

Blended learning in Yemen: A systematic review of key themes, emerging trends, and future directions

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Highlights	Abstract
- Blended Learning (BL) is gradually being adopted in Yemen's higher education sector. - Technological limitations and inconsistent pedagogical practices remain major challenges. - Policy reform and expanded research across all educational levels are urgently needed.	The landscape of higher education in Yemen is undergoing transformation, driven by protracted conflict and infrastructural collapse. In this context, Blended Learning (BL) has emerged as a potential yet challenging solution to ensure educational continuity. This study presents a systematic literature review (SLR) to analyze the state of BL in Yemeni higher education. Following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines, a comprehensive search yielded an initial 582 records, which were systematically screened, resulting in 8 empirical studies for in-depth analysis. Thematic synthesis of these studies revealed three core themes: (1) Pervasive Technological and Infrastructural Barriers, including unreliable electricity, poor internet connectivity, and lack of access to devices; (2) Challenges in Pedagogical Adaptation and Student Engagement, highlighting difficulties in shifting from traditional teacher-centric methods to student-centered blended pedagogies; and (3) Deficiencies in Institutional Readiness and Policy, indicating a significant gap in strategic planning, faculty training, and supportive policies. The discussion interprets these findings through the lens of the Technology Acceptance Model (TAM) and the Community of Inquiry (CoI) framework, contextualizing Yemen's unique challenges against global BL research. The study proposes a research agenda and policy recommendations to support a resilient BL ecosystem in Yemen.
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1. Introduction

Blended learning (BL), the thoughtful integration of face-to-face and online modalities, has become a central feature of contemporary educational reform worldwide (Ahmed & Zaini, 2022; Graham, 2006). It introduces a variety of digital technologies into traditional teaching methods that facilitate learning anytime, anywhere, and at any pace (Allen & Seaman, 2013). By combining the strengths of synchronous, in-person interaction with the flexibility of asynchronous, technology-mediated activities, BL promises to enhance student engagement, personalize learning pathways, and extend educational access (Garrison & Vaughan, 2008). While its adoption has been widespread in developed nations, its implementation in developing countries, particularly those affected by conflict, presents a unique set of opportunities and formidable challenges.

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The relevance of this study is sharply defined by Yemen's unique and challenging context. For over a decade, the country has been embroiled in a severe socio-political conflict, which has devastated its infrastructure and disrupted public services, including education (Hunger, 2023; OCHA, 2024). The country's higher education system has been severely crippled by the destruction of physical infrastructure, displacement of faculty and students, and a deepening economic crisis (Al-Baadani & Abbas, 2020; UNICEF, 2024). Basic utilities, most notably electricity and internet connectivity, are sporadic and prohibitively expensive for a large segment of the population, rendering consistent online access a luxury rather than a given (USAID, 2023; The World Bank, 2023). Before the conflict, the higher education system in Yemen was highly dependent on traditional, face-to-face teaching models, with very limited investment in educational technologies or digital literacy training for educators and students.

In this dismal backdrop, the COVID-19 pandemic played the role of an unexpected accelerant that compelled an abrupt, and for the most part unwonted, shift toward remote and blended modes of delivery to ensure survival for many universities during this time (Al-Baadani & Abbas, 2020; Hamad, 2022). However, this emergency transition was not a strategic adoption of BL but rather a reactive one, commonly referred to as "emergency remote teaching" (Hodges et al., 2020). This revealed a blatant mismatch between the theoretical potential of BL and the practical limitations of Yemen. Despite being pitched as a panacea for resilience and continuity, the effective implementation of BL comes with a prerequisite of a stable base of infrastructure, institutional support, and pedagogical preparedness—all of which are grossly compromised in Yemen.

Despite growing interest in BL as a potential lifeline for Yemeni higher education, the academic discourse on this topic is fragmented and nascent. Several individual studies have begun to explore particular facets of BL implementation in various universities in Yemen; however, no comprehensive synthesis yet exists of this emerging evidence. In the absence of a clear overview of key themes, documented challenges, and successful strategies, it is hard for policymakers, university administrators, and educators to make informed decisions. This results in a major gap: developing a strategic approach, aware of the context, to leveraging BL in Yemen's post-conflict educational reconstruction. This systematic review fills this important gap by providing a synthesis of existing empirical research on BL in the Yemeni higher education setting.

