

Blended Learning And Orientation To Apply In Teaching Learning Themes In High School

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Abstract:

Blended learning is a teaching method that demonstrates the advantages of face-to-face teaching and online teaching. This is a teaching method that suitable for educational contents of the learning themes. These contents meet the requirements of deep differentiation, and meet the requirements of career orientation. A survey was conducted with 97 teachers who participated in teaching learning themes to collect data on awareness, on the advantages and disadvantages of applying blended learning and on the implementation of different levels of blended learning in learning themes. The results of the survey and synthesis of theoretical research on blended learning have allowed the article to introduce the appropriate characteristics of blended learning, the challenges of blended learning and the orientation for applying blended learning in teaching general leaning themes and in teaching Biological leaning themes.

Key Word: Blend; Blended learning; Face-to-face teaching; Online teaching; Teaching learning theme.

Date of Submission: 27-04-2024

Date of Acceptance: 07-05-2024

I. Introduction

In the context of continuous changes in digital technology, economic factors, the global workforce and the teaching environment that is undergoing many innovations, it is important to take initiatives on using teaching models. Blended learning (BL) is one of the solutions that is quickly gaining acceptance. Tasks and solutions to enhance support for management, teaching, assessment, scientific research, and application of information and communication technology have been actively deployed (Bray & Tangney, 2017; Diabat & Aljallad, 2020), at the same time, promoting the combination of distance "face-to-face" teaching via television and online teaching via the Internet (Attard & Holmes, 2020; Hori & Fujii, 2021; Mukuka et al, 2021). Several commonly used social networks and applications allow users to incorporate video discussion, screen sharing, interaction, and learning management tools (Sun et al, 2020).

The blended teaching model emphasizes the role of e-learning elements (Adguzel, 2020), combining traditional face-to-face classes with online learning activities (Attard & Holmes, 2020; Keržič et al., 2019), developed based on the application of digital technology platforms in teaching, helps students practice self-study awareness, initiative in choosing learning space, time. BL limits the disadvantages of face-to-face teaching and online teaching.. To achieve allying of organization and the benefits that BL can result, the researchers suggest that a more strategic approach and effective, fit implementation of BL. Garrison & Vaughan (2013) emphasize the importance of committed and collaborative leadership to create strategic direction and commitment to implementation. Moskal et al (2013) emphasize the importance of institutional context, suggesting that any adoption plan needs to be aligned with organizational purposes and fully supported through the organizational infrastructure and development of staff and student. Bokolo (2020) used institutional theory to propose that BL implementation is influenced by normative, coercive, and mimetic pressures.

Many studies on BL in Vietnam show that this is a form of teaching suitable for all educational levels and subjects (Vu Thai Giang & Nguyen Hoai Nam, 2019; Nguyen Van Hien et al., 2020; Nguyen Hoang Trang et al., 2020; Duong Huu Tong et al., 2022; Phan Thi Bich Loi & Nguyen Thanh Nga, 2022; Tran Phuong Thao & Nguyen Thi Thu Hoai, 2023);... However, the application this teaching model effectivity still faces many challenges that related to technological, organizational and intructional design.

The current general education curriculum in Vietnam (Viet Nam Ministry of Education and Training, 2018a) is implementing the goal of forming and developing learners' qualities and comperiences through educational content of educational levels. subjects and activities. The curriculum has determined that, at the career orientation stage, each selected subject has a number of learning themes. The learning themes of each subject aim to meet the requirements of deep differentiation, helping students enhance knowledge, practical skills and apply knowledge to solve practical problems, and meet requirements of career direction. Applying BL

in learning themes is meaningful in developing students' competences when students experienced learning with digital technology and directly doing experiments, practicing and implementing learning projects, etc. However, teachers still encounter difficulties in designing and organizing BL in learning themes to suit actual teaching conditions.

The research goal of this article is to explore and survey effectiveness of BL to guide its apply in teaching learning themes. The article focuses on solving and clarifying the issues: What characteristics does BL have that are suitable for teaching learning themes? What are the challenges of BL in teaching learning themes? How to apply BL in teaching learning themes to meet current educational innovation practices in Vietnam?

II. Methodology

The Theoretical Research Method

Theoretical research methods are used to refer to documents on BL, on flipped classrooms, and on teaching learning themes, thereby determining appropriate characteristics and the challenges of BL in teaching learning themes. At the same time, we propose apply BL in learning themes.

