



**APPLYING BLENDED LEARNING MODEL  
AT THE FACULTY OF ENGINEERING AND TECHNOLOGY - HUNG VUONG  
UNIVERSITY IN CURRENT DIGITAL TRANSFORMATION CONTEXT**

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**Abstract:**

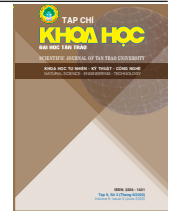
The article refers to the application of a blended learning model in the current digital transformation context at the Faculty of Engineering and Technology - Hung Vuong University. In which, the application method is presented in accordance with the conditions of the faculty - the university, analyzing and evaluating the current situation to see the effectiveness, benefits, existence, difficulties, as a basis for educators to find out improvement and adjustment plans to bring about practical effectiveness in training.

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**Keywords:**

*Blended learning, Digital transformation, Training.*

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## VẬN DỤNG MÔ HÌNH DẠY HỌC KẾT HỢP TẠI KHOA KỸ THUẬT CÔNG NGHỆ - TRƯỜNG ĐẠI HỌC HÙNG VƯƠNG TRONG BỐI CẢNH CHUYỂN ĐỔI SỐ HIỆN NAY

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Thông tin bài viết	Tóm tắt
<p>Ngày nhận bài: 06/12/2022</p> <p>Ngày sửa bài: 12/3/2023</p> <p>Ngày duyệt đăng: 16/5/2023</p>	<p>Bài viết đề cập đến việc áp dụng mô hình dạy học kết hợp trong bối cảnh chuyển đổi số hiện nay tại khoa Kỹ thuật công nghệ - Trường Đại học Hùng Vương. Trong đó trình bày về cách thức vận dụng phù hợp với điều kiện của khoa - trường, phân tích đánh giá thực trạng để thấy được hiệu quả, lợi ích, tồn tại, khó khăn, làm cơ sở để các nhà giáo dục tìm ra các phương án cải tiến, điều chỉnh sao cho mang lại hiệu quả thiết thực trong đào tạo.</p>
<p><b>Từ khóa:</b></p> <p>Học tập kết hợp, Chuyển đổi số, Đào tạo</p>	

### 1. Make a problem

The COVID-19 pandemic has greatly affected economies around the world, including the education sector, with up to 90% of the world's primary, secondary and university students unable to attend school. Since the pandemic, technology solutions have been targeted by educators to support education and distance learning. Since then, digital transformation has been mentioned more and more widely. Digital transformation has changed the way of thinking and training. Blended learning is one of the ways to change the form of training in order to break down the barriers of space and time. Learners can actively arrange their study time at any time, anywhere that has a mobile device or computer connected to the internet. At the Faculty of Engineering and Technology - Hung Vuong University is applying this method according to the

roadmap to build an effective solution suitable to the conditions of the school and students.

### 2. Research content

#### 2.1. Digital Transformation

Digital Transformation is a process of total and comprehensive change of individuals and organizations in the way of living, working and production methods based on digital technologies. Digital transformation not only helps increase productivity, reduce costs, but also opens up new development spaces, creating new values in addition to inherent traditional values.

Digital transformation [4] is an inevitable trend in the era of the digital revolution 4.0. In Vietnam, digital transformation is often understood as the process of changing from a traditional business model to a digital one by applying new technologies such as big data,

Internet of Things (IoT), cloud computing ... to change the operating method, leadership, working process, company culture. Not only digital transformation has an important role in businesses, but digital transformation also plays an important role in other areas of society, including education and training.

With the current trend of technology development, accessing technology [5] into teaching and learning becomes easier and more convenient. The development of applications on mobile platforms, social networks to help users easily interact anytime, anywhere, has created conditions for online education to develop to a higher level. The basic foundation of digital transformation in education is based on physical facilities, information infrastructure, specialized digital databases, guidelines, policies, and a team of leaders, officials, lecturers, teachers, learners...

## **2.2. Blended learning**

Online learning method has many outstanding advantages. However, we cannot deny the positive aspects of traditional teaching methods (direct teaching). Therefore, the blended learning model between the two above methods has been applied in many universities and is of interest to the Ministry of Education and Training [6] Currently, this is not a new method, but it is still considered a trend in the future.

Currently, there are several different concepts of Blended learning, specifically:

According to Davis and Fill (2007), blended learning [3] is the integration of traditional face-to-face teaching methods and online learning activities supported by information technology platforms.

According to Alvarez (2005) blended learning [1] is “the combination of training media such as technology, activities, and event types to create an optimal training program for a specific object”.

