Tuijin Jishu/Journal of Propulsion Technology
ISSN: 1001-4055
Vol. 44 No. 3 (2023)

Applying The Blended Learning Teaching Model to Develop Self-Learning Capabilities for Students

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Abstract: The Industrial Revolution 4.0 presents both opportunities and essential requirements for the development of Education 4.0. Accordingly, education becomes an ecosystem where individuals can learn together anytime, anywhere using connected devices. Educational institutions transform into an ecosystem that fosters individualized, innovative products with knowledge and capacity for personal innovation and creativity. This article presents the results of developing self-learning capabilities for students with the support of the Blended Learning model. The research outcomes were achieved through the design of a teaching website, proposing processes and measures to enhance self-learning capabilities in general physics for engineering students. Experimental results demonstrate that the Blended Learning model in physics education has effectively leveraged its advantages, contributing to the improvement of the quality of general physics teaching.

Keywords: *Blended Learning, Self-Learning Competencies, measures*

1. Introduction

Blended learning is a modern learning model of the digital era that is becoming increasingly popular due to its effectiveness and flexibility in education. In Vietnam, the Blended Learning model has been introduced in teaching at various educational institutions and has been evaluated to have certain positive effects, contributing to the improvement of teaching quality. The application of the blended learning model in university teaching has brought significant benefits in developing students' self-learning abilities.

For learners, it enhances their autonomy and self-management in learning. The blended learning model provides students with flexibility and autonomy in accessing and consuming knowledge. Students can decide their own learning time and pace through accessing online resources. This encourages students to develop self-regulation and time management skills, as well as explore and conduct in-depth research. It promotes students to become self-directed learners with critical thinking and information processing abilities. Additionally, the model facilitates interaction and collaboration by creating an interactive and cooperative learning environment. Students can participate in online forums, study groups, or online discussions to exchange knowledge and experiences with peers, fostering interaction, information sharing, and a multidimensional learning environment. Moreover, it develops digital skills as students need to use online technologies and tools to access knowledge and engage in learning activities, contributing to the enhancement of their digital literacy, including information search and filtering skills.

For educators, blended learning enables them to be more creative and proactive in the teaching process. Unlike traditional methods, instructors need to customize their lesson plans based on learners' needs in terms of learning styles, preferences, and capabilities. Thus, instructional programs must be the best products serving the learning needs of each individual. Applying blended learning allows instructors to integrate various information delivery tools, such as PowerPoint presentations, texts, and dynamic videos, for theoretical content. This allows instructors to focus more on open-ended issues and development through direct classroom discussions.

For educational institutions, when implementing traditional classroom models, the costs of classroom systems and associated equipment are significant investments. The application of blended learning helps reduce the demand for physical classrooms, thereby reducing the pressure on infrastructure investment. It saves time and costs compared to traditional teaching methods while still achieving optimal training/development outcomes, making it an attractive aspect of blended learning that educational institutions cannot overlook when considering reforming and innovating their systems.

On the basis of clarifying the concept of associative learning; The role and significance of this model for teaching at universities in general and teaching physics in particular, an overview of the blended learning model of teaching, proposing a teaching process and a competency framework. Self-study force in the process of teaching general physics at the University of Food Industry in Ho Chi Minh City.

2. Literature review

2.1. The concept of blended learning model

Blended learning is an essential trend in modern education, which was first explored in the 1960s. However, the concept of blended learning (BL) was officially introduced and used in educational programs in the 1990s. Terms such as "integrated learning," "mixed learning," and "hybrid learning" are often used interchangeably in research on blended learning models. Numerous research studies have been conducted on blended learning models worldwide and in Vietnam.

Blended learning is defined as the "combination of instructional media such as technology, activities, and events to create an optimal training program for a specific audience" (Alvarez, 2005). In their book "Handbook of Blended Learning," Bonk and Graham (2006) summarized three widely used definitions of BL in research studies as follows:

Blended learning is the combination of teaching methods (or the provision of instructional media) according to the research perspective of Bersin & Associates (2003), Orey (2002a, 2002b), Singh & Reed (2001), and Thomson (2002).

Blended learning is the integration of teaching methods according to the viewpoint of educators such as Driscoll (2002), House (2002), and Rossett (2002).

Blended learning is a model that combines online instruction and face-to-face guidance according to the research approaches of Reay (2001), Rooney (2003), Sands (2002), Ward & LaBranche (2003), and Young (2002) as presented at the blended learning conference in Bangkok.

