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ISSN: 2354 - 1431

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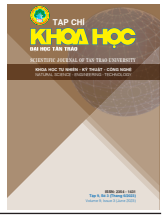

IMPROVING VOCATIONAL TRAINING FOR INFORMATION TECHNOLOGY STUDENTS IN DIGITAL TRANSFORMATION CONTEXT

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DOI: 10.51453/2354-1431/2023/957

Article info

Received:03/12/2022

Revised: 26/02/2023

Accepted: 16/5/2023

Abstract:

In the context of industrial revolution 4.0, universities around the world and Vietnam have grasped and implemented digital transformation of educational models in order to make the most of resources to meet increasing requirements in training human resources both in quantity and quality for socio-economic development. In this article, we refer to the application of digital transformation in vocational training for students majoring in Information Technology at Hung Vuong University

Keywords:

digital transformation,

vocational training,

information technology

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NÂNG CAO KỸ NĂNG RÈN NGHỀ CHO SINH VIÊN NGÀNH CÔNG NGHỆ THÔNG TIN TRONG BỐI CẢNH CHUYỂN ĐỔI SỐ

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DOI: 10.51453/2354-1431/2023/957

Thông tin bài viết

Ngày nhận bài: 03/12/2022
Ngày sửa bài: 26/02/2023
Ngày duyệt đăng: 16/5/2023

Từ khóa:
Chuyển đổi số, rèn nghề, công nghệ thông tin.

Tóm tắt

Trong bối cảnh cách mạng công nghiệp 4.0, các trường đại học trên thế giới và Việt Nam đã nắm bắt và thực hiện chuyển đổi số mô hình giáo dục nhằm khai thác tối đa nguồn lực để đáp ứng yêu cầu ngày càng cao trong đào tạo nhân lực cả về số lượng và chất lượng cho phát triển kinh tế - xã hội. Trong bài viết này, chúng tôi đề cập ứng dụng chuyển đổi số trong đào tạo rèn nghề cho sinh viên ngành Công nghệ thông tin tại trường Đại học Hùng Vương.

1. Questioning

In the industrial revolution 4.0, digital transformation is taking place as an inevitable process in many industries and fields. The technology boom is ushering in a new era for education. Education trends are changing: smarter, more agile and less expensive. Digital transformation in education has been introduced by the Government in Decision No. 749/QD-TTg approving the "National Digital Transformation Program to 2025, orientation to 2030" dated 03/06/2020, which requires the development of a platform to support remote teaching and learning, thoroughly applying digital technology in management, teaching and learning; digitizing documents and textbooks; Building a platform for sharing teaching and learning resources in both face-to-face and online forms, developing technology for education, towards personalized training [1]

Applying technology to training, determined to deploy and spread the form of digital transformation in education, this method has created conditions for both lecturers and students to enhance self-learning ability, eliminating all limitations and distances in space and time. Long gone are the days of having to study abroad to study with foreigners, having to go directly to each extra class to absorb knowledge. Everything can now be done through digital platforms, through common electronic devices such as smartphones, iPads or laptops.

The digital transformation model in education and training has appeared and been applied quite actively in the teaching and learning process in general around the world for a long time. In particular, when the wave of Covid 19 entered Vietnam and brought terrible consequences, especially the need to limit large gatherings, the trend of digital transformation in

education was more and more developed and spread like a storm. Lots of online teaching applications with E-Learning classes, Zoom software, Google Meet, and Microsoft Teams,.. has been introduced into school from elementary level to postgraduate.

Digital transformation in education during the epidemic period is not only limited to big and modern cities, but it has also become more popular than ever in rural areas and provinces across the country. With just an electronic device and a stable Internet system, students can connect with their teachers and lecturers even though they cannot go directly to the school, complying with the motto of the Ministry of Education to stop going to school but not stop learning during the epidemic. Especially, digital transformation takes place strongly in the training process at universities and graduate schools [2]

2. Benefit of digital transformation in the education industry

Digital transformation in education during the epidemic period is not only limited to big and modern cities, but it has also become more popular than ever in rural areas and provinces across the country. With just an electronic device, a stable Internet system, students can connect with their teachers and lecturers even though they cannot go directly to school, comply with the motto of the Ministry of Education to stop going to school but not stop learning during the epidemic. Especially, digital transformation takes place strongly in the training process at universities and graduate schools [2]

Digital transformation will create a huge repository of open learning materials for learners. That means students can access learning resources more easily and inexpensively instead of having to pay to buy books or go to the library to borrow them. Currently, learners can exploit learning materials quickly using online devices without limitations regardless of their economic status. On the other hand, digital transformation also makes sharing documents and textbooks between students and lecturers easier and more economical by minimizing printing costs.