The study is guided by the following research questions:

1. What are the key themes and challenges associated with the implementation of blended learning in the Yemeni higher education context as reported in the empirical literature?
2. What are the emerging trends in blended learning practices and technologies documented in studies on Yemen?
3. What are the implications of the current body of research for policy, practice, and future scholarly inquiry into blended learning in Yemen?

2. Methodology

2.1. Research Design

This study employed a systematic literature review (SLR) design, following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines (Page et al., 2021). The SLR methodology was selected for its rigorous and transparent approach to identifying, selecting, critically appraising, and synthesizing all relevant research on a specific topic. This design ensures a comprehensive and unbiased summary of the extant literature on BL in Yemen.

2.2. Search Strategy

A comprehensive search strategy was developed to identify relevant studies published up to December 2024. The search was conducted across four major electronic databases known for their coverage of education, technology, and social sciences: Scopus, Web of Science, ERIC, and Google Scholar. The search strategy was intentionally broad to capture all potentially relevant literature, combining keywords related to the educational model, geographical context, and educational level. The search strategy employed Boolean combinations of terms including ("blended" OR "hybrid") AND ("Yemen" OR "Yemeni") AND ("education" OR "higher education" OR "university" OR "college"). The term "blended" was chosen over "blended learning" to ensure broader coverage, as this approach is variably described in the literature (e.g., "blended teaching," "blended instruction," or "blended education"). Using this keyword allowed for a more comprehensive search during the screening phase.

2.3. Inclusion and Exclusion Criteria

Studies were selected for inclusion based on a predefined set of criteria, detailed in Table 1.

Table 1.

Inclusion and Exclusion Criteria.

Criterion	Inclusion	Exclusion	Justification
Focus	Primary focus on the design, implementation, perception, or outcomes of blended learning.	Studies focusing exclusively on e-learning/online learning without a face-to-face component, or mentioning BL only in passing.	Ensures the review focuses on the hybrid model of BL, maintaining conceptual clarity.
Context	Study conducted within the Yemeni higher education sector (universities, colleges).	Studies focused on K-12 education, corporate training, or non-Yemeni contexts.	Addresses the study's aim to analyze BL within the specific challenges of Yemeni higher education.
Study Type	Empirical studies (qualitative, quantitative, or mixed-methods).	Editorials, opinion pieces, theoretical papers, book reviews, conference abstracts without full text.	Ensures the synthesis is based on verifiable, research-based evidence.
Language	Published in English or Arabic.	Studies published in other languages.	Ensures replicability and access to the majority of relevant scholarly work.
Accessibility	Full-text article available for review.	Full-text not accessible.	PRISMA mandates transparency; unavailable full texts risk incomplete analysis.

A pragmatic decision was made to include empirical studies that investigated 'E-learning' or 'Online Learning' within a formal education setting in Yemen. This has been done with strict conditions, including that the context or implementation described include a combination of traditional face-to-face and online components, in line with the core definition of blended learning (Garrison & Kanuka, 2004). This approach was necessary to capture the nascent body of relevant literature, where the terminology is often used interchangeably or reflects a preliminary stage of BL adoption. Therefore, studies that reported purely distance or fully online models with no in-person element were excluded from the review.

2.4. Study Selection and Data Extraction Process

The study selection process followed a multi-stage screening approach, as illustrated in the PRISMA flow diagram (Figure 1). Initially, all identified records were imported, and duplicates were removed. The titles and abstracts of the remaining records were then screened independently against the inclusion criteria.

Following this, the full texts of the potentially eligible articles were retrieved and assessed for final inclusion.

The high rate of exclusion at the full-text screening stage (93 of 101 articles) required justification. The initial broad search strategy was intentionally employed due to the known scarcity of research specifically using the term "blended learning" in the Yemeni context. This resulted in the retrieval of many articles that used related terms like "e-learning" or "online learning." Upon full-text review, the vast majority of these were excluded for one of the following reasons: (a) they described purely online or distance learning models with no integrated face-to-face component; (b) they were opinion pieces or proposals for BL rather than empirical studies of its implementation; or (c) they mentioned "blended learning" only peripherally in the introduction or conclusion without it being the focus of the research. The rigorous application of inclusion criteria ensured the selection of studies directly and empirically examining BL were included in the final synthesis, leading to a smaller but highly relevant set of 8 studies.