Acquiring new knowledge from advanced education, in Vietnam, the concept of BL is relatively new but has already garnered research attention with specific published studies such as:

However, these studies have not yet provided a clear theoretical foundation for the integration of the model and have not extensively discussed the essence and structure of the teaching process, especially at the university level. In 2008, Nguyen Van Hien conducted a research topic titled "Mixed Learning for Training Students in Using Information Technology in Teaching and Learning." In this study, the author proposed a solution to enhance the learning quality of students. Mixed learning is a combination of face-to-face and online teaching, organizing content on an online learning platform. In the following years, many scientific works in Vietnam delved into in-depth research and developed a systematic approach to blended learning. For example, Le Thi Thu Hien (2013) applied a blended learning model to high school students in the subject of Physics. The author analyzed the advantages of the model and proposed a teaching process consisting of four steps: Step 1: Selecting the design of the Physics E-learning system; Step 2: Restructuring the content of teaching; Step 3: Teachers initiate teaching by clearly explaining the entire structure and content of the lesson; Step 4: Guiding students to search for knowledge. Nguyen Thu Ha (2015) provided an overview of research on Blended Learning (BL) both in Vietnam and internationally. The author introduced several concepts, structures, advantages, and applications of B-Learning. Nguyen The Dung (2018) focused on the research topic "Interactive Teaching Approach Based on Competency-Based Blended Learning for Computer Science Pedagogy Students." In this work, the author summarized the theoretical foundation of teaching in BL, proposed a design process, and suggested interactive teaching methods for competency-based BL in Computer Science education. Le Thanh Huy

and colleagues (2018) in their article "Applying B-Learning in the organization of teaching the chapter 'Conservation Laws' (Physics 10) with the support of the social network Facebook, towards developing self-learning capacity of students," designed the content of teaching based on the BL model with the support of Facebook to develop students' self-learning capacity. They also proposed specific evaluation rubrics to enhance students' self-learning skills, stimulate interest in learning, and encourage students to be proactive in their studies. Ha Thi Huong (2020) proposed principles for developing and using a blended learning model in her research on "Utilizing Blended Learning Model." She suggested a process for developing online learning websites in universities, consisting of two stages: (1) Developing multimedia online lecture scripts (4 steps); (2) Building online learning websites (4 steps). She also proposed a process for utilizing a blended learning model to organize teaching in universities. Nguyen Thi Lan Ngoc (2021) in her research "Enhancing Students' Self-Learning Skills through B-Learning in Teaching Optics" systematized, developed, and clarified the theory of B-Learning. The author proposed three measures to enhance students' self-learning skills in BL and introduced a teaching process that focuses on developing students' self-learning capacity.

Here, to fit the learning environment and students' level, the author may argue that Blended Learning is a teaching method that harmoniously combines traditional classroom teaching and online learning, supported by instructional tools to enhance learning effectiveness.

From studies on blended learning models worldwide and in Vietnam, it can be observed that:

The blended learning model is a modern trend in teaching that has changed perspectives on teaching theory, learning environments, teaching methods, and the roles of teachers and learners. The most important aspect is the flexibility, openness, and connectivity that fully cater to learners' needs and learning styles.

Research works cover various educational levels and corresponding subjects across different training programs.

Most research works have analyzed and compared the advantages and disadvantages of the BL model. Therefore, to implement the BL model, appropriate prerequisites are necessary.

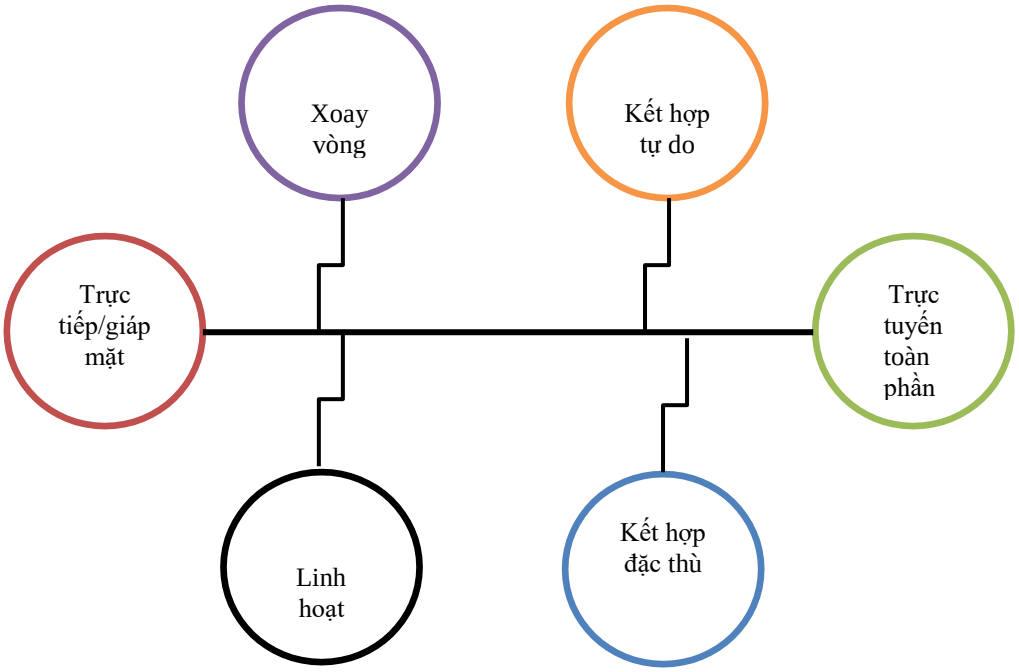
However, these research works have not yet demonstrated a clear theoretical basis for the integration of the model. They also have limited discussion on the nature and structure of the teaching process, especially at the university level.

