THE CURRENT STATUS OF BLENDED LEARNING IMPLEMENTATION IN HIGH SCHOOLS IN CA MAU PROVINCE

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ABSTRACT

In the context of Vietnam's accelerated digital transformation, blended learning (BL) has emerged as an increasingly inevitable trend in secondary education. Nevertheless, the implementation of this pedagogical model in resource-constrained regions - such as Ca Mau province - encounters a range of significant challenges. Findings from a survey conducted with 60 school administrators and 120 teachers across high schools in Ca Mau reveal substantial deficiencies in teachers' competencies and pedagogical knowledge pertaining to the design, delivery and management of BL environments. These challenges are further compounded by the fragmented and insufficient information technology infrastructure observed in several institutions, which severely impairs the quality of online instruction and contributes to administrative reluctance in fully embracing BL initiatives. A systematic assessment of the current implementation status, accompanied by a rigorous analysis of its underlying causes, constitutes a critical foundation for the development of context-specific strategies. Such strategies are essential to enhance the effectiveness of BL integration in Ca Mau's upper secondary schools and to ensure alignment with Vietnam's broader national agenda for digital transformation in education. Moreover, this study contributes to narrowing the digital divide in education by proposing a flexible BL framework tailored to low-resource settings.

1. Introduction

In the context of rapid global digital transformation, BL has gained increasing attention and is emerging as an inevitable trend in contemporary education. BL is a pedagogical model that strategically integrates face-to-face and online learning experiences in a flexible and context-appropriate ratio. BL has garnered considerable scholarly attention and is widely recognized as an effective instructional model in the context of modern education. At its core, BL (also referred to as hybrid learning or mixed-model learning) involves the integration of face-to-face classroom instruction with online learning components for the same students, covering the same content within the same course. More broadly, BL can be understood as "the thoughtful fusion of face-to-face and online learning experiences", where learners play an active role and teachers serve as facilitators, instructional

designers and flexible supporters throughout the learning process (Garrison & Kanuka, 2004). From an educational management perspective, implementing BL is not merely a technical or methodological merger. It also requires a strategic alignment of digital infrastructure, the digital competencies of both teachers and students, as well as institutional policies and orientations. Thus, successful deployment of BL depends on comprehensive planning that encompasses pedagogy, technology, human capacity and organizational governance.

Research by Vaughan and colleagues emphasizes that BL maximizes the use of digital devices and platforms such as computers, the Internet and e-learning software while still incorporating traditional classroom tools and live instruction by teachers (Vaughan et al., 2008). This model has been adopted in several countries and has demonstrated positive educational outcomes. A study conducted at a university in Thailand comparing traditional and BL approaches revealed that group work within a blended format led to significantly better learning outcomes (Wongwuttiwat et al., 2020). In Vietnam, a recent study by Vu Minh Hien and colleagues explored the integration of podcasts as digital learning resources in a BL model for teaching Literature. Their findings suggest that BL offers a novel and contextually relevant approach, aligning well with current educational reforms (Vu Minh Hien et al., 2024). Graham (2006) examined pilot implementations of BL that harness the strengths of both face-to-face and online instruction. These implementations typically utilize Learning Management Systems (LMS) such as Google Classroom and Moodle in conjunction with video conferencing tools like Zoom and Microsoft teams to enhance the learning experience. While initial findings across studies point to promising outcomes, there remains a noticeable gap in research focused on the application of BL in diverse learning environments and contexts.

In Vietnam, Le Van Nhuong (2019) developed and implemented a BL model for teacher education students, revealing that this approach can be effective when learners demonstrate strong self-directed learning skills and when the technological infrastructure is sufficiently robust. However, most existing research on BL in the country has focused on its implementation in urban environments or institutions with relatively favorable conditions. Theoretical models have yet to fully address the challenges of implementing BL in remote or underserved areas and little attention has been given to the influence of cultural, economic and social factors on its effectiveness.

In reality, many localities - particularly remote provinces such as Ca Mau - face considerable limitations in terms of facilities and ICT infrastructure. This raises an important research question: Is BL truly effective in remote schools with limited technological infrastructure and resources?