In the Circular No. 12/2016/TT-BGDĐT dated 22/4/2016. Regulations on the application of information technology in the management and organization of online training in university education institutions. According to Section 1a – Article 2. Explanation of terms: “Blended learning [2] is the combination of e-learning with traditional teaching and learning methods (whereby teachers and learners are present) in order to improve the effectiveness of training and the quality of education”. In which, “E-Learning is a

form of learning through which learners can self-study anytime, anywhere through electronic multimedia materials (lectures, voiceovers, audio, images, video, graphics,..). Forms of learning such as m-Learning (learning through mobile devices: smartphones, tablets, interactive screens), u-Learning (learning through interactive virtual reality methods takes anywhere), or smart-Learning are all forms of e-learning”

Although there are many definitions of this method, Blended Learning always has the following 3 elements:

- Digital technology, techniques and eLearning elements.
- Live interactive activities (traditional learning methods).
- Independent learning (personal learning method when learning online).

## **2.3. Applying blended learning model at Faculty of Engineering and Technology - Hung Vuong University**

When the Covid-19 pandemic broke out, in order to ensure the prevention and control of the epidemic and at the same time ensure the program goals and work plans of the year, Hung Vuong University switched to online teaching. Up to now, when the society has controlled the epidemic, education and training institutions as well as Hung Vuong University continue to return to normal activities. Forms of learning are done in the traditional way. However, in order to promote the advantages of the traditional teaching method and at the same time help teachers and learners have time to gradually become familiar with the online model, the university has oriented to apply the blended learning model. Based on the advantages and disadvantages of the blended learning model and the actual conditions of the university, the Faculty of Engineering - Technology has been flexible in implementation. Based on the official letter No 864/DHHV-ĐT dated 02/11/2022 of the university and based on the results of the implementation of the use of the LMS learning management system with the subjects managed by the Faculty, the Faculty proposed the application of a Blended learning model with some subjects in the year 2022-2023 such as Analysis and Design of Information Systems, Electrical transmission basics. In fact, before that, the subjects that the Faculty of Management have gradually applied in the direction of B-learning, which

focuses on putting the lecture slide content on the LSM system and using assessment exercises for students to learn in an active manner. In this year, with the proposed subjects according to the decision, additional content is self-designed video lectures that closely follow the content of the detailed course outline. Through the above implementation, we evaluate the current situation and the effect brought when changing the teaching method according to this method to have the next roadmap to implement appropriately and effectively.

According to the blended learning method, the Faculty’s students and lecturers have activities that are different from those in the traditional method:

Student activities: With the combined courses, about elearning, students will learn on online materials provided by lecturers on the LMS system including: watching videos, reading documents, completing tasks assigned. It all happens in a virtual learning environment. Besides, in terms of face-to-face learning, students still come to class to participate in individual activities.

Lecturer’s activities: responsible for designing and distributing online learning materials: videos, documents, online courses.. for students to study at home. Indicate the method and allow the learner to practice immediately afterwards. From there, students can easily grasp the lesson content and learning methods. Lecturers will assign tasks and monitor students with management tools.

Since then, the role of lecturers has changed: Lecturers need to prepare online and face-to-face materials, ensure a close connection between online and face-to-face learning, and need to keep a close eye on the learning progress of students.

**2.4. Đánh giá thực trạng**

In the process of implementing blended learning, we give students feedback to improve and enhance learning. We conducted a survey on 100 students participating in blended learning by using survey questionnaires and data processing statistics.

We analyze the benefits of blended learning, the difficulties of blended learning, the convenience of the LMS learning support system being used. In addition, there was a survey on students’ perceptions, on the amount of knowledge students gained in the combined

model, the level of satisfaction with online materials, and suggestions for quality improvement. Observable variables are measured using a 5-point Likerts scale with the number 1 meaning “strongly disagree”, number 2 meaning “disagree”, number 3 meaning “confused”, number 4 means “agree”, number 5 means “strongly agree”.

About the benefits of blended learning

The evaluation questions are designed and statistical as in Table 1 (In which: Score is the average score of each factor with the levels of “strongly disagree”, “disagree”, “confused”, “agree”, “Strongly agree” are scored as 1, 2, 3, 4, 5 respectively. Ranking: based on the average score of the factors to rank).

