International Journal of Teaching and Learning (INJOTEL) e-ISSN: 3025-8308
Vol. 3 No. 11 (2026), pages: 96~114

BENEFITS AND CHALLENGES OF IMPLEMENTING BLENDED LEARNING: A LITERATURE REVIEW

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Abstract

This study aims to explore the key benefits of blended learning in educational institutions and the challenges educators/teachers and students face in the implementation of blended learning. With the use of a systematic literature review, 25 research papers were synthesized. To ensure a rigorous selection of relevant research studies on the topic while remaining flexible to include diverse views, this study followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) framework across multiple databases, including Google Scholar, Scopus, and Mendeley. The research revealed that blended learning benefits students in a few different ways, e.g., increased autonomy, greater flexibility, inclusivity, support for diverse learning styles, and development of transferrable skills. There are also some challenges that both students and teachers still have to face. Internally, students are faced with distractions, especially from social media, and feelings of isolation, while teachers deal with resistance to change, low self-confidence, and increased workload. Externally, there is still a technological divide between rural and urban areas, a lack of teachers' involvement in the decision-making process, and a lack of clear policies and strategic direction within educational institutions.

Keywords: Benefits, challenges, blended learning, secondary schools, higher education

INTRODUCTION

The rise of digital technology in the past ten years has single-handedly transformed many areas of our lives, including how we learn and consume information. The availability of digital tools in schools has fundamentally changed the education landscape, facilitating students to access, create, and share knowledge beyond the boundaries of traditional classrooms. This shift requires us to redefine pedagogical strategies to leverage the full potential of technology in schools (Bates, 2019). Some digital tools have been developed in the education sector to help teachers deliver lessons, increase student autonomy, enhance academic process management, promote collaboration, and improve communication between teachers and students. During the COVID-19 pandemic, video conferencing tools such as Zoom and Google Meet became popular and widely used as teaching platforms to replicate face-to-face classes (Bailey, Almusharraf, & Almusharraf, 2022).

Two years into the pandemic, these tools were used to support blended learning as schools reinstated in-person classes. Blended learning is one of the teaching and learning models approved by many educationalists and research scholars that appeared to be the most viable and best-fit solution for educational institutes for at least a few months after the pandemic (Saboowala & Mishra, 2021). As schools were still under

strict health protocols, they were not allowed to operate at full capacity, leaving half of each school's students and staff having to learn and work from home. Since then, the blended learning model for students has regained momentum and is widely used across the world. K-12 schools often use a rotation model in their implementation of blended learning, where students have to alternate between attending online learning and in-person class sessions (Halverson et. al., 2017). Blended learning refers to a pedagogical approach that blends traditional face-to-face instruction with online learning experiences (McCarthy & Palmer, 2023). Blended learning models enable students to join classes remotely, enabling students in remote or underserved regions to access education without the constraint of physical attendance.

According to Lv et al,. (2024), the evolution of blended learning began in the early 2000s, made possible by advancements in digital technology and the rise of Learning Management Systems (LMS) that allowed institutions to integrate online and face-to-face instruction. Blended learning comes in various forms, with each specified to different learning goals and contexts, including the Rotation Model, Flex Model, A La Carte Model, Enriched Virtual Model, and HyFlex Model. First, the Rotation Model requires students to experience a structured shift between various learning methods within a subject or course. In this model, the teacher gets to schedule and decide when the rotation model is used. Various class activities range from small-group or full-class instruction, group projects, individual tutoring, and traditional pencil-and-paper assignments (Kömür, Kılınç, & Okur, 2023). Second, unlike the Rotation Model, the Flex Model engages students primarily in online learning while having continuous access to meet teachers face-to-face for support as needed (Haque, 2024). The Flex Model also offers constant support where students advance based on mastery rather than a traditional time-based approach (Devanaki, 2024). Third, in the A La Carte model, students can choose to attend some classes in a traditional face-to-face format while taking one or more classes fully online (Joshi & Khan, 2024). Fourth, in the Enriched Virtual Model, classes are held online, with some periodic in-person classes meant as reinforcement (Haque, 2024). Of all the different blended learning models, the Enriched Virtual Model enables students to have greater autonomy over their learning and allows them to complete coursework primarily online, supported by scheduled in-person meetings with teachers (Joshi & Khan, 2024). Fifth, in contrast to the Enriched Virtual Model, the HyFlex Model, more popularly known as hybrid flexible learning, is a type of blended learning that affords students the flexibility to attend classes either in person or remotely (Kömür, Kılınç, & Okur, 2023).