This study seeks to explore the current state of BL implementation in upper secondary schools in Ca Mau under conditions of weak infrastructure and limited educational resources. The goal is to propose context-appropriate and practical strategies for deploying BL effectively in such settings. By addressing this gap, the research aims to contribute to narrowing the digital divide in education and to provide empirical evidence that can inform policy development on BL for similarly disadvantaged regions.

In summary, this study investigates the implementation of BL in remote and under-resourced educational contexts, proposing a context-sensitive BL model tailored to environments with limited internet connectivity and restricted access to digital devices. In contrast to previous research, which has predominantly focused on urban schools with robust infrastructure - such as high-speed internet, personal devices and technologically proficient

educators - this study addresses the practical realities of marginalized settings. It highlights feasible strategies including the use of offline learning systems (e.g., USB drives or memory cards containing instructional materials), repurposing available devices (e.g., basic mobile phones, outdated computers) and prioritizing free communication platforms (e.g., Zalo, Facebook groups) over subscription-based tools. This approach diverges from conventional reliance on complex LMS such as Moodle or Google Classroom, which require stable internet connections and multimedia-rich instructional design (e.g., high-quality videos, interactive quizzes). Rather than emphasizing advanced technological competencies (e.g., e-learning design, LMS administration) and centralized teacher training, the study advocates for equipping educators with simple, accessible tools - such as recording lessons via mobile phones and developing basic slide-based presentations - while fostering peer support networks among neighboring schools. Moreover, whereas prior evaluations of BL effectiveness have typically focused on metrics such as test scores and online course completion rates, this study shifts the emphasis toward student participation in contexts lacking internet access or personal devices and the learning outcomes of disadvantaged groups. This reframing seeks to advance a more equitable and sustainable model of BL.

2. Research methodology

2.1. Research design

This study adopts a primarily quantitative research approach, aiming to assess the contextual conditions for implementing BL in a specific locality. The findings are expected to serve as a foundation for proposing context-sensitive and effective implementation strategies. The evaluation focuses on the following key dimensions:

Stakeholder perceptions, including school leaders and teachers. The role of school administrators is considered critical as their perceptions and decisions directly influence the implementation of BL initiatives (Ghaida et al., 2011).

Technological infrastructure and physical conditions, including students' and teachers' access to devices (computers, smartphones, internet); infrastructure quality (internet speed, electricity stability) and the availability and contextual appropriateness of digital learning resources such as instructional videos and e-lessons (Nhuong, 2019; Anh, 2022; MOET, 2024).

Digital competency, which covers teachers' proficiency in using online teaching tools and students' ability for autonomous learning through digital platforms (Oliviar & Fomin, 2022; MOET, 2024).

Instructional models, including the ratio between in-person and online instruction, the flexibility of the learning schedule and assessment methods (e.g., online tests, in-person assignments) (Garrison & Kanuka, 2004).

Policy and resource support, including budget allocations from local authorities or schools; incentive policies for teachers to adopt BL; school-level support (e.g., teacher training, student orientation) and inter-agency collaboration involving Departments of Education and Training and telecom providers (Oliver & Trigwell, 2005; UNESCO, 2020).

This theoretical and analytical framework not only enables an objective assessment of BL implementation levels but also guides the development of practical solutions tailored to the local context of upper secondary schools in Ca Mau province.

2.2. Survey participants

The sample was selected using a stratified random sampling method from 15 upper secondary schools, comprising 60 school administrators (including principals and vice principals) and 120

teachers. The administrators were purposefully chosen to represent schools located either near urban centers or in remote areas. All respondents voluntarily participated in the survey which was administered via Google Forms.

2.3. Data collection instruments and analysis methods

The primary data collection instrument was a structured questionnaire developed and distributed through Google Forms. Each dependent variable includes between 5 and 8 observed variables. The overall Cronbach's Alpha coefficients range from 0.750 to 0.869 while the "Cronbach's Alpha if Item Deleted" values for the observed variables range from 0.720 to 0.845, indicating that the measurement scales demonstrate acceptable to good levels of reliability.

A five-point Likert scale was employed, where responses ranged as follows:

1 = Strongly disagree/Ineffective/Never

2 = Disagree/Less effective/Rarely

3 = Agree/Moderately effective/Sometimes

4 = Strongly agree/Effective/Often

5 = Completely agree/Highly effective/Always.