Many people think that online learning will limit the possibilities of interaction between teachers and learners. But in fact, this new learning method increases two-way interaction because learners can talk face to face one-on-one with the instructor without being limited by space. In addition, 4.0 technologies such as VR applications, and AR augmented reality also create more "real" reality experiences for learners. Compared to traditional theoretical learning methods that can only be imagined through books, new technology helps learners have multi-sensory experiences, creating a sense of curiosity and excitement when learning.

The era of online learning will open up learning opportunities at a much cheaper cost than before, as schools will have to spend less to pay for issues related to premises, facilities, and equipment,.. Digital transformation also creates more choices for learners. Instead of going to public schools, they can participate in E-learning courses at a much cheaper cost. Learners can even choose courses that suit them and subjects that they are interested in. This makes learning more effective and quality.

3. Vocational training for information technology students in the digital transformation period at Hung Vuong University

In the context of digital transformation, more than anyone at the forefront must be information technology (IT) training at universities. Recognizing this, Hung Vuong University in addition to training modules in the training program, IT students also practice vocational skills during their studies at the school. One of the career skills for IT students is skills in computer hardware and networks.

To apply digital transformation in hardware training and computer networks, the department has built a website with the address: http://117.4.33.49:88/.

The website provides lessons based on e-learning materials built in Chapter 2 including Videos, sets of multiple-choice questions, practice exercises: accurate exercises, and complete knowledge, suitable for the vocational training program being implemented in the IT industry. For Video, the video was put on the youtube channel by the research team and connected from the website to the youtube channel.

3.1. Implement experimental teaching

The teaching model is described as shown below:

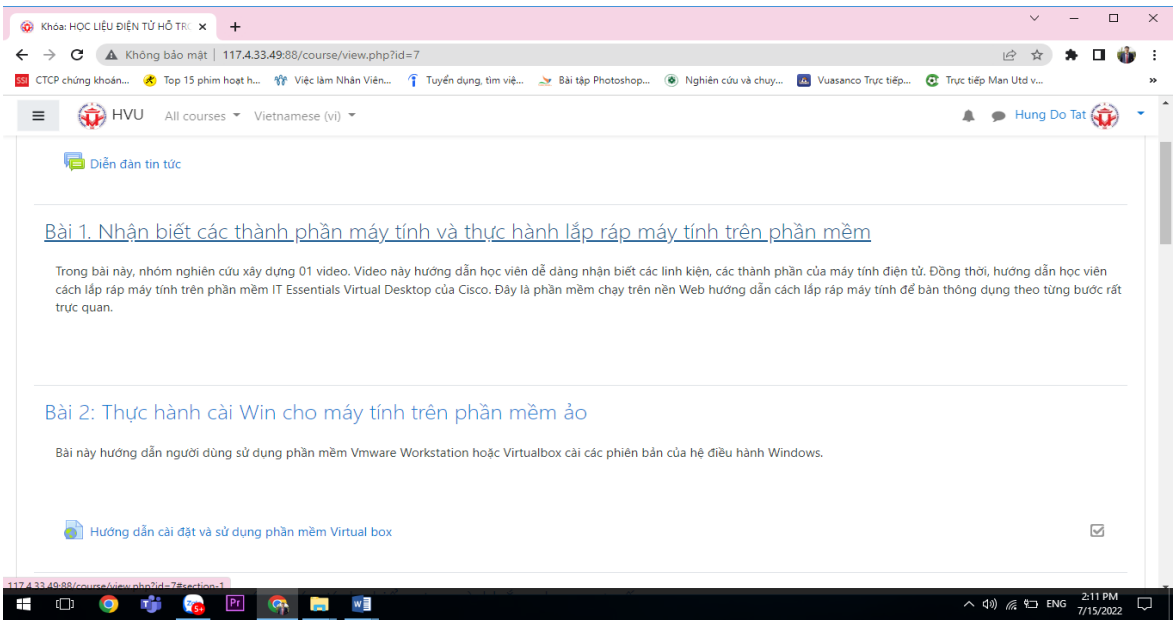

Figure 1: Lessons based on e-learning materials

Each lesson following this model is carried out in the following steps:

- Step 1: Before class

Instructor (GV): Create an electronic lecture for students to study at home Lecture content based on e-learning materials has been developed including Videos, practice exercises, and multiple-choice questions. The content of electronic lectures for students to preview at home and the content of class discussions must ensure a harmonious and reasonable structure. Constantly update new content, and new situations in reality to include in the video lecture in the following years so that the lecture is always fresh.

