the research and application of this type of training is of great interest in Vietnam. However, E-learning in Vietnam is still in its early stages and there is still a lot of work to be done to keep up with other countries.

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