The Practical Research Method

The Research Design

Research on BL shows that BL is an appropriate and positive teaching method in a teaching context with the impact of digital technology and other factors. Using questionnaires for 97 teachers with groups of questions about awareness of BL, frequency, extent of applying BL, advantages and disadvantages when applying BL. The survey results have supplemented data for theoretical research on the characteristics and challenges of BL in teaching learning themes, and orientations for applying BL in teaching learning themes of Biology.

Research Participants

Teachers participating in the survey were selected through purposive sampling method. The survey was conducted on 97 high school teachers who have participated in teaching learning themes.

Research Instruments

The teaching content of learning themes to meet the requirements of deep differentiation, help students apply them to solve a number of practical problems, and help students have orientation to choose a career for the future.

BL is applied in teaching learning themes to help students experience learning with digital technology and directly do experiments, practice, and carry out projects.

Data collection and analysis

The survey results were processed and analyzed to evaluate and contribute to conclusions about the characteristics, challenges of BL in teaching learning themes and suggestions for applying BL in teaching Biological learning themes.

III. Result And Discussion

1. Characteristics of blended learning are suitable for teaching learning themes

The classification of e-learning model, Padma Raut & Jaishree Dhokane (2023) identify 3 types: synchronous learning, asynchronous learning and BL. BL is considered a form of learning that combines face-to-face learning (F2F) and online learning (OL) (Garrison & Vaughan, 2008; Voss, 2003). Mirriahi et al (2015), pointed out that educational institutions are engaging in BL or "a blend of F2F and OL learning experiences" because BL has got the benefits for learners, teachers, and educational institutions. Vaughan (2007) summarized the benefits of BL: creating opportunities for interaction between teachers and students, students actively participating in learning, increased flexibility in teaching, improved student's learning outcomes, increased institutional reputation and reach, and reduced costs. Those benefits may tend to be small-scale, individually focused, and results-oriented (Smith & Hill, 2019), and have the potential to extend beyond the individual and bring potential for learning through reviewing and restructuring pedagogy not only within individual courses but also across educational institutions (Garrison & Kanuka, 2004).

In BL, electronic learning tools are used in online lessons, presentations, and discussions (Adiguzel et al., 2020; Alammary, 2019). Lazar et al. (2020) determined that digital learning tools include: High-tech digital learning tools (software that supports learning for students such as interactive whiteboards, scientific software, digital teaching applications and software, digital textbooks and mobile devices, etc) and traditional digital tools (supporting digital videos, projectors, videos, interactive documents, etc). These tools are selected and used appropriately when teaching learning themes. At the same time, the ratio between F2F and OL is different,

but the OL element should range from 33% to 50%, even 80% (Lazar et al., 2020), with five components of BL (Alammary, 2019): F2F instructor-led, F2F collaboration, online instructor-led, online collaboration and online self-paced.

The organizing BL is carried out by many different models. Staker and Horn (2012) proposed four major models in the BL classroom, including the Rotation model, the Flex model, the Self-blend model, and the enriched-virtual model. Beaver et al (2015) proposed four models and explained how each model combines different components: Rotation model, Flex model, "A La Carte" model, and Enriched-Virtual model. Alammary (2019) introduces five models classified according to where content is communicated and where practical activities take place, including the flipped, mixed, flex, supplemental, and online-practicing models. Tesch (2016) offers six BL models: Face-to-face driver, Station rotation, online lab, flex, self-blend, and online driver.

The results of the survey of teachers' BL perceptions show that: 63.92% of teachers identified BL as a teaching model that combines traditional and modern teaching models. OL has a certain ratio, which can be increased or decreased depending on the level of application; Some teachers choose BL as a teaching model in which learners access lectures, documents and contact teachers through electronic devices connected to the Internet (18.56%) and this is a learning method that learners can study anywhere through devices such as phones, laptops, tablets... (17.52%). Although teachers still single-mindedly identify the characteristics of BL, most teachers (95.86%) agree that BL helps students be flexible in the time and place of learning, and control the pace of learning, practice, and can review lecture content that is not clearly understood; Teachers do not need to completely change their teaching habits, so they can focus and better convey lesson contents to students. 65.98% of teachers believe that it is very necessary and necessary to apply BL in teaching learning themes because it is appropriate, but 58.76% of teachers confirm that they apply BL at a proficient level. Therefore, there is a need for more instructions on applying BL in teaching.