This study on blended learning is expected to provide new insights for teachers and educators on the effectiveness and challenges surrounding the implementation of blended learning. For policymakers, this study seeks to provide a deeper understanding of policy formulation on digital infrastructure and teacher training programs with a focus on the effective integration of technology in classrooms. For schools and other educational institutions, this study is intended to encourage them to ensure equitable access to technology and infrastructure readiness. Besides that, institutions ought to establish clear guidelines for the smooth implementation of blended learning.

Despite numerous studies published on blended learning, there is still a lack of consolidated research that critically assesses both its benefits and challenges. This study

aims to bridge the gap by comprehensively synthesizing existing findings on this topic and providing a comprehensive outlook on the benefits and challenges associated with the implementation of blended learning and its implications for educators, policymakers, and institutions. The following research questions guided the systematic review:

1. What are the key benefits of implementing blended learning in education?
2. What challenges do educators and students face in the implementation of blended learning?

RESEARCH METHODS

This study used a systematic literature review approach to synthesize studies on the benefits and challenges of implementing blended learning. To ensure a rigorous selection of relevant research on the topic while remaining flexible to include diverse views, this study followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) framework across multiple databases, including Google Scholar, Scopus, and Mendeley.

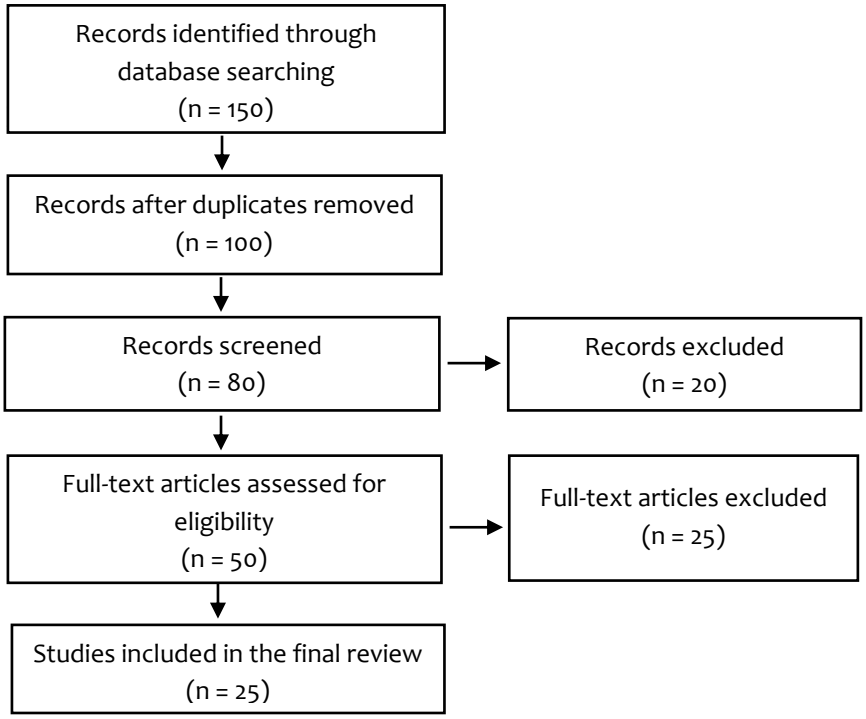

Figure 1

A systematic search was conducted using Boolean operators (AND, OR, and NOT) and keywords related to blended learning. The search was formulated as follows:

Figure 2

The search was focused on research papers published between 2010 and 2025. To maintain relevance, research publications were included only if they fulfilled some key criteria, including researching on the blended learning model at the secondary level

or university levels, reporting on the benefits and challenges in blended learning implementation, using qualitative, quantitative, and mixed-methods research designs, and being published in reputable academic journals. Conversely, the researcher

Topics	Search terms (Boolean operator: OR within each topic, AND between topics)
Blended Learning	"blended learning" OR "mixed-mode learning" OR "hybrid learning"
Benefits & Effectiveness	"benefits" OR "positive outcomes" OR "effectiveness"
Challenges & Limitations	"challenges" OR "issues" OR "limitations"
Education Level	"secondary schools" OR "higher education"

excluded studies that focused on the implementation of blended learning in informal education centers or primary schools, or if they were editorials, opinion-based, non-peer-reviewed articles, and lacked clear research objectives and methodology.