2.2. Blended learning model

The blended learning model is considered a modern form of learning in the digital age and is gradually becoming an essential trend in modern education. There have been numerous research works on the blended learning model. Here, we summarize some notable research studies that provide valuable insights in this field.

According to Michael B. Horn and Heather Staker (2014) in their curriculum "Blended: Using Disruptive Innovation to Improve Schools," there are four models of blended learning: (1) Rotation Model (consisting of smaller models: Station Rotation, Class Rotation, Individual Rotation, Flipped Classroom), (2) Flex Model, (3) A La Carte Model, and (4) Enriched Virtual Model.

The physics-based spatial organization model is widely implemented in blended learning practices in many countries around the world, following the methods outlined by Lim et al. (2017).



Therefore, through the various learning models mentioned above, we have observed that blended learning is prevalent in education at different levels. However, each educational level has its own specific characteristics, requiring distinct differentiation. Based on research conducted in numerous countries worldwide, including Vietnam, the following popular models have been identified:

The Face-To-Face Driver Model: This model involves integrating electronic learning elements, online lectures, or internet-based content within the traditional classroom setting, in terms of physical space and class time.

The Rotation Model: This model incorporates alternating between various forms of in-class and out-of-class learning activities, utilizing information technology tools. The Rotation Model can be further categorized into smaller models such as Station Rotation, Flipped Classroom, and Individual Rotation.

The Flex Model: This model combines online coursework with in-class teaching activities, allowing students to choose their learning paths based on their individual needs. This flexibility enhances effectiveness and alignment with students' requirements.

The Online Lab School Model: This model focuses on using remote computer-based learning for most, if not all, course content.

The Self-Blend Model: The Self-Blend Model is suitable for learners who have specific needs in a particular field that are not covered by traditional course offerings. This model enables learners to control their learning time and choose supplementary materials to enhance their foundational knowledge.

The Online Driver Model: This model offers flexibility in terms of time and location for learning. Learners have the freedom to choose where they study, and primary guidance and materials are provided through online platforms. Instructors coordinate, assess, and respond to inquiries as required, primarily through online means.

With these six blended learning models, the internet provides abundant online learning resources, such as e-books, online lectures, instructional videos, and other materials. Consequently, instructors can easily create and share online lectures, expanding the scope of learners' knowledge and learning experiences.

Moreover, the internet offers an improved environment for information exchange between instructors and learners. Through email, online forums, class websites, and various applications, instructors and learners can

exchange information, address questions, interact, and support each other easily. This also enables instructors to monitor learners' learning progress and provide timely support when needed.

2.3. Levels of Blended Learning Model

Based on the research by C.R. Graham (2006), there are four macro levels of blended learning models: 1. Activity level; 2. Course level; 3. Program level; 4. Institutional level.

Specifically, they are as follows:

Activity level: Blended learning at the activity level occurs when a learning activity incorporates two elements: face-to-face instruction and computer-mediated instruction.

Course level: This is the most commonly used level. At the course level, blended learning takes place in two ways: Option 1 involves simultaneous face-to-face instruction and computer-mediated instruction; Option 2 involves a reasonable arrangement of time sequencing between face-to-face instruction and computer-mediated instruction.

Program level: This level is typically applied at the university level. Blended learning at the program level is a form of education where learners can choose between a combination of face-to-face courses and online courses, or one of them as determined by the program.

Institutional level: At this level, blended learning follows the regulations set by educational institutions regarding the integration of face-to-face instruction and computer-mediated instruction.

2.4. Research on Self-Learning Competencies

Self-learning is a determining factor for lifelong learning trends in the era of the Fourth Industrial Revolution. To strive for a lifelong learning society, individuals themselves must possess self-learning competencies. According to the comprehensive general education program, self-learning competencies are identified as one of the three core competencies that need to be developed for students across all subjects and grade levels.

Self-learning competencies are understood as complex attributes and skills. They encompass skills and techniques that are closely associated with corresponding motivations and habits, enabling learners to meet the demands posed by their tasks (Nguyen Canh Toan, 2004). Self-learning competency is the ability to independently seek, perceive, and apply knowledge to new or similar situations with high quality (Le Hien Duong, 2010). It involves the voluntary and proactive determination of learning tasks, setting learning goals and striving to achieve them, employing effective learning methods, adjusting one's mistakes and limitations through self-assessment or feedback from teachers and peers, and actively seeking support when encountering difficulties in learning (Luong Viet Manh, 2015). Therefore, self-learning competency can be understood as a psychological attribute that ensures individuals are well-equipped to perform self-learning activities successfully. Self-learning competency is developed and nurtured through self-learning activities, driven by the learner's own learning needs.