Through theoretical research and survey results, we find that, among the BL models, the Rotation model is suitable to guide application in teaching learning themes. Rotation model is often specified in 4 forms: Station Rotation (this type of course/subject is designed with many "learning stations" in a class or group of classes and learners must rotate in all of those stations), Lab Rotation (learners in the course/subject rotate in the computer room for "online learning stations"), Flipped Classroom (learners learn theory online at home, and discuss, practice, do homework at live classes), Individual Rotation (each learner has his own list and does not necessarily have to rotate to each station or available method, making learning highly individualized). Among the Rotation models, we choose to use the flipped classroom model to organizing teaching learning themes.

The learning themes of each subject in the General Education Curriculum aim to meet the requirements of deep differentiation, helping students enhance knowledge and practical skills, apply knowledge to solve a number of practical problems, meet career orientation requirements. In particular, the general education curriculum in Biology (Viet Nam Ministry of Education and Training, 2018b) introduces a system of learning themes to expand and improve knowledge, practice practical skills, and learn about professions to directly orient and serve as a basis for technical and technological processes that related to biology. They direct students to fields of 4.0 technology, such as biotechnology in agriculture, medicine, food processing, environmental protection, etc., which are applied in a way that integrates biological achievements and interdisciplinary science. When applying BL, especially using a flipped classroom to teach learning themes, students will learn about concepts, scientific bases, processes, and some applications of technologies in Biology-related fields, professions in outside the classroom through online learning; And when coming to class, students will directly report and discuss about assigned assignments and tasks. The focus of live classroom is the active participation of students. With 3 levels of BL organization, teaching learning themes is suitable for level 2: teachers redesign and replace some F2F activities with OL activities. Usually, practice activities, practical experiences or learning-oriented activities (such as reporting instructions, answering questions) are suitable for F2F, and activities that provide learning information or test, assessment will be consistent with OL.

2. Challenges of blended learning in teaching learning themes

Although BL has many advantages, implementing BL also faces many challenges. Boelens et al. (2017) raised four main challenges: Flexibility in integration (in terms of time, location, learning progress); Interaction (face-to-face and online interaction); Support student learning (monitoring and assessment), Create an effective learning environment (motivate and encourage, show empathy, personalize learning). Adiguzel et al. (2020) argue that applying BL often increases teachers' workload. Professional development such as equipping communication techniques, teaching strategies and necessary information technology skills for F2F combined with OL is still limited (Attard & Holmes, 2020). The big challenge is how teachers and learners can successfully use technology and ensuring the commitment that all learners have skills to technology (Hofmann, 2014). Another challenge is that students do not feel motivated to learn online because of feelings of dishonesty and isolation, little interaction with each other (Poon, 2013). Hofmann (2014) points out technical challenges

related to the urge and level of technological using; and organizational challenges such as the perception that BL is not as effective as training, managing and monitoring participants' progress in traditional classroom; and instructional design challenges because the actual design of appropriate content takes too little time and budget for a successful program.

The results of a survey of teachers' opinions about the advantages and disadvantages of organizing BL in teaching learning themes are presented in Table 1.

Table 1. Survey results about advantages and disadvantages when organizing blended learning in teaching learning themes

	Contents	Response rate (%)	
		Advantage	Disadvantage
1	Students are proactive in learning space, time, and content.	87,62	12,38
2	Students have an interactive learning environment, and are more proactive and active in learning.	82,47	17,53
3	Limited to students who have not been exposed to technology and lack online learning tools.	46,39	53,61
4	Students who are unable to self-study and research may have fear, depression, and reduced learning outcomes.	41,23	58,77
5	Teachers reduce direct teaching time in class.	90,72	9,38
6	Teachers are given time to focus on other tasks.	77,32	22,68
7	Teachers must have information technology expertise related to the design of electronic learning materials, design, scripting, video recording, cutting, merging, video editing, etc.	37,11	62,89
8	Teachers must change teaching methods to attract learners to participate in learning, and have tools to manage, monitor, check learners' online learning.	46,39	53,61
9	Educational institutions reduce pressure on classroom systems and reduce fixed costs in direct teaching.	75,26	24,74
10	Educational institutions must have "Server system and Internet connection infrastructure", learning management system, and learning content.	32,99	67,01
11	Educational institutions have policies to support and encourage teachers to invest, research and find teaching methods or take additional courses on BL.	52,58	47,42

Each content are asked in Table 1 has teachers answering as advatage or disadvantage, in which, the content chosen by many teachers as disadvantage is: content 3 (53.68%), content 4 (58.77%), content 7 (62.89%), content 8 (53.61%), content 10 (67.01%). When we asked the question "What difficulties do you meet of BL in your practical teaching?", we received the following answers: Students are not self-aware when participating in OL for the reason of least connection (63 comments); Students have little contact with information technology and do not have enough equipments to learning (20 comments from teachers working in extremely difficult areas); Teachers still have limited information technology and finance (37 comments from some teachers in mountainous and extremely difficult areas); Learners must receive many exercises assigned by the teacher, or the teacher's lectures may be shared outside the classroom (28 comments from teachers in cities and rural areas); Educational institutions are not qualified to provide adequate facilities to organize BL, and it is difficult to come up with policies to support teachers to implement BL in the most optimal way (69 comments).