The mean score (M) was used to interpret the descriptive results along five levels:

1.0 to < 1.8: Strongly disagree/Ineffective/Never

1.8 to < 2.6: Disagree/Less effective/Rarely

2.6 to < 3.4: Agree/Moderately effective/ Sometimes

3.4 to < 4.2: Strongly agree/Effective/Often

4.2 to 5.0: Completely agree/Highly effective/Always.

Collected data were coded, aggregated and processed using descriptive statistical tools in SPSS version 27, including frequency, mean and standard deviation.

3. Research findings and Discussion

3.1. Perceptions of school leaders and teachers regarding the importance of blended learning implementation

The survey results collected from 60 school administrators and 120 teachers regarding their perceptions of the importance of implementing BL in upper secondary schools in Ca Mau province reveal insightful trends (see table 1 and figure 1).

Table 1. Level of agreement among school leaders and teachers on the importance of implementing BL in upper secondary schools in Ca Mau province

Respondents	Mean (M)	Standard Error (SE)	Standard Deviation (SD)
Teachers	4.08	0.047	0.679
School Administrators	2.77	0.089	0.691
Overall Average	3.43	0.068	0.685

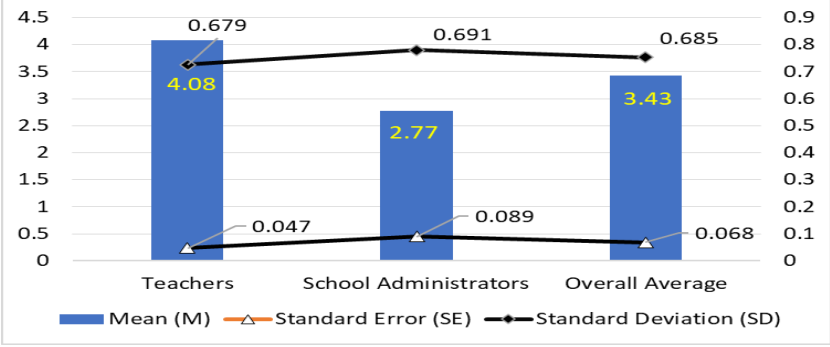

Figure 1. Comparison of agreement levels between school administrators and teachers regarding the importance of implementing blended learning activities in upper secondary schools in Ca Mau province

Table 1 and figure 1 illustrates a marked discrepancy between teachers and school administrators in their assessment of the importance of implementing BL in upper secondary schools in Ca Mau province. Teachers demonstrated a very high level of agreement (Mean = 4.08 ± 0.047), placing their responses in the "Strongly Agree" range. In contrast, school administrators rated the importance significantly lower (Mean = 2.77 ± 0.089), corresponding only to a moderate level of agreement.

The lower standard error among teachers (SE = 0.047) compared to administrators (SE = 0.089) suggests that teacher responses were more consistent and cohesive while administrators' views were more varied, possibly reflecting their broader scope of oversight and awareness of implementation challenges. Although the standard deviations for both groups were similar (0.679 for teachers and 0.691 for administrators) the clustering of responses differed: teachers tended to cluster around more positive perceptions, whereas administrators' responses were distributed around more critical or cautious evaluations.

The divergence in perspectives may stem from the different roles these stakeholders play in the education system. Teachers, who are directly involved in classroom instruction, tend to hold more favorable views of BL due to their firsthand experience with its pedagogical benefits. Conversely, administrators often adopt a more pragmatic lens, grounded in their understanding of systemic limitations such as budget constraints, infrastructure readiness and the technical demands of sustaining BL (Ghaida et al., 2011; UNESCO, 2020).

These perceptual differences between administrators and teachers may hinder coherence and alignment in the implementation of BL. Therefore, it is essential to balance the needs and expectations of both groups. Specifically, Ca Mau should prioritize investments in infrastructure to support BL and facilitate dialogues or professional exchange sessions to bridge the perception gap between administrators and teachers across the province. Such efforts will contribute to a more unified and context-sensitive approach to BL adoption.

3.2. Availability of technological infrastructure and physical facilities

The study surveyed 60 school administrators and 120 teachers regarding the availability and adequacy of technological infrastructure and physical facilities that support the implementation of BL in upper secondary schools in Ca Mau province. The findings are summarized in table 2.