Nurturing self-learning competencies among students is an important and indispensable task for educators, as educational institutions primarily provide students with foundational knowledge, and students need lifelong self-learning competencies to teach themselves and explore knowledge beyond what is taught in schools (Trinh Quoc Lap, 2003). In Vietnam, many scientists have conducted research on the development of self-learning competencies, including studies that identify measures to nurture self-learning competencies through the design of learning sheets and physics review (Luong Viet Manh, 2015). Activities aimed at developing self-learning competencies for students can also be carried out through the creation of self-learning materials for physics, including the digitization of self-learning materials on the internet, providing students with additional digital learning resources (Tran Duc Khoan, 2016). Enhancing research competencies can also be achieved through scientific research activities and seminars incorporated into teaching (Le Hien Duong, 2010).

Based on the competency structure development approach by Nguyen Lan Phuong (2014), Griffin's competency structure, and the self-learning competency structure by Do Huong Tra (2019), we propose the following structure for self-learning competencies:

Competence's component	Behavioral Indicators
1. Identify learning tasks	1.1. Determine specific and detailed learning objectives 1.2. Identify the knowledge and skills to be learned.
2. Plan the implementation	2.1. Determine learning methods 2.2. Develop a scientific and feasible learning plan 2.3. Allocate time for self-learning 2.4. Identify the conditions for self-learning
3. Implement the self-learning plan	3.1. Access learning materials 3.2. Analyze and process information from learning materials 3.3. Identify issues and ask questions 3.4. Complete learning tasks
4.Self-assessment and evaluation	4.1. Self-assess the level of plan completion 4.2. Self-evaluate the results and adjust the learning plan

To meet the requirements of modern higher education, teaching according to the blended learning model is one of the contemporary teaching methods that fulfills the desired learning outcomes of university programs. With the blended learning model, students can develop and enhance their self-learning abilities, cultivate their ability to take control of their own learning process, and no longer be passive or dependent in the process of knowledge exploration.

3. Research Method and Results

3.1. Research Method

The research was conducted at the Ho Chi Minh City University of Food Industry. A questionnaire was distributed to 435 first-year students studying in six majors that include general physics courses. Out of the total, 423 valid responses were collected, including 221 males and 202 females.

3.2. Building a system of learning materials to meet the blended learning model's teaching requirements

Based on the objectives and requirements of a website supporting teaching and learning using the self-learning competency approach in the Blended learning model, we have chosen to design the website at the address https://www.vatlydaicuongcdio.edu.vn/.

To fully utilize the website's features, users need to be provided with an account and password. Both instructors and students participating in the TN classes will be provided with individual accounts and passwords. The account and password for reference are as follows: account: tkdnvatlydaicuongcdio, password: tkdn1234.

The website structure consists of 9 Navigation bars (Navbar): (1) Introduction, (2) Academic Profile, (3) Learning Materials, (4) Review, (5) Self-assessment, (6) Exams, (7) Forum, (8) External Links, and (9) Login. The website interface is presented in Figure 1.

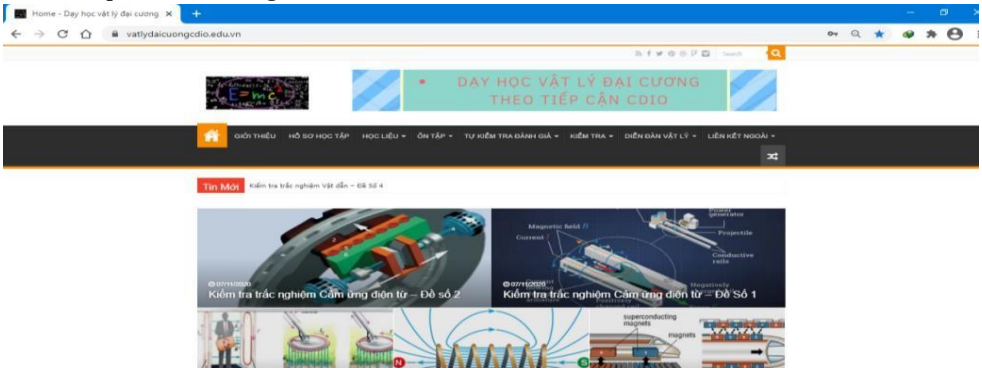


Figure 1. Website homepage interface

Navbar "Introduction" presents the objectives, functions, target users, and effective ways to use the website.

Navbar "Academic Profile" includes detailed course syllabi, study guides, and assessment forms.

Navbar "Learning Materials" serves as a repository for most of the website's content, providing general physics textbooks used in some universities, including reference textbooks in both Vietnamese and English. It also offers a lesson system organized by chapters, with an interface as shown in Figure 2.