Through studying some research on BL and results of survey, we identified the followed challenges of BL when applied in teaching learning themes:

For students: BL is limited for learners who have not been exposed to technology, lack of tools to support OL, and learners with limited self-study competency; Learners can be overloaded due to receiving many assignments given by teachers.

For teachers: BL requires teachers to design electronic learning materials for online lessons, so BL is limited for teachers who do not have expertise or are afraid to use information technology, and do not know how to use software tools to design, script, record videos,...; Teacher's lectures can be shared outside the classroom.

For educational institutions: Educational institutions have difficulties in fully providing facilities such as server systems, Internet connection infrastructure with enough bandwidth and capacity to meet access needs of the user; At the same time, it is difficult to provide support policies to encourage teachers in extra learning or receive training in professional courses, including teaching by BL.

IV. Proposing The Application Of Blended Learning In Teaching Learning Themes Orientation for applying blended learning in teaching learning themes

In the study of Alammary et al. (2014) showed three BL design approaches: Low-impact bend; Medium-impact bend; High-impact bend.

Low-impact blend (level 1): add some OL activities to the traditional available course. This format is convenient for teachers who are not confident or are new to using teaching technologies and OL support to designing BL lessons and courses. Based on the foundation of available lessons, teachers just add some OL activities, but be not necessary to change teaching methods, for example, teachers and students use software available technology, use a number of tools in the form of webquest, wiki, google, or social networks (facebook, zalo,...) to submit assignments, discuss online,... Assessment is done both F2F and OL.

Medium-impact blend (level 2): some of the available course activities in the traditional format are replaced with a blended format. This format is advantageous for teachers who have a certain understanding and confidence when using technology to design online learning activities and teaching environments. When designing, teachers determine which activities and content should be online instead of face-to-face, depending on learner characteristics, teaching experience, and teaching conditions. In this approach, teachers and learners need to be trained to have certain understanding when using tools for OL teaching. Feedback and evaluation of students play an important role in adjusting the design of teaching content more appropriately.

High-impact blend (level 3): the entire course is redesigned in the blended format. This format is suitable for teachers who have a high understanding of tools and technology to design completely new lessons and courses based on the traditional content and teaching process. This type of course design meets the needs and types of students which can be grouped of learning styles or designed to meet individual learners.

All 3 levels of BL focus on 4 factors: teaching content - including materials and resources that require learners to exploit to meet tasks and achieve teaching goals; teaching process - includes the interaction of learners with teachers and classmates during the learning process and performing tasks; learning products - are the results when learners perform each task and learning activity; the impact on learners - is the impact of the BL teaching process on learners.

When surveying the applying BL in teaching learning themes, most opinions of teachers choose the frequency of application very often and often at level 1 (85.57%) and at the level 2 (63.91%), no opinion chose level 3; 77.32% of opinions agree that the organizing BL is effective in appropriate contents and activities. At the same time, learning themes in general education programs in Vietnam are new contents and in Biological learning themes, iconceptual knowledge, applied knowledge occupies large proportion. From there, we propose an approach to designing BL in level 2: teachers design online lessons and send them to students simultaneously with direct teaching in class; Students rely on documents and information sources on the Internet to perform online learning tasks provided by teachers. Questions and discussions are conducted in class or online. Abstract contents needs communication, debate, explanation or modeling, and practical activities, real-life experiences or learning-oriented activities are arranged for F2F in class; The contents that must be self-study for a long time, need to develop self-discipline, and activities that provide learning information should be organized online.

Organizing teaching learning themes is accordance with the applying BL according to the flipped classroom model. Refer to 3-step BL process (Safei Soleh et al., 2023), the process of organizing 3-phase learning thematic teaching (Nguyen Thi Hang et al., 2020) and some instructions on the flipped classroom model (Abeysekera, 2015; Altemueller, 2017; Cristina Rotellar, 2016), we propose a process for organizing BL according to the flipped classroom model in teaching, learning themes (Figure 1).