Table 2. Level of agreement among school leaders and teachers on the availability of technological infrastructure and physical facilities for blended learning in upper secondary schools in Ca Mau province

Infrastructure and Facilities	Respondent	Mean (M)	Standard Error (SE)	Standard Deviation (SD)
Functional computer systems for BL	Teachers	3.93	0.047	0.679
	Administrators	3.88	0.089	0.691
Stable Internet connection to ensure smooth online activities	Teachers	4.08	0.046	0.658
	Administrators	3.87	0.090	0.700
Availability of LMS to support BL	Teachers	3.93	0.048	0.688
	Administrators	4.07	0.085	0.660
Availability of unified, high-quality online learning materials per subject	Teachers	3.83	0.054	0.777
	Administrators	3.33	0.118	0.914

Infrastructure and Facilities	Respondent	Mean (M)	Standard Error (SE)	Standard Deviation (SD)
Adequate classrooms and functional spaces for in-person sessions	Teachers	3.98	0.041	0.590
	Administrators	3.27	0.119	0.918
Projectors, interactive screens to support in-person teaching	Teachers	4.03	0.050	0.718
	Administrators	3.28	0.117	0.904
Overall Average	**Teachers**	**3.96**	**0.103**	**0.798**
	Administrators	**3.62**	**0.048**	**0.685**

Table 2 reveals that overall, teachers rated the adequacy of technological infrastructure and physical facilities higher than school administrators ($M = 3.96 \pm 0.103$ vs. $M = 3.62 \pm 0.048$). This suggests that teachers held a more favorable perception of the current infrastructure supporting BL.

Both groups rated certain aspects relatively high, particularly internet connectivity (Teachers: $M = 4.08 \pm 0.046$; Administrators: $M = 3.87 \pm 0.090$) and equipment for in-person teaching such as projectors and interactive screens (Teachers: $M = 4.03 \pm 0.050$). Conversely, online learning materials and classroom facilities received the lowest ratings from school administrators ($M = 3.33 \pm 0.118$ and $M = 3.27 \pm 0.119$, respectively).

Administrators also exhibited greater variation in their responses as evidenced by consistently higher standard errors and standard deviations, particularly in the evaluation of classroom facilities. This suggests that administrators held more divergent views, likely influenced by differences in school size, location and available resources. In contrast, teacher responses were more convergent, indicating a greater level of consensus.

Teachers rated Internet access as the most satisfactory component and online learning materials as the least. Administrators, on the other hand, viewed the LMS most favorably and expressed the most concern about classroom and functional space availability. This may reflect their deeper involvement with the administrative and technical aspects of LMS operations.

In general, teachers expressed more positive evaluations across most indicators, especially for technological devices and physical classroom conditions, whereas administrators rated only the LMS more favorably, possibly due to their closer engagement with system-level management. These differences likely stem from each group's perspective: teachers emphasize instructional experience while administrators consider infrastructure sustainability and investment costs.

In summary, teachers appeared more optimistic about the availability of digital tools while administrators expressed concerns about classroom facilities and the systemic quality of online learning materials. To reconcile these perspectives and foster coherent implementation of BL, it is essential to:

- Improve the quality and consistency of online learning materials;
- Upgrade classroom infrastructure to meet BL needs;
- Enhance LMS functionalities to align with administrators' expectations;
- And restructure investment policies to support a more integrated and effective BL environment.

3.3. Frequency of technology use by teachers and students

Survey data from 60 school administrators and 120 teachers indicated that approximately 70% of administrators in upper secondary schools across Ca Mau province reported that BL is occasionally implemented at their institutions. Only 15% of schools have adopted

this approach more regularly while another 15% reported minimal implementation. These findings are consistent with earlier results (See table 1) which showed that administrators hold less favorable perceptions of the importance of BL. This relative lack of appreciation for blended models has resulted in limited institutional attention to their adoption.

Many administrators noted that current policy frameworks do not mandate BL as a formal instructional modality in secondary schools. Moreover, challenges such as insufficient infrastructure, limited student access to learning devices and teachers' unfamiliarity with blended teaching practices were frequently cited as key barriers to implementation. As a result, school leaders remain hesitant to formally integrate BL into their institutional teaching strategies.