Inclusion/ Exclusion Criteria	Assessment
Criteria 1: Are the studies about the benefits and challenges of blended learning implementation?	yes/ no
Criteria 2: Were the research papers published in reputable academic journals?	yes/ no
Criteria 3: Are the studies focused on the implementation of blended learning in secondary and/or higher education?	yes/ no
Criteria 4: Are they editorials?	yes/ no
Criteria 5: Are they opinion-based?	yes/ no
Criteria 6: Are they non-peer-reviewed articles?	yes/ no
Criteria 7: Do they lack clear research objectives and methodology	yes/ no

Figure 3

Once articles had been collected, thematic analysis was carried out inductively, and recurring themes were identified surrounding the benefits and challenges. To ensure validity and reliability, the Critical Appraisal Skills Program (CASP) checklist was used to assess the quality of the collected research articles with qualitative and mixed-method research designs and the Cochrane Risk of Bias tool for articles with qualitative research design.

Findings

There was a total of 25 studies included in this study, with 10 qualitative research, 1 quantitative research, 1 survey, 4 mixed method research, and 10 literature review studies. The majority of these studies (n=17) were conducted in higher education, and some (n=2) in secondary school, while the rest (n=7) were in both K-12 and higher education.

Benefits of Implementing Blended Learning

Based on the studies collected and synthesized, blended learning is believed to have

Increased Flexibility

Studies	Methods	Education Level	Findings
(Namyssova, et al., 2019)	Mixed methods	Higher education	Blended learning provides an opportunity for students to be independent and autonomous in their learning, allowing them to study at their own pace.
(Tabassum, Moin, Abbas, & Kumbhar, 2024)	Quantitative	Higher education	Blended learning provides learners with the most current information, allows them to study at their own pace, offers live interviews and discussions over the network, reduces training costs, and improves learning effectiveness.
(Kyei-Akuoko, Mensah, Kuusongno, Yalley, & Amponsah, 2024)	Mixed-methods	Higher education	Blended learning provides students with some flexibility and individualization at the university

			level and enhances the student experience when properly incorporated. The use of blended learning offers learners the best of both worlds, online and traditional learning methods, because instructors and students have much greater flexibility and accessibility in accessing quality education.
(Fadde & Vu, 2023)	Qualitative	Higher education	The main benefit of blended learning is learners' ability to be in charge of their own learning, including the flexibility to choose when and where they engage with course materials and activities.
(Kanwal, Zahid, & Afzal, 2023)	Mixed-methods	Higher education	Blended learning is a promising approach for reducing educational disparities and enhancing access to quality education, especially in underserved regions. It provides

			flexibility, especially for non-traditional learners, such as working adults or those with family responsibilities, enabling them to pursue higher education.
(Kumi-Yeboah, 2014)	Literature Review	K-12 education	Students have the flexibility of participating in class either online or in-person/in-class instruction that may suit their learning style.
(Fatima & Chibb, 2023)	Literature Review	Higher education	Blended learning allows more learners to be enrolled in higher education without substantially increasing campus facilities.

Figure 4

Improved Student Engagement

Studies	Methods	Education Level	Findings
(Hesse, 2017)	Literature review	K-12 education	Blended learning is believed to be effective in improving students' engagement, achievement, and perceptions regarding learning in general.

(Joshi, Sridhar, Zalte, & K, 2023)	Literature review	K-12 education & higher education	Blended learning positively influences student engagement by promoting active participation, self-directed learning, and collaborative interactions.
(Moreira & Lima, 2024)	Literature review	K-12 education & higher education	Blended learning has the potential to improve student engagement and autonomy.
(Halverson & Graham, 2019)	Literature review	K-12 education & higher education	Blended learning has a huge potential to support cognitive engagement through reflection and critical discourse.
(K. & Maskari, 2018)	Qualitative	Higher education	Students participating in blended learning are believed to have improved engagement, autonomy, and flexibility.