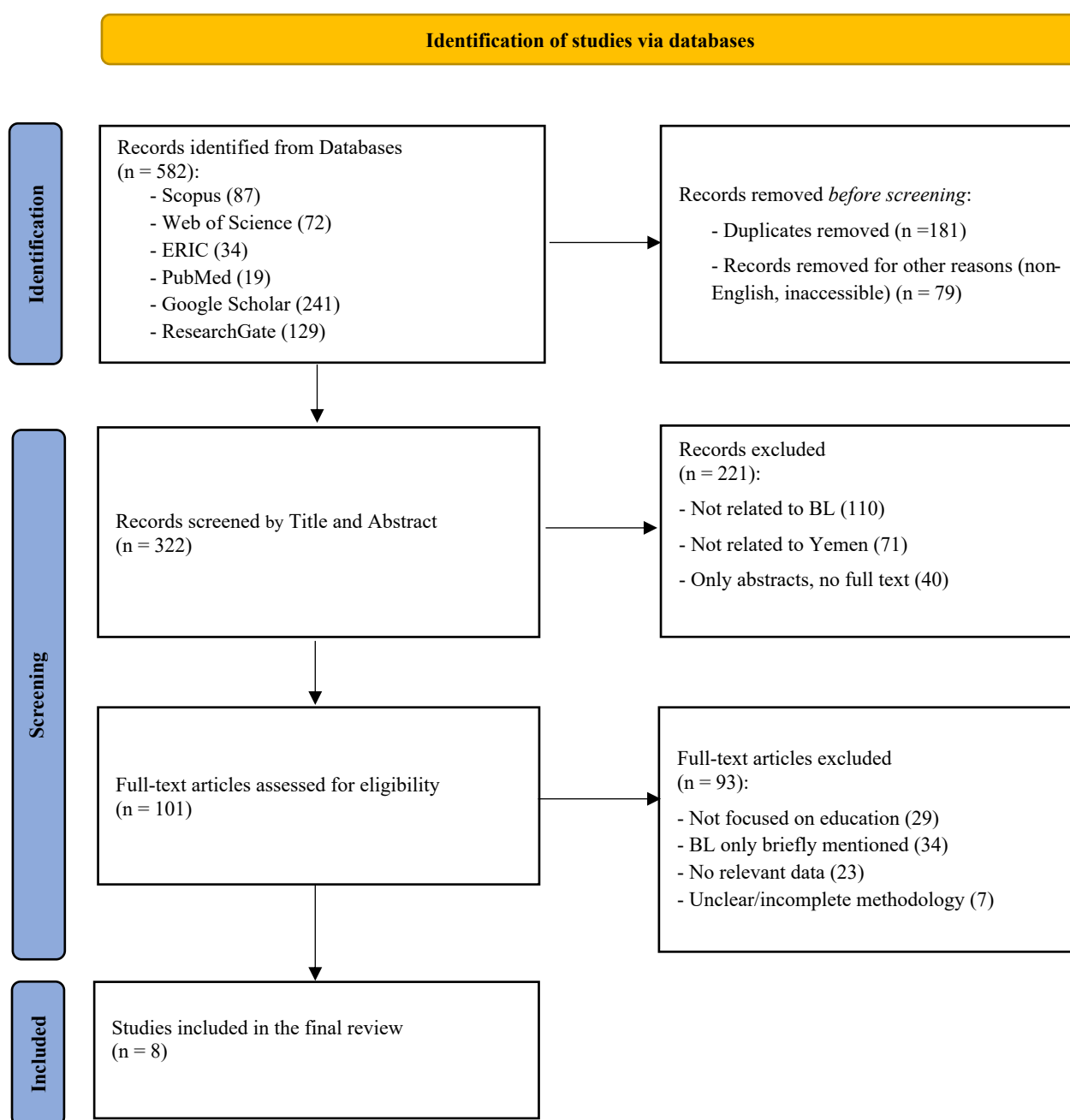


Fig. 1. PRISMA 2020 Flow Diagram for Study Selection

As shown in Figure 1, the flowchart outlines each step of the study selection process for this systematic review on BL in Yemen, including the identification, screening, eligibility, and inclusion phases. It provides a clear overview of the number of records removed at each stage and specifies the reasons for exclusion, ensuring transparency and adherence to the PRISMA 2020 reporting standards.