Regarding the frequency and extent of technology use, the survey results revealed several key patterns:

Classroom management tools: The most widely used platform was the LMS, reported by 91.7% of respondents, followed by Zalo or Facebook groups (78.3%). Google Classroom was the least used among the tools in this category with only 58.3% adoption.

Teaching and learning tools: A large majority of teachers (96.7%) frequently employed synchronous interaction platforms, such as Google Meet, Zoom and Microsoft Teams, to deliver live online lessons.

Assessment tools: The most commonly used digital tools for online assessment were Google Forms and Azota, indicating a strong preference for platforms that support formative and summative evaluations.

These findings suggest that teachers have become increasingly comfortable utilizing various digital tools to support online instruction with a clear preference for familiar, user-friendly and cost-free platforms. This behavioral trend forms an important foundation for expanding the implementation of BL in the province. However, it is worth noting that some teachers and students still express hesitation when engaging with newer or more complex technologies. These concerns must be addressed through targeted training, technical support and user-centered design in future digital education initiatives to ensure inclusive and effective adoption of BL models across all schools in Ca Mau.

3.4. Effectiveness of the blended learning model in upper secondary schools

The effectiveness of the BL model is evaluated through three key aspects: the achievement of instructional goals, the effectiveness of blended teaching strategies and the application of assessment methods in BL environments. Survey data from 60 school administrators and 120 teachers revealed relatively similar means, standard errors and standard deviations between both groups, suggesting general alignment in perceptions. The detailed findings are presented below:

Effectiveness in achieving instructional goals

The effectiveness of BL in supporting educational objectives was assessed through five indicators: personalization of student learning, development of essential skills (e.g., self-study, information seeking, problem solving), digital competence development, increased student autonomy and responsibility and time-cost efficiency.

School administrators (M = 3.93, SE = 0.080) and teachers (M = 3.01, SE = 0.066) both reported relatively positive evaluations of BL in achieving instructional goals at the high school level.

Teachers rated the personalization of student learning the highest (M = 4.03, SE = 0.066) while administrators placed higher emphasis on digital competence development (M = 4.08, SE = 0.080) and cost-time efficiency (M = 4.03, SE = 0.075).

Notably, the goal of cost and time efficiency received the lowest rating from teachers (M = 2.02, SE = 0.077), contrasting sharply with the more favorable view from administrators (M = 4.03, SE = 0.066).

This discrepancy may reflect the challenges teachers face in preparing and managing BL activities, which often demand more time and effort than traditional methods. Moreover, the integration of digital content may entail costs or require digital skills that teachers lack, particularly if they are not well-trained in sourcing or using free digital resources. Teachers may also struggle to effectively incorporate technology into lesson planning, leading to underestimation of BL's benefits in skill development and personalized learning. The limited training in blended pedagogy further compounds these challenges, affecting perceptions of its potential to foster student agency.

Effectiveness of blended teaching strategies

The survey results indicate that teachers are actively using a variety of blended teaching strategies:

The use of online meeting tools that allow students to ask questions and engage in discussion received a high mean score (M = 3.97, SE = 0.071), emphasizing the critical role of digital platforms in fostering interaction.

Platforms such as Zoom and Google Meet were widely used (M = 3.93, SE = 0.095), reflecting strong adoption of synchronous tools.

Teachers also incorporated collaborative learning activities, such as group projects and online assignments (M = 3.90, SE = 0.091) and emphasized interactive in-person class time for discussion, practice and reflection (M = 3.90, SE = 0.094).

Although slightly lower, the use of digital videos and instructional media (M = 3.80, SE = 0.094) and educational games (M = 3.70, SE = 0.104) still demonstrated regular application, pointing to diverse pedagogical strategies and a commitment to maintaining student engagement. Overall, these findings reflect considerable teacher effort in building a dynamic and interactive learning environment through blended teaching practices.

Effectiveness of assessment practices in BL

Assessment practices in BL showed a mixed level of effectiveness:

Teachers reported frequent use of multiple assessment formats (M = 3.72, SE = 0.143), suggesting a recognition of the importance of diverse evaluation methods in BL environments.