Figure 5

Better Knowledge Retention

Studies	Methods	Education Level	Findings
(Fan, et al., 2023)	Literature review	K-12 education & higher education	The study compared retention rates and success between students enrolled in blended courses and those in

			traditional courses. The results indicated that blended learning environments positively impact student retention and success rates.
(Basque & Pudelko, 2010)	Qualitative	K-12 education & higher education	The study concluded that the implementation of the blended learning model resulted in higher retention rates among students compared to traditional in-person classes. In addition, students were appreciative of the flexibility and relevance of course content, which contributed to their continued enrollment and completion.

Figure 6

Develops Digital Literacy Skills

Studies	Methods	Education Level	Findings
(Dewi & Fatkhiyani, 2021)	Experimental	Higher education	The n-gain test results reveal that for increasing digital literacy after applying blended learning, the n-gain obtained was 0.56 in

			the medium category, which indicates a moderate improvement in digital literacy following the implementation of the blended learning model.
(Puniatmaja, Parwati, Tegeh, & Sudatha, 2024)	Quasi-experimental	High school	The results of the study show there is a correlation between e-learning and students' digital literacy.

Figure 7

Challenges in the Implementation of Blended Learning

Internal Challenges

Studies	Methods	Education Level	Findings
(Muhria, Supriatna, & Nurfirdaus, 2023)	Literature review	K-12 education & higher education	Two major challenges students face are self-regulatory issues and the difficulty of learning technology.
(Li, 2022)	Mixed-methods	Higher education	Being physically present had a significant impact on the sense of community students have with other school members, and interaction was a full mediator between social presence and

			sense of community.
(Ali, 2021)	Qualitative	Higher education	Results reveal that during the implementation of blended learning, teachers may encounter several challenges, including teacher resistance, teacher low self-efficacy, increased teacher workload, and lack of readiness.

Figure 8

External Challenges

Studies	Methods	Education Level	Findings
(Gulati, Shastri, & Patil, 2024)	Qualitative	Higher education	Implementing blended learning in online higher education in India is met with challenges. The ongoing digital divide, which is especially visible in rural regions with limited internet connectivity, is one of the most pressing of these concerns.
(Shah, et al., 2024)	Qualitative	Higher education	Three main challenges faced by teachers of postgraduate blended learning programs, include (a) Skills: digital, instructional, and online class

			management, and (b) administrative barriers in terms of resources training, and (c) faculty resistance.
(Hill & Smith, 2023)	Qualitative	Higher education	Similarly, a pre-pandemic review of UK universities revealed that blended learning was not prominently embedded in institutional strategies; experts emphasized the need for strong strategic leadership, governance structures, and support systems to enable large-scale adoption. Without top-down support and alignment with institutional goals, individual efforts remain isolated, making it hard to scale or sustain blended learning.
(Ma'arop & Embi, 2016)	Literature review	Higher education	Instructors/teachers find it challenging to design a curriculum for blended courses, deciding what to teach online and in-person and how to align both modes.

(Abel V. Alvarez, 2020)	Qualitative	Higher education	An effective implementation of blended learning requires teachers and students to be well-prepared to use new technologies and pedagogies. However, many institutions implement blended learning without sufficient training or professional development.
(Nguyen, Philipsen, Muls, Wang, & Lombaerts, 2020)	Qualitative	Higher education	An effective implementation of blended learning calls for clear policies and guidelines to support and standardize blended learning, but many institutions lack them.

Figure 9

Discussion

The findings indicate that blended learning offers a range of benefits to students. First and foremost, blended learning affords students the autonomy and flexibility to be in charge of their own learning and go along at their own pace. It also provides a chance for students to benefit from digital resources that they do not normally find in in-person class sessions while, at the same time, they can alternately partake in in-person discussions and more hands-on class activities, making learning more enriching for students (Namyssova, et al., 2019). Aside from that, not all students are able to take the traditional academic path, especially at the college level. A few college students are working professionals, parents, or people with other responsibilities, which prevents them from attending on-campus classes full-time. Blended learning makes it possible for them to balance their academic duties and off-campus responsibilities.