Students: Self-study, self-study with electronic lectures of teachers and prepare practical part in the class. This learning turns students into the center, instead of teachers controlling students, now students actively study electronic lectures to form their own opinions and questions about the content, and before class have an understanding of related concepts. Required skills of students: Skills to use Information Technology, skills to search for knowledge online. Self-study skills and personalization of your learning.

- Step 2: During class

Teachers exchange, discuss, check and evaluate students in class. Teachers mainly guide students to do practical exercises and learn the ununderstood knowledge of students.

Students: Practice applying the knowledge learned along with feedback from teachers and other students. By doing this, students develop the necessary skills, which are: Communication skills, teamwork skills, and technology application skills.

Classroom work of teachers and students: Teachers guide students to deepen their knowledge, and students perform appropriate group activities as well as spend more time in practice and thinking..

- Step 3: Outside the classroom, after school

At the end of class, if the content exchanged in class is not complete, teachers will guide and answer students' questions online.

Students: Review the knowledge learned during the class and learn more on your own.

Students may write a journal or blog, they may update what they have learned or need to focus on next. Students can also use their blogs or diary to make notes.

After step 3, teachers move on to step 1 to create new e-lectures or supplement old lecture content to suit the current level of students. Students also move on to step 1 to study the teacher's new lecture.

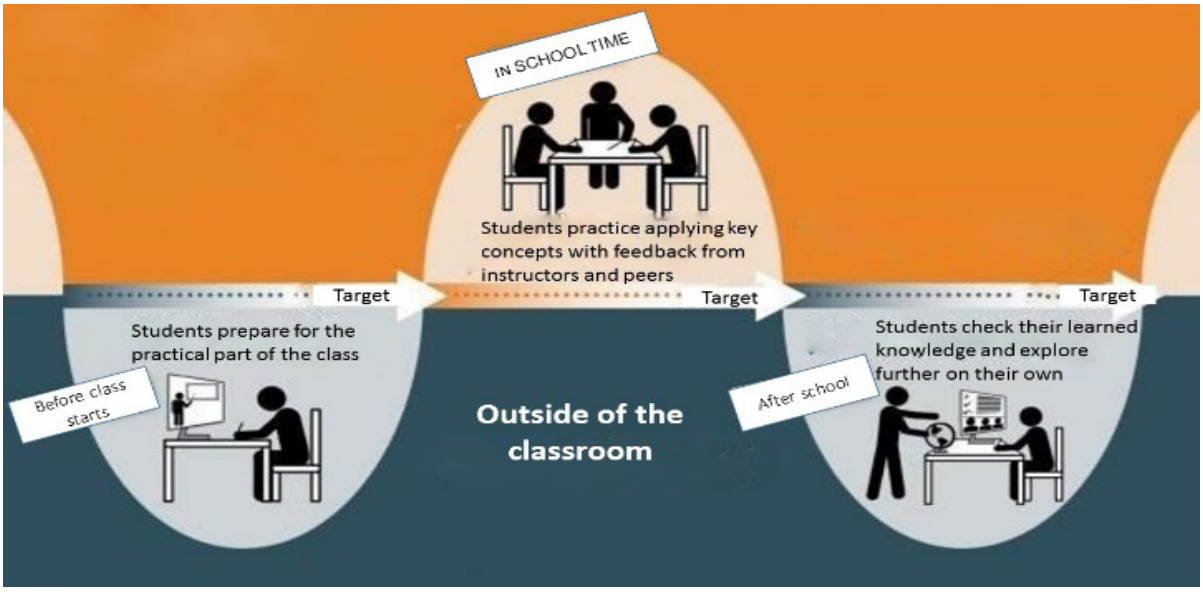

Figure 2: A classroom model

3.2. Evaluate the effectiveness

3.2.1. Student reviews

Nearly 100 students participated in the survey, the response rate was 100%. Engagement with videos is primarily measured through frequency, while awareness of the effectiveness of videos in teaching and learning. To analyze the qualitative aspect of quantitative answers, open-ended questions are included in the questionnaire with the following results:

According to statistics, the number of students participating in the post-experiment survey nearly 100 times students responded to the following contents: The effectiveness of the content of the website has been built; Video quality and content on the website; The videos are built to help me become more confident with the knowledge in computer networks, computer hardware; When asked about the knowledge students gained by watching lectures on the website, the results obtained 72.5% of the knowledge about computer networks, hardware, and consolidated knowledge for students.