**Table 1: Survey on the benefits of blended learning**

Survey content	level 1	level 2	level 3	level 4	level 5	point	Ranking
Know the learning results immediately after taking the test.	1.9%	2.9%	4.9%	58.3%	32%	4.16	1
Easy to review the lecture.	3.9%	1%	9.7%	54.4%	31.1%	4.08	2
Get basic knowledge before going to class.	1.9%	0%	10.7%	64.1%	23.3%	4.07	3
Implement the lesson anytime, anywhere.	2.9%	0%	13.6%	55.3%	28.2%	4.06	4
Develop your own initiative	1.9%	1%	10.7%	62.1%	24.3%	4.06	5
There is an information channel to exchange with lecturers.	1.9%	1.9%	11.7%	60.2%	24.3%	4.03	6
Track your learning progress.	2.9%	1.9%	11.7%	57.3%	26.2%	4.02	7
Create excitement in learning.	2.9%	3.9%	10.7%	54.4%	28.2%	4.01	8
Improve learning results.	2.9%	1.9%	14.6%	55.3%	25.2%	3.98	9
Various references.	1.9%	3.9%	12.6%	58.3%	23.3%	3.97	10
Put pressure on studying regularly.	3.9%	10.7%	18.4%	50.5%	16.5%	3.65	11

Through the students’ question-answering, we found that the majority of students agreed and strongly agreed on the benefits of learning in a blended learning model. In which the content “Knowing the learning results immediately after taking the test” was rated the highest score of 4.16, in fact, after each theoretical lecture video, we design a discussion and a test to reinforce knowledge. After taking the test, all students receive the results, thereby adjusting their learning behavior. The second-highest content with a score of 4.08 is “Easy to review the lecture” because the lecture is uploaded to the LMS learning management system, regardless of the time, location, and device. Students can study and review the lesson at any time when there is an Internet connection. Next, the highly appreciated content is “Get basic knowledge before going to class”,

“Implement the lesson anytime, anywhere”. Before conducting face-to-face sessions, students need to grasp the knowledge they have learned from online materials, on that basis, to exchange feedback on on problems that still exist. Particularly, the “Put pressure on studying regularly” of this learning system was rated the lowest, but this is still a pretty high rating (3.65/5). From this result, teachers need to pay more attention to measures to increase the pressure of regular study on students.

About the difficulties of blended learning

In this content, we also conduct a survey and score using a 5-point Likerts scale. The evaluation questions are designed and statistically as shown in Table 2.

**Table 2: Survey on learning difficulties in blended learning**

Survey content	level 1	level 2	level 3	level 4	level 5	point	Ranking
The problems are not answered immediately and directly.	3.8%	14.4%	19.2%	46.2%	16.3%	3.57	1
Difficult to find suitable self-study method.	3.8%	18.3%	24%	38.5%	15.4%	3.43	2
Reduced face-to-face interaction leads to reduced communication skills.	3.8%	25%	18.3%	37.5%	15.4%	3.36	3
Lack of tools for online learning such as: Laptop, Smartphone, internet.	6.7%	25%	20.2%	33.7%	14.4%	3.24	4

In general, students find the most difficult is “The problems are not answered immediately and directly” because after each online lesson if students have problems, the basic exchanges are messages sent to the forum, or through other communication channels such as zalo, facebook,.. or discussed in the next live session, so the problems have not been resolved in time. The second difficulty highly appreciated by students is “Difficult to find suitable self-study methods”, this shows that students are often familiar with the guidance from teachers during direct learning. When learning online in the digital transformation environment, students are still confused about the self-study method. The difficulty most underrated by students is “Lack of tools for online learning”, in fact, with the investment in education by schools and parents, the devices for learning are no longer prominent problem. However, there are still some students who have difficulty in this problem, mainly the problem of the Internet, the network speed is sometimes slow, the connection is poor, affecting the access to the online system.

About the convenience of the LMS learning support system being used

The evaluation questions are designed and statistically as shown in Table 3.

**Table 3: Survey on the convenience of the LMS learning support system being used**

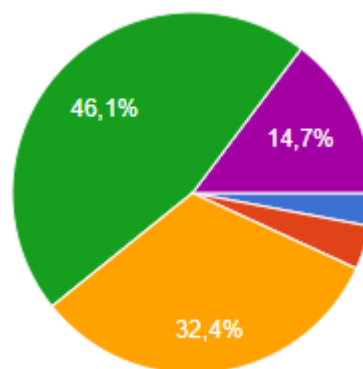
Survey content	level 1	level 2	level 3	level 4	level 5	point	Ranking
The system has a nice and user-friendly interface	1.9%	3.8%	15.4%	56.7%	22.1%	3.93	1
Easy to use system	3.8%	2.9%	18.3%	53.8%	21.2%	3.86	2
The system has a fast speed.	3.8%	14.4%	19.2%	46.2%	16.3%	3.57	3

Looking at the survey results, it shows that students basically agree that the system is easy to use, has fast speed, beautiful and appropriate interface, and scores in the range from 3.5 to below 4. However, students did not rate high on fast system speed.