Beyond offering flexibility and access, another benefit of blended learning is that it improves students' engagement and overall participation during class sessions. According to Garrison and Vaughan (2008), the integration of in-person and online learning experiences enhances students' engagement by cultivating a culture of critical thinking and inquiry where students actively collaborate with their peers. This is supported by Dziuban et al. (2018), who said that blended learning supports diversified learning styles, which leads to enhanced engagement as students are in charge of their own learning without intensive supervision by teachers while being supported by attending in-person classes.

In addition to promoting engagement, blended learning contributes to deeper and more sustained retention of course material. Means et al. (2010) asserted in light of the synergistic effect of the flexibility of attending online classes and the accountability of attending in-person classes, students registered in blended have higher retention rates. Asynchronous discussions taking place online enable students to reflect on the course content at hand, leading them to retain information, even complex ideas, while the continuous use of blended assessment modes such as quizzes help create a feedback loop that solidifies understanding (Vaughan, 2014). Blended learning also affords students the ability to revisit online materials such as recorded classes, which reduces their anxiety and strengthens their retention of topics discussed, addressing knowledge gaps and promoting retention (López-Pérez et al., 2011).

Alongside improved retention, due to their constant exposure to technology and online resources, students enrolled in blended learning classes are more digitally literate than their peers. The skills students acquire are not just technical competence but also critical engagement to assess digital environments, which is a competency cultivated through blended learning's hybrid structure (Martin & Grudziecki, 2015). Similarly, according to Messaoudi (2024), blended learning significantly improved undergraduate students' digital literacy, and the blended learning model could be potentially replicated in other educational settings with minimal resource investment.

Despite all the benefits of blended learning, there are some remaining internal challenges that students and teachers still have to deal with along the way. For students, although blended learning fosters autonomy and responsibility, they still face obstacles such as distractions from social media, which affect their concentration and study planning (Lobos et al. 2024). Some students may also lack the technological literacy to leverage the full potential of blended learning (Sareen & Mandal, 2024). In some instances, limited social interaction may lead students to feelings of loneliness, with some still questioning if the tools have added value to their social interaction (Pei et al., 2024). Among teachers, challenges include resistance to change (Jeffrey, Milne, & Suddaby, 2014), low self-efficacy (Ali, 2024), increased workload (Zhao & Song, 2021), and lack of readiness (Kaban et al., 2024).

Beyond individual-level challenges, some external factors are also prevalent. Firstly, there are challenges in terms of accessibility to current technologies. Sometimes, the shift towards blended learning from a more traditional in-person system does not achieve the intended results but further exacerbates learning inequality among students, especially those from rural areas (Srivastava, 2023). Secondly, teachers and faculty are still resistant to change and have low self-efficacy, which become significant barriers to the implementation of blended learning. Resistance often happens among teachers for two reasons: Teachers are not involved, or teachers' involvement is very minimal in the decision-making process for the adoption of blended learning (Ali, 2024). Thirdly, there is a gap between teachers' competence and what is required to conduct a blended-learning class. The adoption of blended learning requires technological expertise, and not all teachers have that (Shah, et al., 2024). Fourthly, teachers find it difficult to design their teaching using this new model and often struggle to decide what to teach offline and online. Fifthly, institutions often lack clear policies and guidelines to support and standardize blended learning. Educational institutions should define an institutional approach to blended learning and foster a common understanding of what success will look like (McCarthy & Palmer, 2023).

CONCLUSION

Through the use of blended learning, students are afforded the chance to be more in charge of their own learning with greater autonomy, flexibility, and control. Blended learning also supports inclusivity, particularly by providing quality education for working professionals and people with demanding responsibilities. Due to the differentiated learning styles facilitated by blended learning, students are more engaged and are more likely to retain information they receive. Other than that, students also get to develop not only technical skills but also digital skills, which are transferrable skills for lifelong learning and future professional success in the 21st century.

However, both students and teachers are still facing some challenges during the implementation of this learning model. Internally, students often struggle with, among other things, distractions and feelings of isolation, while teachers often experience resistance, low self-confidence in their ability to use technology, and increased workload. Externally, students' and teachers' access to technology remains unequal, with significant differences in access to technology between urban and rural areas. In addition, not all educational institutions are transparent in their plans, as sometimes teachers are not involved or only have minimal involvement regarding the implementation of blended learning. Lastly, educational institutions often lack standardized policies, strategic direction, and training support for effective implementation.

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