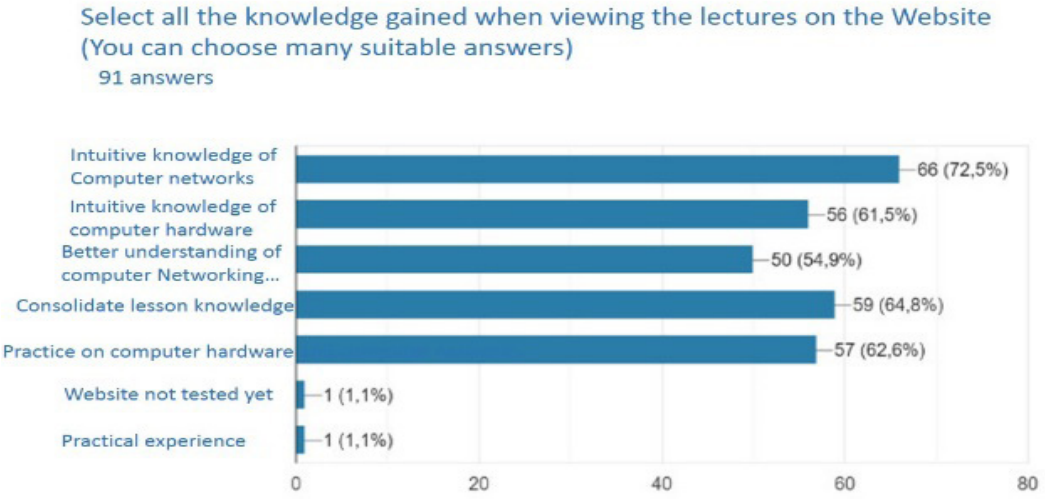

Figure 3:Results of the assessment of knowledge gained by students based on lectures [4]

When asking about the quality of videos and content on the website, the results are over 80% of sound quality, clear images, and useful and practical knowledge. However, there is still 1 number of students who are not satisfied with the quality of videos and content..

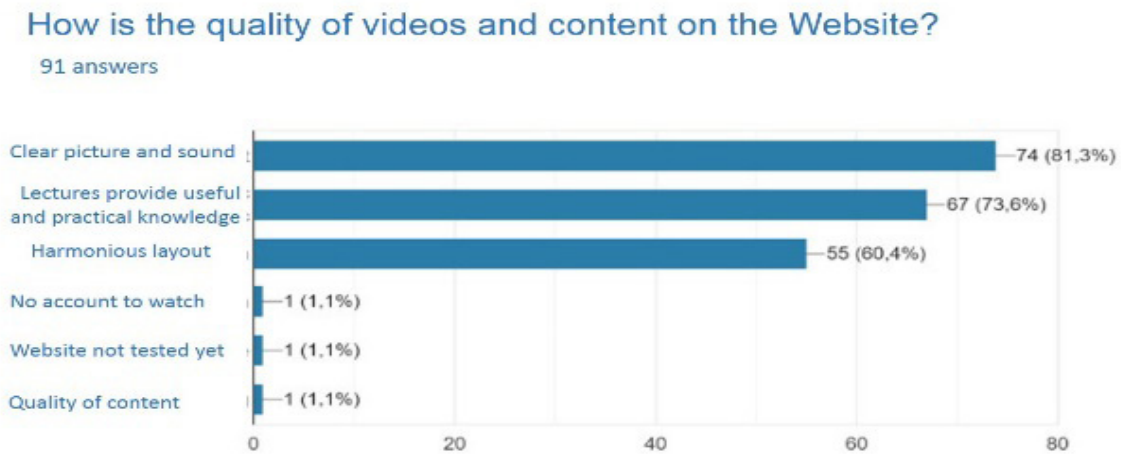

Figure 4: Statistical results of student feedback on the quality of lectures [4]

Students' feedback on the effectiveness of watching videos helps them become more confident with their knowledge in computer networks and computer hardware: 68.8% strongly agree, 28.1% partially agree.

Figure 5:Feedback on how well videos perform [4]

3.2.2. Faculty evaluation

When asked about the number of videos teachers showed students, 100% told students to see all the videos that had been built (18 videos).

Regarding the goals teachers have set / or expectations when showing students lecture videos, 100% of lecturers define the purpose of the website to help students systematize, and reinforce the knowledge learned in class, no lecturer chooses the purpose of teaching new knowledge. However, the lecturers all want to be able to save time teaching theory in class to help students have more time to practice knowledge. 100% of lecturers say they have no technical difficulties when showing students lecture videos.

When asked about how to show students the lecture videos, the instructors said they asked students to watch and answer questions on the website.