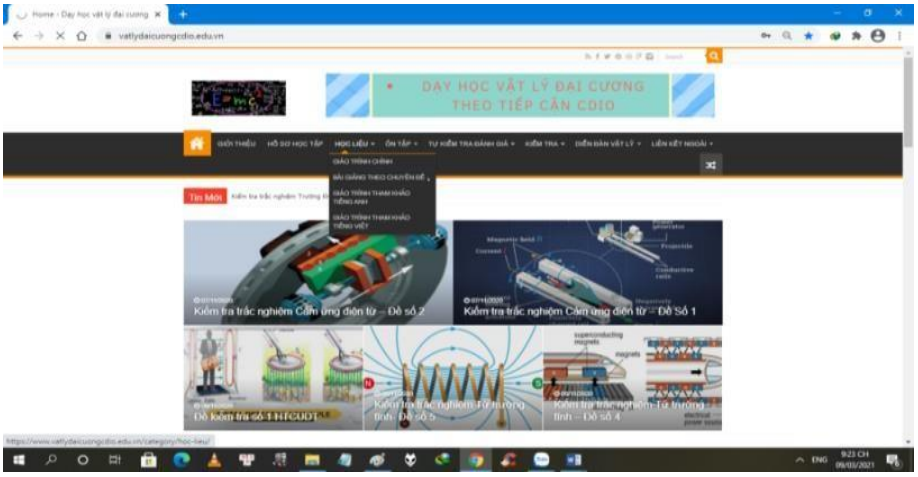


Figure 2. "Learning Materials" Interface

The lecture system has encompassed all 6 chapters of the Electricity section in the General Physics program: electric field, conductors, dielectrics, static magnetic field, electromagnetic induction, and electromagnetic field.

Each chapter consists of the following content: objectives, PowerPoint lectures, audio-enhanced PowerPoint lectures, and seminar topics. The presentation interface is shown in Figure 3.

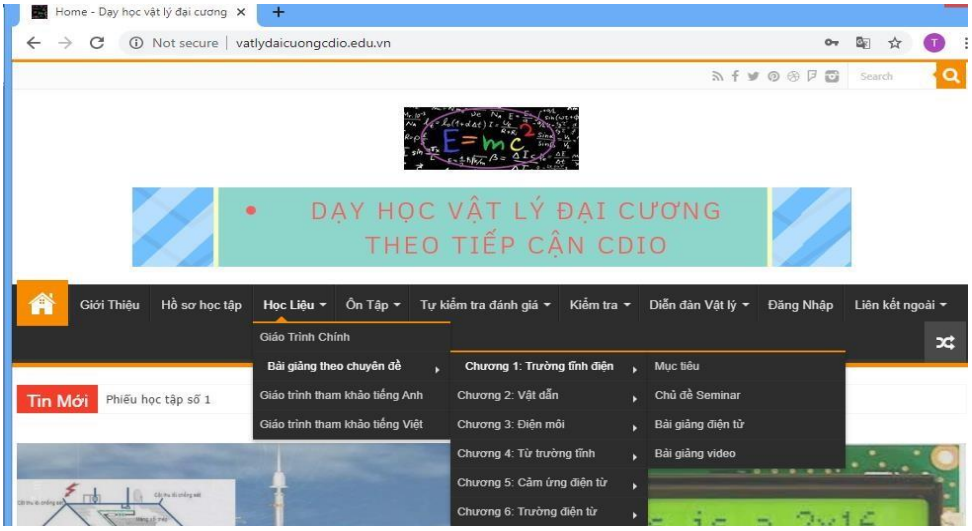


Figure 3. Interface "Lecture by topic"

The audio-merged PowerPoint lectures are created using the Audio to Video Mixer technique, which is the simplest method to present them to instructors. This allows them to create additional lectures if needed, and students can easily access and listen to the lectures while viewing the visual content through intuitive images and videos on their computer screens.

Navbar "Review" is organized into 6 chapters, each including: essay practice exercises, multiple-choice practice exercises, and comprehensive application exercises. The essay exercises come with instructions, and the multiple-choice exercises provide answer feedback for self-assessment of knowledge mastery after self-study. To assist learners in self-testing and self-assessment of their learning progress, we provide an "Self-assessment" section. In this section, we have created 24 multiple-choice test sets. Learners can take the tests once or multiple times, immediately knowing their test results and also having the option to view the answers. The "Self-assessment" interface is shown in Figure 4.

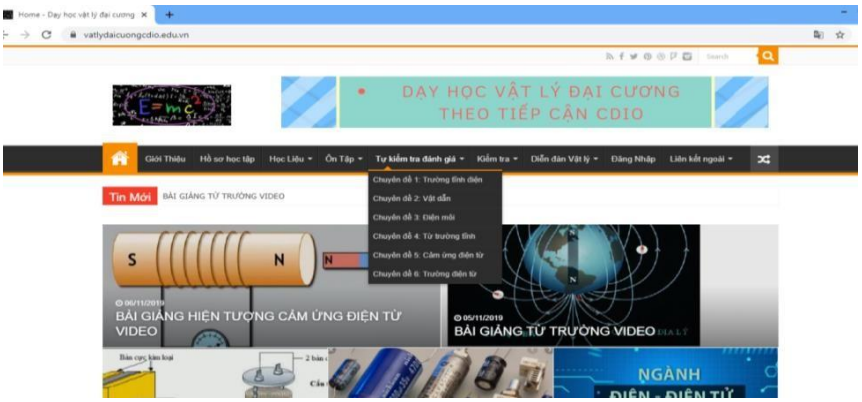


Figure 4. "Self-assessment" interface

Navbar "Assessment":

Objective: to assess students' self-study and self-learning outcomes.