However, the development of clear rubrics or assessment criteria (M = 3.12, SE = 0.154) and the use of higher-order thinking tests (e.g., inferential assessments) (M = 2.68, SE = 0.172) remained at a moderate level.

Particularly concerning was the limited use of technology for timely feedback (M = 2.32, SE = 0.167) and the infrequent organization of review or reflection sessions post-assessment (M = 1.93, SE = 0.177).

These results indicate that while teachers are exploring a variety of assessment tools, the integration of technology for real-time feedback and reflective practices remains underdeveloped. There is an urgent need for professional development in digital assessment literacy and feedback mechanisms to ensure BL assessments are formative, transparent and student-centered.

3.5. Challenges in implementing blended learning activities

The survey findings on the challenges associated with implementing BL in general education schools in Ca Mau province indicate no significant differences in mean scores, standard errors or standard deviations between school administrators and teachers. Therefore, the results were aggregated across the full sample to provide a comprehensive overview (table 3).

Table 3. Perceived challenges in implementing blended learning in high schools

Challenges	Mean Score	Standard Error	Standard Deviation
Selecting and effectively using appropriate software for BL	3.80	0.094	0.732
Difficulties in using BL support software	3.70	0.104	0.809
Limited access to full software functionalities due to copyright/license issues	3.90	0.091	0.706
Lack of a unified and complete learning management system	3.90	0.094	0.730
Insufficient training for teachers and students	3.83	0.089	0.693
Teachers' lack of time to learn new applications and update BL content	3.88	0.089	0.691
Lack of resources and institutional support for developing online lesson content	3.87	0.090	0.700
Limited cooperation and support from students' families toward BL	4.07	0.085	0.660
Overall Mean	**3.87**	**0.092**	**0.715**

As presented in table 3, school administrators generally agreed that despite certain advantages, numerous challenges persist in the implementation of BL (M = 3.87, SE = 0.092). Among these, the most significant obstacle identified was the limited cooperation and support from students' families in facilitating BL activities (M = 4.07, SE = 0.085).

Other challenges were also rated at relatively high levels of difficulty, with mean scores ranging from 3.70 to 3.90, standard errors between 0.085 and 0.104; standard deviations between 0.660 and 0.809. These included: the absence of a unified and fully functional learning management system (M = 3.90); difficulties in selecting and effectively using digital tools (M = 3.80); the complexity of BL software (M = 3.70); restricted access to software functionalities due to licensing issues (M = 3.90); inadequate training for both teachers and students (M = 3.83); limited time for teachers to learn new applications and prepare blended content (M = 3.88); the lack of resources and institutional support for developing online instructional materials (M = 3.87).

These findings reflect a multifaceted set of barriers that hinder the effective implementation of BL, highlighting the need for systematic investment in technical infrastructure, training programs and family engagement strategies to support sustainable and scalable BL models in high school contexts.

3.6. Discussion and recommendations

The findings from this study confirm that the implementation of BL-in high schools across Ca Mau province is still in its initial stages and faces multiple systemic, pedagogical and contextual challenges. While both school leaders and teachers recognize the potential of BL in enhancing student learning outcomes - particularly in fostering digital competencies, learner autonomy and collaborative engagement - these benefits are not being fully realized due to fragmented infrastructure, limited institutional readiness and constrained teacher capacity.

A key issue lies in the disparity between the perceived feasibility of implementing BL and the actual conditions of infrastructure and resources. Although teachers rated the availability of internet connectivity and

interactive devices relatively high, they reported low satisfaction with the availability of high-quality online learning materials and physical classroom conditions. This suggests that infrastructure development must go beyond hardware provision to include investment in digital content, learning environments and long-term maintenance.

The results also highlight a significant gap in teacher training and support mechanisms. Teachers commonly reported a lack of time and skills to develop and manage BL resources effectively. This points to the need for targeted professional development that equips educators not only with technical know-how but also with pedagogical strategies for integrating technology meaningfully into their instructional practices.

Moreover, the challenges associated with LMS and digital platforms ranging from usability issues to concerns over licensing and system fragmentation - underscore the urgency for schools to adopt standardized, user-friendly and well-supported LMS solutions that align with national digital transformation strategies in education.