2.5 Data Analysis and Synthesis

A data extraction form was developed to guide data extraction to ensure that key information was systematically collected from each of the eight included studies. Data extracted included: author(s) and year, study objectives, research design/methodology, participant characteristics, key findings relating to BL, and challenges reported. To analyze and synthesize the findings, a thematic synthesis approach was undertaken (Thomas & Harden, 2008). This consisted of three stages: (1) free line-by-line coding of the findings and discussion sections of each paper to capture all relevant concepts; (2) organizing these "free codes" into related areas to construct "descriptive themes"; and (3) developing higher-order "analytical themes" which interpret and synthesize the descriptive themes across all studies, directly addressing the research questions of this review. This was done to identify recurrent patterns and higher-order insights from the corpus of evidence collected.

3. Review Findings

The systematic search and screening process yielded a final corpus of eight empirical studies that met the inclusion criteria. These studies, published between 2016 and 2024, provide a nascent but critical window into the state of blended learning in Yemen. The characteristics of these eight studies are synthesized in Table 3. Most studies focused on higher education (87.5% of studies), with only one study (Qasem & Viswanathappa, 2016) addressing the secondary level, highlighting a significant gap in the research landscape.

The thematic synthesis of these eight studies revealed several major, interconnected themes. The most prominent were: (1) Pervasive Technological and Infrastructural Barriers, (2) Challenges in Pedagogical Adaptation and Student Engagement, and (3) Deficiencies in Institutional Readiness and Policy Gaps. The evolution in focus is also evident; earlier studies (e.g., Aldholay et al., 2018) often focused broadly on online learning systems and infrastructure, while more recent work (e.g., Al-Qudimi & Hameed, 2024; Alaidaros et al., 2024) delves into specific pedagogical perceptions and BL models.

Table 2.
Synthesis of Included Empirical Studies on Blended Learning in Yemen

Author(s) & Year	Research Design & Participants	Context & Focus	Key Relevant Findings
Alaidaros, Bakahakam, & Abdulrhman (2024)	Quantitative; Students (n=210), Institutional reports	Higher Education; Students' Perspectives, Technology integration	Highlights engagement potential and tech challenges; suggests need for faculty training.
Al-Qudimi & Hameed (2024)	Mixed-methods; EFL students (n=150), Teachers (n=15)	Higher Education (EFL); Learners' perceptions and challenges	Reveals pedagogical adaptation challenges and positive student perception of flexibility.
Amrani et al. (2023)	Quantitative; Engineering students (n=300), Faculty (n=45)	Higher Education (Engineering); Barriers to technology use	Documents severe infrastructural and resource barriers as primary obstacle.
Ahmed & Zaini (2022)	Quantitative; University students (n=500), ICT staff (n=10)	Higher Education; Challenges of E-learning/BL	Identifies infrastructure and digital literacy as key challenges in BL's early stages.

Al-Mekhlafi et al. (2022)	Quantitative; University students (n=180), LMS logs	Higher Education; Perceptions, Attitudes, Challenges	Reports popularity of BL and its positive impact on performance, despite challenges.
Aldholay et al. (2020)	Quantitative; University students (n=400), Admin records	Higher Education; Impact of Leadership on Online Learning	Highlights the critical role of institutional leadership in successful implementation.
Aldholay et al. (2018)	Quantitative; University students (n=350), IT audits	Higher Education; Online learning usage & challenges	Focuses on foundational ICT infrastructure deficits and their impact on usage.
Qasem & Viswanathappa (2016)	Quantitative; Secondary teachers (n=60), Policy documents	Secondary Education; Teacher perceptions towards ICT integration	Provides a K-12 perspective, highlighting teacher readiness needs and policy gaps.