Content: consists of 12 test sets.

Organization: the test sets are arranged according to the corresponding self-study content in the 12 weeks of participating in the Electrical course.

Implementation: mandatory.

Frequency: one test per week, with a duration of 25 minutes.

Test results are automatically scored based on the answers, and the corresponding results are sent to the instructor's email for student management.

Interface: Refer to Figure 5 for the "Assessment" navbar.

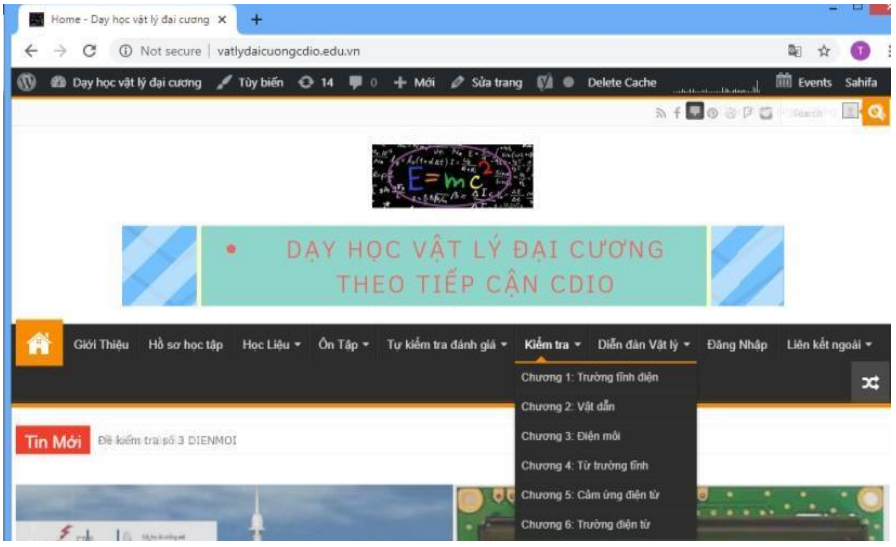


Figure 5. "Assessment" Interface

The website also provides a "Forum" for students to interact with each other in the Student-Student section and communicate with instructors in the Student-Instructor section. Additionally, the website includes "External Links" to reference additional physics-related websites such as the Physics Library, Violet Library, and Physics Classroom.

To fully utilize all the features of the website, users must be registered members with provided login credentials (for example, username: tkdnvatlydaicuongcdio and password: tkdn1234).

3.3. Design of the Blended Learning Implementation Process in Teaching

Through research on the Blended Learning approach and the teaching of general physics, we propose a specific instructional process using the Blended Learning model, consisting of four stages:

Stage 1: Receiving the learning tasks and the conditions for task implementation (face-to-face interaction). Students participate in problem-oriented situations through learning, seminar topics, practical exercises, etc., and show interest, needs, and a desire to explore and solve problems. Immediately after that, students are ready to receive the learning tasks, which involve completing learning forms and external assessments to acquire core knowledge, conducting seminars, practical exercises, etc., in assigned groups. In this stage, the instructor needs to ensure that the provided learning materials are diverse and suitable for different student groups, the self-study instructions are clear for students to engage in independent learning, the learning forms and assessments are sufficient to evaluate, classify, and identify difficulties and challenges in students' self-study activities, and the self-study time allocation in the training program is sufficient to accomplish the tasks.

Stage 2: Individual/Group self-study with the provided learning materials (self-study on the website).

Individual: Students engage in individual self-study and discussions based on the instructor's guidance outside the classroom using the available learning materials to complete learning forms and required assessments. Through this process, students acquire new concepts and may encounter new issues.

Group: Students work on seminar topics, practical exercises, etc., in assigned groups.

Stage 3: Discussion, deepening, formalization, and systematization of new knowledge/skills (face-to-face interaction). Students discuss errors, challenges, and difficulties encountered in learning forms, assessments, website discussions, etc., to deepen, formalize, and systematize their knowledge and skills.

Stage 4: Presenting the results and applying them to practical situations. Students present their research papers, deliver seminars, solve practical problems, etc.

3.4. Some measures to enhance self-learning capabilities

Based on the analysis of the characteristics and level of self-learning capabilities, along with the advantages of the Blended learning model, the following measures can be proposed to enhance self-learning capabilities in the teaching of general physics according to the Blended learning model.

Measure 1: Cultivate skills in finding resources and engaging in collaborative learning on the learning forum website to accomplish assigned tasks.

One of the challenges for students is the lack of self-learning skills. Insufficient self-learning skills can limit the effectiveness of studying and gradually decrease the positive motivation for learning.