The characteristic of this plan is live teaching plays a key role, but some F2F activities are replaced with some OL activities:

Before class (using OL): The teacher identifies the lessons/contents that want to "invert". Teachers can create their own materials such as PowerPoint lectures, screencasts and poscards, or reuse online content such as websites, readings and videos; The teacher determines the requirements that students need to see and do at home, thereby introducing the reversed task/exercise to the students. Students self-study lectures provided by teachers through LMS or by technological means, search the Internet, and perform "reverse exercises"; Students can submit assignments via Email, via Google classroom, via Zalo, via Padlet, etc.

During class (using F2F): Teachers organize learning activities for students in class such as correcting exercises, answering questions, summarizing, expanding, asking students to apply higher level exercises/tasks (create products based on analyzing the requirements of a specific topic).

After class (using OL): Teachers provide instructions for students to complete outside of class. Those instructions help develop activities of during class stage. This is the stage where learning materials and activities are introduced to develop students' self-study competence.

Illustration of the applying of blended learning in teaching learning theme "Biological control"

From the contents of the theme: (i) Concept of biological control; (ii) The role of biological control; (iii) Basis of biological control; (iv) Some biological control measures (protection of natural enemies; reasonable use of pesticides, fertilizers,...); (v) Practice: Collecting or investigating applications of biological control in locally, teachers determine the contents of OL instructions and supported F2F discussion to deeply

understand: (i), (ii), (iii), (iv); Content (v) is implemented, reported, evaluated in F2F class and supported online to implement and complete the product.

Based on the applying orientation introduced in 3.1, we propose to apply blended learning according to the flipped classroom model in this theme:

Before class: Teachers prepare PowerPoint lectures, reusing online contents such as websites, readings and videos about concepts, roles, bases, and measures of biological control ; At the same time, they prepare reverse tasks/exercises:

Follow the biological control materials and answer the questions:

1/ What is biological control? In biological control, harmful organisms are controlled by what agents? Please name some organisms or attractants that humans use in biological control and how humans use.

2/ What role does biological control play? What are the advantages of biological control compared to using synthetic chemicals to kill harmful organisms?

3/ What biological control methods and scientific basis are described when using one species of organism to control another?

4/ Find out biological control measures that have been used in your locality. Let's analyze the advantages and disadvantages of those measures.

5/ Please suggest the use of biological control measures in your locality.

Teachers deliver learning materials, exercises, and tasks via technology software (from 10 to 15 days before the F2F class). Students self-study learning materials, perform exercises and tasks individually or in groups, record questions and submit assignments and questions via interactive software that teacher requested.

During class: Teachers organize learning activities: correct exercises, answer questions, summarize, expand, and ask students to apply exercises/tasks at a higher level such as: Collecting articles and images, videos related to biological control measures being used in your locality; Conduct field research, observe biological control applications in your locality and evaluate the use of that biological control measure.

After class: Teachers provide instructions for students to complete outside of class such as providing some additional learning materials or introducing addresses that students can collect and investigate local biological control applications.

Thus, applying BL in teaching learning themes is completely well-founded and feasible. However, no matter to what extent BL is applied, according to which model, it is necessary to pay attention to the conditions: Learners need to be aware of their self-aware, positive, and proactive role in activities. They are motivated to learn, take time to learn how to use learning tools and instructions, and increase communication, sharing when encountering difficulties, and complete learning tasks; Teachers have confidence, have a scientific attitude and spend time to build and develop BL lessons. They introduce, guide, monitor, support, assessment learners and making positive interventions, comments in learning activities of students. School leaders have full awareness and vision of BL, have appropriate policies and prepare basic technology infrastructure to make convenient for teachers and students when they join BL..

V. Conclusion

Blended learning is one of the teaching methods suitable for teaching learning themes, including Biological learning themes. In the BL organization models, the article identifies the Rotation model as being oriented to be applied in teaching learning themes and is specified by the flipped classroom model according to level 2 of BL. Theoretical research and survey results show that BL still has got challenges of technology, organization, and instructional design for both students, teachers, and educational institutions. However, applying level 2 of BL according to 3 stages of the flipped classroom in the Rotation model shows that it is a completely feasible solution, and meeting current educational innovation practices in Vietnam. Those results have been proven when applying BL in teaching learning theme "Biological control". The next research direction is to add ways to evaluate students' competences and conduct experiments applying BL in teaching learning themes to evaluate the effectiveness of the proposal.

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