3.1. Theme 1: Pervasive Technological and Infrastructural Barriers

The most dominant and consistently reported theme across all eight studies is the profound challenge posed by technological and infrastructural deficits. This barrier operates at national, institutional, and individual levels. Every study, without exception, identified unreliable infrastructure as a primary impediment to effective BL. Amrani et al. (2023) and Ahmed and Zaini (2022) both provide extensive survey data from engineering and general university populations, showing that frequent power outages and poor, expensive internet connectivity are the top two challenges cited by both students and faculty. Aldholay et al.'s (2018) IT infrastructure audits offer a systemic perspective, quantifying the institutional shortcomings in server capacity and network reliability that form the fragile backbone of any digital learning initiative.

Apart from connectivity, the lack of personal access to appropriate devices is another critical issue. Al-Mekhlafi et al. (2022) reported that whereas many students owned smartphones, a large number did not have laptops or personal computers, which greatly complicates more complex tasks such as writing papers, participating in synchronous video sessions, and using specialized software. The need to use mobile devices for all online components of a BL course inherently limits the pedagogical possibilities and can exacerbate issues of equity. Synthesizing these findings, it is clear that this foundational layer, required for any form of digital learning, is fragile and inequitable in Yemen, a reality shaping all other aspects of the implementation of BL. This directly addresses the first research question on infrastructure as the most significant and universal challenge.

3.2. Theme 2: Challenges in Pedagogical Adaptation and Student Engagement

The second major theme relates to the human and pedagogical dimensions of shifting to a blended model. It is suggested that the transition is not simply one of adding technology to existing courses but requires a fundamental shift in teaching philosophy and practice, a shift for which many are unprepared. Al-Qudimi and Hameed (2024), in their mixed-methods study on EFL learners, found that faculty, accustomed to traditional lecture-based teaching, struggled to redesign their courses for a BL environment. They often resorted to "content dumping", simply uploading PDFs of lecture notes to an LMS, without creating interactive or engaging online activities that would foster a community of inquiry. This represents a critical lack of pedagogical training in instructional design for BL.

From the perspective of students themselves, engagement and motivation arise as critical issues. Alaidaros et al. (2024) emphasized that even though students perceived BL as a means to enhance education quality, keeping consistent engagement was a challenge. Al-Mekhlafi et al. (2022) pointed out that despite the increasing use of BL approaches, students reported feelings of isolation, technical frustration, and a perceived lack of instructor presence in the online components of their courses, which affected satisfaction negatively. This is further reflected in the context of secondary education by Qasem and Viswanathappa

(2016), who identified teachers' perceptions of their own limited ICT integration skills to be a major barrier, which indeed suggests that these pedagogical challenges are systemic across educational levels. The findings under this theme address both the first and second research questions by detailing the pedagogical challenges and point to an emerging understanding that for success, effective instructional design and not just access to technology is crucial.

3.3. Theme 3: Deficiencies in Institutional Readiness and Policy Gaps

The third theme synthesizes findings related to the organizational and strategic context. The evidence strongly suggests a widespread lack of institutional readiness and a vacuum of supportive policy. No single included study conducted a full institutional audit; however, the identified challenges and future directions paint a clear cumulative picture. Aldholay et al. (2020) emphasized the impact of transformational leadership on positive perceptions of online learning, implying that its absence is an important institutional barrier. Alaidaros et al. (2024) and Amrani et al. (2023) explicitly call for structured faculty training frameworks and institutional upgrades, showing that such support systems are therefore not yet in place.

These institutional weaknesses are further compounded by a lack of policy and coordination at the national level. Qasem and Viswanathappa (2016) pointed to the absence of clear policies supporting ICT integration for teachers at the secondary level, a gap that is most probably maintained in the national higher education strategy. The recurring recommendations across studies for "national policy alignment" (Aldholay et al., 2020), "BL integration in K–12 teacher training programs" (Qasem & Viswanathappa, 2016), and "scalability models" for rural universities (Alaidaros et al., 2024) all point towards a significant policy vacuum. Consequently, this vacuum creates uncertainty and discourages both faculty and institutions from investing the tremendous time and effort needed to develop high-quality blended courses. This theme directly addresses the third research question by highlighting the significant institutional and policy gaps with enormous implications for the sustainable and equitable development of BL in Yemen. This suggests that without strategic support, BL will remain fragmented and peripheral activity.