The blended learning model, through the use of online forums on the learning website, can help students develop their skills in finding resources. When assigned learning tasks, students need to explore and research information from various sources to answer questions or complete exercises. Searching for online resources requires students to know how to use search tools, evaluate the reliability of information sources, and select suitable materials for task requirements. These skills help students become independent, capable of searching and organizing information effectively.

The blended learning model and the use of online forums on the learning website create a favorable environment for students to accomplish assigned tasks. Through the forum, instructors can post and assign learning tasks, provide detailed instructions, and create discussion questions or group exercises. Students can access the forum to view and submit assignments, exchange opinions, and receive feedback from instructors and

peers. This helps students complete tasks in a timely, proactive manner and receive support during the learning process.

Measure 2: Students self-study lessons and solve exercises on the website system.

When implementing teaching based on the Blended learning model, instructors can choose to teach only a few lessons or a portion of the knowledge in a lesson, and students can self-study the rest at home on the website. Instructors can announce the plan in advance, and students can rely on their study plans, read textbooks, search for additional reading materials, and self-study through video lectures provided by instructors in class or solve exercises online. Core issues related to self-learning will be discussed in the next class. Students can access the learning website system to access and self-study lessons. The system can provide learning materials such as online lectures, reading materials, instructional videos, or reference materials. Students can take control of their time and study location, allowing them to learn at their own pace and adjust their learning methods according to their individual needs.

The learning website system provides exercises and questions for students to solve. Students can read and understand the requirements of each exercise, apply the knowledge they have learned to solve problems. The system can provide automatic grading functionality for students to know their results and receive immediate feedback. This helps students self-assess their progress and work towards improving their performance.

With this learning approach, the Blended learning model helps reduce the time spent on classroom lectures, allocating more time for student group activities, discussions on self-learning issues, and independent completion of exercises. This task assignment method helps students cultivate their self-learning planning skills, resource searching abilities, identify learning objectives, and independently solve assigned tasks. Gradually, this enhances students' self-learning capabilities.

Measure 3: Students self-assess and evaluate their progress through the learning website.

The assessment and evaluation results, the academic achievements of learners, are important for both instructors and students. For instructors, they can adjust their teaching plans (such as changing or supplementing teaching methods) based on students' learning outcomes and provide remedial plans or extracurricular activities for students with low performance. For students, they rely on assessment results to timely adjust their self-study time, make efforts to achieve their learning goals in the subject. In particular, self-assessment and evaluation of their own learning results will build confidence and help plan better self-learning strategies for the next period.

An important factor in enhancing students' self-learning capabilities is providing personal feedback and guidance. Instructors can use online learning tools to monitor students' learning progress and provide individual feedback. Through the learning management system, instructors can evaluate online assignments, provide comments, and suggest improvements for each student. They can also use email, online messaging, or online meetings to communicate with students about the learning process and provide assistance when students encounter difficulties. Personal feedback and guidance help students receive necessary support and develop effective self-learning abilities.

3.5. Experimental Results of Teaching with the Blended Learning Model

The proposed pedagogical measures were implemented in the teaching process of Technical Physics Electromagnetism for 425 students at the Ho Chi Minh City University of Food Industry in the first semester of the 2022-2023 academic year, yielding the following results:

Based on the experimental results, analysis, and evaluation, it can be affirmed that the Blended learning model helps students develop self-learning abilities, teamwork skills, and information technology competencies. During the learning process, students participate in solving scientific and technical knowledge issues through classroom and online learning. On the website, students independently tackle assigned problems, identify new issues, propose solutions, implement them, extract knowledge, and apply what they have learned.

Students express their personal opinions on knowledge issues during group discussions or pre-class discussions. They also participate in evaluating the academic performance of other students.

With the Blended learning model, students study the lessons in advance through audio lectures on the website and complete study sheets. They engage in discussions on the website and in the classroom, applying their

knowledge to solve exercises. As a result, students acquire solid theoretical and practical knowledge in general physics, develop strong foundational knowledge, and enhance self-learning skills to meet the program's learning outcomes.

We utilized the case evaluation method for three specific students as follows:

Nguyen Anh T, born in 2003, male, with an overall grade of 7.12 in the General Physics 1 course.

Dang Le Phuong Q, born in 2002, female, with an overall grade of 7.85 in the General Physics 1 course.

Tran Van X, born in 2003, male, with an overall grade of 6.2 in the General Physics 1 course.