Table 1. Results of lecturers assessing the effectiveness of the website

Nội dung	Hoàn toàn đồng ý	Đồng ý	Bình thường	Không đồng ý	Hoàn toàn không đồng ý
1. Website được xây dựng đầy đủ về mặt nội dung trong rèn nghề, giúp sinh viên hệ thống được kiến thức đã học	100%	0%	0%	0%	0%
2. Nội dung được xây dựng giúp sinh viên có thêm các hiểu biết mới ngoài các kiến thức đã học.	83.4%	16.6%	0%	0%	0%
3. Các video được tổ chức khoa học theo các nội dung cụ thể trong sách giáo trình, vì vậy rất dễ để sinh viên tìm hiểu thêm thông tin và ôn tập lại kiến thức	100%	0%	0%	0%	0%
4. Các video có cung cấp phần bài tập luyện tập và giải đáp các câu hỏi, vì vậy sinh viên dễ dàng theo dõi và có thể sử dụng làm tài liệu tự học	100%	0%	0%	0%	0%
5. Cách thức sử dụng các video rất đơn giản, không đòi hỏi công nghệ phức tạp.	100%	0%	0%	0%	0%
6. Hình ảnh rõ ràng, giao diện đơn giản, dễ theo dõi.	100%	0%	0%	0%	0%
7. Các bài giảng được trình bày theo quy trình như một bài giảng trên lớp nên sinh viên dễ theo dõi.	100%	0%	0%	0%	0%
8. Ngôn ngữ được sữ dụng trong các video phù hợp tốc độ nói vừa phải, dễ theo dõi	100%	0%	0%	0%	0%
9. Thời lượng của mỗi video phù hợp.	100%	0%	0%	0%	0%
10. Khối lượng kiến thức ở mỗi video là vừa phải, phù hợp.	100%	0%	0%	0%	0%

Regarding the things that lecturers are most satisfied with after showing students lectures, most lecturers emphasize the aspect of sticking to the practical content of students' vocational training on computer networks and hardware. Regarding comments and comments on incomplete parts, some lecturers commented on aspects of approaches to lecture knowledge, and some small errors in the audio in the video were a little small.

When asked to give an overall rating on the lecture videos, 100% of the lecturers were satisfied with the design of the content, images, and interface of the lectures, and all rated the suitability of the application as a substitute for theoretical teaching hours in class and helped students learn on their own, Review the knowledge of the module.

Table 2. Results of lecturers assessing the effectiveness of lecture videos

Contents	Totally agree	Agree	Normal	Disagree	Totally disagree
1. I am satisfied with the design of the content of the videos, the multiple choice	100%	0%	0%	0%	0%
2. I am satisfied with the images, the	100%	0%	0%	0%	0%
3. My students can self-study by watching the lectures on the website.	100%	0%	0%	0%	0%
4. These lectures are suitable for most major and non-specialist students.	100%	0%	0%	0%	0%
5. These videos can be used instead of theoretical lectures in the classroom	100%	0%	0%	0%	0%

4. Conclusion

"Education is the top national policy, developing education and training to improve people's knowledge, train human resources, and foster talents. Strongly shift the educational process mainly from equipping knowledge to comprehensively developing learners' capacity and quality; Learning goes hand in hand with practice, and reasoning is associated with the practice. Education and training development must be linked to the needs of socio-economic development" [5] The teaching model in the context of digital transformation combined with the use of video lectures, and sets of multiple-choice questions is very suitable for the actual teaching situation and teaching duration of vocational training content for IT students in particular and other industries in general. This model should be replicated and widely used in vocational training to optimize the initiative and self-learning of students, as well as reduce the time pressure for lecturers while improving the quality of vocational training as well as the quality of training.

References

[1]Q. đ. s. 7.-T. n. 0. c. T. t. C. p. p. duyệt, Chương trình chuyển đổi số quốc gia đến năm 2025, định hướng đến năm 2030, 2020.

[2] D. Mazzone, " Digital or Death: Digital Transformation - The Only Choice for Business to Survive Smash and Conquer (1st ed.).," Mississauga, Ontario: Smashbox, 2014.

[3] Đ. C. s. V. Nam, "Văn kiện Đại hội đại biểu toàn quốc lần thứXIII, t.1, NXB Chính trị Quốc gia.," 2021.

[4] N. K. T. -. N. T. H. -. Đ. T. Hưng, "Xây dựng học liệu điện tử hỗ trợ rèn nghề cho sinh viên ngành Công nghệ thông tin ở trường Đại học Hùng Vương," Giáo dục và xã hội, 2022.

[5] https://cmcts.com.vn/vi/quy-trinh-chuyen-doi-so-trong-nganh-giao-duc-va-dao-tao.html.