In addition to the advantages, disadvantages, and convenience of the system, we also surveyed a few other related contents.

Regarding the question “How much knowledge did you absorb through the combined lecture (both face-to-face and online)?”

- 1: Most don't understand (0%-20%)
- 2: Very little understanding (20%-40%)
- 3: Understand at a weak average level (40%-60%)
- 4: Understand at a good and average level (60%-80%)
- 5: Understand at a good and very good level (80%-100%)

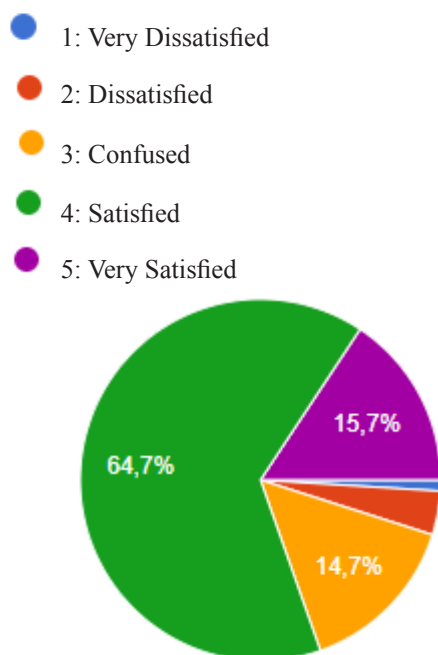


**Figure 1: The level of knowledge acquisition through the combined lecture**

The chart shows that the majority of students understand at a good and average level accounting for 46.1%, a small amount of understanding is a weak average level of 32.4%, at a good and very good level,

only 14.7% and a very small amount accounts for a total of 6.8 % is not understood and partially understood. Thus, overall, the number of students who understand at a weak average level or below is still high, reaching nearly 40%. This shows that lecturers need to find more appropriate teaching methods to improve students' knowledge acquisition.

Regarding the question “*What is your general feeling about blended learning (both face-to-face and online)?*”



**Figure 2: Feeling of blended learning**

In terms of students' feelings when using the blended learning system, the number of satisfied and very satisfied students accounted for a total of 80.4%, and the rate of dissatisfaction and very dissatisfaction was 4.9%. Thus, even though it is difficult to use the system, students still tend to approach the system. Because this is a technology trend, it is necessary to find ways to adapt and improve to better serve their learning purposes.

In addition to the above questions, we also provide open-ended questions so that students can state the content that they have other comments.

Regarding the responsiveness of video lectures, discussion topics, exercises and online tests... there were 74 students responding in which the number of students saying that they were good, very good, and satisfied was 45/74, accounting for 60.8%. The remaining amount is additional feedback for the completion of the video or exercise questions. Some

students have additional comments: want more videos about the subject; the exercise does not have many samples so it is difficult to understand; the test is easy to do, easy to understand; the video is very specialized but it is better to rewind.

Regarding the question “*What are your suggestions to improve the quality of teaching and learning in the form of a combination?*” Among the 74 students who answered, 32 students said that it was good, very good, satisfied, accounting for 43.2%. The number of remaining students gave additional comments: need to increase interaction; Theoretical subjects can be studied in LMS, while practical and programming subjects should still be studied in class to have questions that you can ask teachers and friends; There should be more exercises; When doing exercises, you should study directly; Use active learning methods; Should turn on the review function, to listen to the parts you don't understand, instead of having to watch the entire lecture, you can drag to the part you don't understand to review.

#### General assessment

Blended learning is a combination of traditional and online learning methods. It helps to personalize the learning experience of learners, helping to promote learning motivation and ability of learners. On the lecturer's side, there are opportunities to improve many skills such as: how to prepare materials to build lectures in a scientific way, ensure a close connection between the two forms of learning, have the opportunity to improve skills about information technology.

### 3. Conclusion

The feedback and evaluation of students after each course plays an important role in designing more appropriate lesson and course content. The results of the survey of students' evaluations of the blended learning model show that most students are aware of the advantages and disadvantages of the model. In addition, students also made suggestions to contribute to improving the quality of teaching and learning. This research will help the lecturers with important information, adjust the lesson plans for the next courses more appropriate, more effective.

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