Another critical concern is the insufficient engagement of families in supporting students' participation in BL. This reveals a socio-cultural dimension that requires policy attention. Schools should collaborate with families through awareness programs and digital literacy initiatives to ensure that learning does not end at the classroom but is supported holistically at home.

The study on BL implementation in Ca Mau province reveals notable similarities with previous research, while also highlighting key contextual differences. In terms of convergence, BL in Ca Mau has expanded educational access for students in remote areas, aligning with UNESCO's (2020) assertion that BL helps bridge the digital divide. The emphasis on pedagogical innovation to foster learner autonomy and active participation reflects the perspectives of Graham (2006) and Vaughan & Garrison (2008), who advocate for building learning communities. Technologically, the study underscores the need to develop digital content and online learning management systems, consistent with findings by Hien et al. (2024) and Ghaida et al. (2011) regarding ICT integration in teacher education.

However, the study also identifies several divergences Ca Mau faces challenges stemming from discrepancies in perception between administrators and teachers as well as limited parental engagement-factors not addressed in prior studies. Infrastructure limitations and incomplete software systems are also prominent issues, whereas Wongwuttiwat et al. (2020) report positive outcomes using SIMnet in Thailand while acknowledging the need for further content development. Regarding teacher training, the study recommends enhancing digital competencies, echoing Oliiar & Fomin's (2022) view that BL supports professional development but requires technological proficiency and familiarity with flipped classroom models. Finally, Oliver & Trigwell (2005) caution that without clearly defined learning objectives, BL may become conceptually ambiguous - a concern not raised in the Ca Mau study but worth considering in future implementation.

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Based on the findings regarding the current state of BL implementation in high schools across Ca Mau province, several key strategies are proposed to enhance its effectiveness:

Raise awareness and promote mindset change among educators: First and foremost, it is essential to strengthen advocacy and awareness-raising efforts targeting school administrators and teachers. These efforts should emphasize the pedagogical benefits and long-term advantages of BL in improving teaching and learning quality, thereby motivating educators to embrace innovation in instructional methods.

Enhance school-family collaboration: Effective BL implementation requires stronger partnerships between schools and students' families. Regular communication, mutual understanding and shared responsibilities in supporting students' learning at home are vital. Schools should facilitate parent engagement through consistent updates and digital communication platforms.

Invest in a unified and user-friendly LMS: Schools should prioritize the adoption of a standardized, accessible and copyright-compliant LMS. Such a system will ensure smooth navigation, effective course tracking and reliable management of daily learning activities for both teachers and students.

Provide comprehensive professional development and support: Specialized training programs for teachers should be designed to develop their digital pedagogy skills, including the effective use of educational technologies and instructional design tools. Schools must allocate adequate time and resources for teachers to adapt and design BL courses. Similarly, students should be guided to proficiently use online learning tools to foster greater autonomy and self-directed learning.

Innovate pedagogical practices: Teachers are encouraged to creatively integrate diverse teaching methods, balancing synchronous (in-person) and asynchronous (online) learning. Incorporating interactive activities, group discussions and collaborative projects can enhance student engagement, critical thinking and cooperative learning. Additionally, regular personalized feedback and timely recognition of student achievements can increase learner motivation, boost confidence and improve academic performance.

Support digital content development through policy and funding: Finally, local educational authorities and schools should formulate policies and allocate appropriate budgets to support the development of high-quality digital learning materials. This investment is crucial to promote pedagogical

innovation and meet the growing demands of education in the digital era.

4. Conclusion

This study provides a comprehensive overview of the current status, benefits and challenges of implementing BL in high schools in Ca Mau province. The evidence suggests that while there is general optimism among educators regarding the potential of BL, systemic barriers related to infrastructure, professional development, digital content and stakeholder collaboration remain significant. Addressing these challenges requires coordinated efforts from policymakers, school leaders, teachers and families. A well-resourced, inclusive and pedagogically sound implementation of BL can contribute not only to improving learning outcomes but also to advancing educational equity and innovation in Vietnam's secondary education system. A limitation of this study is its predominant reliance on quantitative data. Future extended research will strengthen the integration of both quantitative and qualitative data to enhance the depth and comprehensiveness of the findings.

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