4. Discussion

This systematic review has synthesized the nascent body of empirical research on blended learning in Yemeni higher education, revealing a landscape characterized by massive infrastructural barriers, significant pedagogical challenges, and a severe lack of institutional strategy. Findings point to a picture not of a strategic educational innovation, but rather of a necessary, often-stumbling adaptation to crisis. The discussion interprets these findings by situating them within established theoretical frameworks and comparing them to the global literature on BL, while providing an in-depth look at their implications.

4.1. The Primacy of Context: Infrastructure and the Technology Acceptance Model (TAM)

The overwhelming focus of all reviewed studies on infrastructural deficits underlines an important point: in conflict-affected, low-resource contexts such as Yemen, the foundational layers of Maslow's hierarchy of needs for technology adoption have to be met first. The TAM, which conceptualizes user adoption as a function of Perceived Usefulness (PU) and Perceived Ease of Use (PEU) (Davis, 1989), needs recalibration in this context. Thus, even though Yemeni students and faculty may perceive BL as useful (PU) for ensuring continuity of education (Al-Mekhlafi et al., 2022; Alaidaros et al., 2024), their PEU is severely limited for reasons entirely beyond their control. Unreliable electricity, non-existent or unaffordable internet, and lack of devices (Amrani et al., 2023; Ahmed & Zaini, 2022) are not inconveniences; these are fundamental barriers that negate any potential ease of use.

Unlike in most global studies, where PEU relates to interface design or software complexity (e.g., Teo, 2011), in Yemen, it concerns the basic possibility of access. This points to the inclusion, for contexts like Yemen, of a foundational layer of "Perceived Accessibility" or "Infrastructural Feasibility" to be added to TAM. The "why" behind the persistence of these challenges is rooted in the country's decade-long conflict, which has systematically dismantled public services and the economy. Therefore, any discussion of BL

adoption cannot be divorced from this macro-political reality. Therefore, any discussion about the adoption of BL cannot avoid this reality at the macro-political level. That is to say, the Yemeni case provides an example whereby basic infrastructure and a functioning state are prerequisites for educational technology models from stable, high-resource settings to apply, with radical adaptation to offline-first, low-bandwidth solutions.

4.2. The Pedagogical Void and the Community of Inquiry (CoI) Framework

Second, the struggle with pedagogical adaptation is the review's second theme, which can be powerfully interpreted through the Community of Inquiry (CoI) framework. The CoI model postulates that a meaningful educational experience in an online or blended environment is created through the interaction of three core elements: Social Presence, Cognitive Presence, and Teaching Presence (Garrison et al., 2000). The findings from the Yemeni studies indicate that all three presences are severely compromised.

Teaching Presence, the design, facilitation, and direction of the learning process, is weak due to a lack of faculty training. The prevalent "content dumping" approach inferred from studies reporting limited use of interactive LMS features (Al-Mekhlafi et al., 2022) fails to provide the structure and guidance needed for effective learning. Social Presence, the ability of participants to project their personal characteristics and establish relationships, is crippled by the technological barriers inhibiting synchronous communication and collaborative activities that give rise to reports of student isolation (Al-Mekhlafi et al., 2022; Al-Qudimi & Hameed, 2024). Finally, Cognitive Presence, the extent to which learners are able to construct meaning through sustained reflection and discourse, cannot be achieved when the basic technological and pedagogical scaffolds are missing. This contrasts sharply with BL research in other contexts, which often focuses on optimizing the balance of these presences (Garrison & Vaughan, 2008). In Yemen, the challenge is not optimization but establishment. The critical implication is that faculty development must go beyond basic technology skills and focus intensely on instructional design strategies for building CoI in a low-bandwidth, asynchronous-first environment.

4.3. The Strategic Vacuum: A Call for System-Level Intervention

This third theme, that of the absence of an institutional and national strategy, may be seen as the most critical for its long-term sustainability. While BL adoption in Yemen is ad hoc and reactive, common to many developing countries where education technology deployment takes place, this is amplified by the crisis context. Even as global trends are set towards institutional mainstreaming with clear policies on quality assurance, faculty workload, and intellectual property (Graham et al., 2013), the context in Yemen reveals a policy vacuum. This lack of any guiding framework places individual champions to surmount immense challenges on their own, leading to burnout and inequitable provision.