The results of monitoring the self-learning abilities of each student are as follows:

Table 1. The development of students' self-study ability Nguyen Anh T (Through behavioral indicators)

Behavioral Indicators	Before educational experiment				After educational experiment			
	Weak	Medium	Good	Excellent	Weak	Medium	Good	Excellent
1.1. Determine specific and detailed learning objectives			**x**					**x**
1.2. Identify the knowledge and skills to be learned.		**x**					**x**	
2.1. Determine learning methods		**x**					**x**	
2.2. Develop a scientific and feasible learning plan		**x**					**x**	
2.3. Allocate time for self-learning	**x**					**x**		
2.4. Identify the conditions for self-learning		**x**					**x**	
3.1. Access learning materials		**x**					**x**	
3.2. Analyze and process information from learning materials			**x**				**x**	
3.3. Identify issues and ask questions			**x**					**x**
3.4. Complete learning tasks		**x**					**x**	
4.1. Self-assess the level of plan completion		**x**					**x**	
4.2. Self-evaluate the results and adjust the learning plan		**x**					**x**	

Table 2. The development of students' self-study ability Dang Le Phương Q (Through behavioral indicators)

Behavioral Indicators	Before educational experiment				After educational experiment			
	Weak	Medium	Good	Excellent	Weak	Medium	Good	Excellent
1.1. Determine specific and detailed learning objectives			**x**					**x**
1.2. Identify the knowledge and skills to be learned.			**x**				**x**	
2.1. Determine learning methods		**x**					**x**	

2.2. Develop a scientific and feasible learning plan			x					x
2.3. Allocate time for self-learning			x					x
2.4. Identify the conditions for self-learning		x					x	
3.1. Access learning materials		x					x	
3.2. Analyze and process information from learning materials		x					x	
3.3. Identify issues and ask questions		x						x
3.4. Complete learning tasks			x					x
4.1. Self-assess the level of plan completion		x					x	
4.2. Self-evaluate the results and adjust the learning plan	x					x		

Table 3. The development of students' self-study ability Tran Van X (Through behavioral indicators)

Behavioral Indicators	Before educational experiment				After educational experiment			
	Weak	Medium	Good	Excellent	Weak	Medium	Good	Excellent
1.1. Determine specific and detailed learning objectives	x					x		
1.2. Identify the knowledge and skills to be learned.		x				x		
2.1. Determine learning methods	x					x		
2.2. Develop a scientific and feasible learning plan		x				x		
2.3. Allocate time for self-learning		x				x		
2.4. Identify the conditions for self-learning		x					x	
3.1. Access learning materials		x					x	
3.2. Analyze and process information from learning materials		x				x		
3.3. Identify issues and ask questions	x					x		
3.4. Complete learning tasks		x				x		
4.1. Self-assess the level of plan completion		x				x		
4.2. Self-evaluate the results and adjust the learning plan		x					x	

The case study results show that the Blended learning model helps develop self-learning abilities for students who are weak, average, and excellent. Even the initially weak students, after going through the self-

learning process, have learned to identify their learning plans, search for resources, and collaborate with other students to fulfill their learning tasks.

4. Discussion and Conclusion

The blended learning model is an instructional approach that combines online and traditional learning methods to leverage the advantages of both forms of education. It is becoming increasingly popular in the field of education, particularly at the university level. This model has been proven to enhance students' self-learning capabilities. In this article, we will discuss the benefits of blended learning and conclude its potential for improving students' self-learning abilities through its application.

One of the significant advantages of the blended learning model is its flexibility and convenience. Students can access online learning materials and participate in traditional learning activities according to their own flexible schedules. This helps students take ownership of their learning process and efficiently organize their time. Furthermore, blended learning provides interaction and integration between online and traditional learning, allowing students to engage in diverse learning activities such as discussions, group work, and practical exercises.

Another important aspect of the blended learning model is interaction and individual feedback. Through online learning tools such as forums, email, or instant messaging, students can communicate with instructors and peers to discuss learning content, receive feedback, and personal guidance. This individual feedback helps students receive necessary support and motivation throughout the learning process. Additionally, students can share opinions, exchange knowledge, and learn from each other, creating a vibrant community learning environment.

The blended learning model also encourages students to develop self-learning capabilities. Being self-directed in time management, resource searching, and completing online assignments requires students to have self-learning skills, patience, and self-discipline. Students learn to work independently, search for information from various sources, and analyze and apply knowledge in real-life situations. At the same time, interaction and support from instructors and the student community also help students develop communication, collaboration, and adaptability skills in diverse learning environments.

From these benefits, it can be concluded that the blended learning model has the potential to enhance students' self-learning capabilities. Students are equipped with important skills such as autonomy, self-learning, and creativity. They learn how to use technology to access knowledge and interact with diverse learning resources. Moreover, this model encourages students to develop critical thinking, problem-solving, and teamwork skills. As a result, students become lifelong learners, capable of self-learning and acquiring knowledge in an interconnected and constantly changing world.

However, to achieve these benefits, the implementation of the blended learning model needs to be carefully planned and considered. It requires thorough preparation and effective management from instructors, ensuring that the learning content is appropriately designed for this model and that online tools are efficiently utilized. Additionally, it is essential to ensure support and interactive feedback from instructors and the student community to create a reliable and vibrant learning environment.

In summary, the blended learning model is an effective teaching method for enhancing students' self-learning abilities. From self-directed learning, interaction and personal feedback to developing self-learning and collaborative skills, students are equipped with essential skills and capabilities to succeed in their learning and future careers. However, the implementation of the blended learning model needs to be approached with careful consideration and diligence to ensure the success and effectiveness of the learning process.

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