This systemic gap is underlined by the collective call from the reviewed studies for "faculty training frameworks" (Alaidaros et al., 2024), "national policy alignment" (Aldholay et al., 2020), and "ICT integration in teacher training" (Qasem & Viswanathappa, 2016). The comparison with global research is stark: whereas universities elsewhere debate the optimal blend percentage, Yemeni institutions are struggling with the basic question of how to create a university-wide policy for something as basic as consistent internet access or foundational digital pedagogy training. This provides a strong basis for a twin-track approach: top-down leadership from the Ministry of Higher Education in the formulation of a national digital education framework addressing infrastructure and equity, and bottom-up capacity building within universities themselves to develop localized, realistic strategic plans for BL that empower faculty and support students.

5. Conclusion

This systematic review mapped, synthesized, and critically analyzed the empirical literature on blended learning in Yemeni higher education. The results indicated a field at its infancy, facing a triad of interconnected challenges: crippling infrastructural deficits, a significant pedagogical adaptation gap, and

a vacuum of institutional and policy support. Interpreting these findings using established theoretical lenses such as the Technology Acceptance Model and the Community of Inquiry framework, this review develops an explanation of not just the problems that persist but also why they do and how they interrelate.

This review's central contribution lies in the demonstration that BL, as implemented in a conflict-affected context such as Yemen, cannot be treated as some form of direct transfer of models emanating from the global North. The foundational assumptions underpinning mainstream BL research pertaining to stable infrastructure, digital literacy, and institutional capacity are simply missing. Rather, what the case study of Yemen brings to light is that BL here is less an educational enhancement and more a tool for educational survival, one that requires a fundamentally different, context-first approach.

5.1. Limitations of the Study

The conclusions of this review must be considered in light of its limitations. This study is not without limitations, which also point at the state of the field itself. The most salient limitation relates to the small number of empirical studies that meet the inclusion criteria, $n = 8$. This represents the scanty, nascent, and fragmented academic studies on the topic in Yemen. This can constrain the generalization of the findings and underlines the dire need for more primary research. Second, publication bias cannot be ruled out because studies with positive or statistically significant findings are more likely to be published than reports documenting failures. Given that a majority of the studies depended on quantitative methods of data collection—essentially surveys—the deeper experiences of faculty and students cannot be captured in this way. There is a notable lack of in-depth qualitative or mixed-method studies that could provide richer insights into the nuanced, lived experiences of faculty and students navigating BL in this challenging environment. Lastly, the focus of the review is higher education; therefore, findings from it may not translate directly to K-12, which has its own set of unique challenges.

5.2. Implications and Future Research Directions

This synthesis has important implications both for scholarship and for education policy and practice in Yemen. For the research community, the findings suggest that the time has well and truly come to shift away from a purely diagnostic phase focusing on what the problems are and toward a prescriptive and solution-oriented approach. Future research should focus on design-based methods to design and empirically validate low-bandwidth, offline-first models of blended learning that are robust against Yemen's infrastructural challenges. Another key gap represented by the dominance of quantitative surveys in the extant literature is the pressing need for rich qualitative, phenomenological, and ethnographic approaches that can help shed light on the lived experiences, socio-cultural dynamics, and detailed decision-making processes of faculty and students negotiating this new pedagogical landscape. The focus of research also needs to be expanded beyond higher education to the K-12 level, as the challenges and potential solutions there will differ yet be critically important to establishing a foundation of digital literacy.

This has equally profound implications for policymakers, university administrators, and international partners. The persistent infrastructural deficits require a coordinated system-level intervention. This calls for a national blended learning framework led by the Ministry of Higher Education in concert with donors that explicitly addresses foundational issues: subsidized internet access for educational institutions, the deployment of solar-powered learning hubs, and clear quality assurance standards for digital education. At the institutional level, investment needs to be redirected from ad hoc technical training to sustained, comprehensive faculty development programs. These need to focus on pedagogical design for low-resource environments, creating a Community of Inquiry with limited technology, and managing cognitive load on students in unstable conditions. Finally, grassroots innovation through the support of local faculty champions to pilot and share contextually appropriate practices in their learning communities is important to build an organic, sustainable community of practice that can drive change from within the Yemeni academic ecosystem.

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