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FULL PAPER

Digital Literacy in EFL Contexts: Developing 21st Century Skills in Saudi Arabian Classrooms

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Abstract:

The global shift toward digital transformation, driven by the Fourth Industrial Revolution, has amplified the need for 21st-century skills such as digital literacy, critical thinking, and adaptability. In Saudi Arabia, these priorities align with **Vision 2030**, which emphasizes educational modernization to foster a competitive workforce and knowledge-based economy. This study examines the integration of digital literacy in Saudi EFL classrooms, focusing on pedagogical strategies, professional development (PD) needs, curriculum alignment, and barriers to technology adoption. A descriptive survey involving 150 EFL teachers from urban and rural schools reveals widespread use of basic digital tools but a lack of confidence in advanced technologies like AI-driven applications. Findings highlight gaps in teacher training, curriculum resources, and infrastructure, particularly in under-resourced regions. The study proposes actionable recommendations, including tailored PD models (e.g., workshops on AI tools, peer mentoring), standardized digital literacy assessment frameworks, and incentives to motivate teacher engagement. By bridging the disconnect between policy aspirations and classroom realities, this research contributes to enhancing digital literacy integration in EFL contexts, ensuring Saudi learners are equipped for global workforce demands.

Keywords: Digital Literacy; EFL Education; 21st-Century Skills; Saudi Arabia; Vision 2030; AI in Education

1. Introduction

The global shift toward digital transformation, accelerated by the Fourth Industrial Revolution, underscores the urgent need to equip learners with 21st-century skills such as digital literacy, critical thinking, and adaptability (World Economic Forum, 2020). In Saudi Arabia, this imperative aligns with **Vision 2030**, which prioritizes educational modernization to foster a knowledge-based economy and workforce readiness. Within English as a Foreign Language (EFL) education, digital literacy transcends linguistic competence, serving as a gateway to global communication and technological participation. However, integrating digital tools into Saudi EFL classrooms remains fraught with systemic challenges, including uneven teacher preparedness and infrastructural gaps. Drawing on insights from the *Future of Jobs Report 2020* and recent empirical studies, this paper examines Saudi Arabia's progress and obstacles in cultivating digital literacy, offering actionable recommendations for aligning policy, pedagogy, and professional development.

Saudi Arabia's educational reforms, such as the *National Transformation Program* and *Saudi Digital Education Action Plan*, reflect its commitment to embedding technology in classrooms. These initiatives aim to prepare students for a labor market where 50% of global employees will require reskilling in digital competencies by 2025 (World Economic Forum, 2020). In EFL contexts, digital tools—ranging from computer-assisted language learning (CALL) platforms to AI-driven applications—offer opportunities for immersive language practice, intercultural exchange, and personalized learning trajectories (Alresheed et al., 2016). For instance, Tyagi and Beena (2020) emphasize that ICT integration enhances learner autonomy and engagement through interactive multimedia resources, aligning with Saudi Arabia's goal of fostering self-directed learners.

Alshehri's (2025) survey of Saudi EFL teachers' highlights that 68% lack confidence in using digital tools pedagogically, citing gaps in professional development (PD) programs. Additionally, infrastructural disparities—such as limited internet access in rural schools and outdated hardware—hinder equitable implementation (Alresheed et al., 2016). These challenges mirror global trends identified in the *Future of Jobs Report 2020*, which warns that educational systems risk widening skill gaps if technological adoption is uneven.

Statement of the Problem

Saudi Arabia's Vision 2030 underscores the urgent need to cultivate 21st-century skills, including digital literacy, to prepare learners for a technology-driven global economy (World Economic Forum, 2020). Despite significant investments in educational technology, such as smart classrooms and e-learning platforms, Saudi EFL classrooms face systemic challenges in effectively integrating digital tools. Many teachers lack the confidence and pedagogical training to leverage technology for language instruction, while infrastructural constraints and uneven resource distribution further hinder implementation (Alshehri, 2025; Alresheed et al., 2016). This disconnect between policy aspirations and classroom realities risks widening gaps in learners' digital competencies, critical thinking, and communication skills—key pillars of Vision 2030.

Research Objectives

This study aims to:

1. **Investigate pedagogical approaches** for integrating digital technologies (e.g., online collaboration, flipped learning) in Saudi EFL classrooms.
2. **Evaluate the impact** of technology-enhanced language learning on students' digital literacy, critical thinking, and communication skills.
3. **Explore professional development (PD) needs** and effective strategies to empower Saudi EFL teachers in utilizing digital tools.
4. **Identify best practices** for aligning digital literacy with the Saudi EFL curriculum and assessment frameworks.

Research Questions

1. What pedagogical strategies are most effective in incorporating digital technologies (e.g., multimodal composition, AI-driven tools) into Saudi EFL instruction?
2. How do technology-mediated activities influence Saudi EFL learners' development of digital literacy and 21st-century skills?
3. What are the perceived gaps in Saudi EFL teachers' preparedness to integrate digital tools, and what PD models could address these gaps?
4. How can Saudi Arabia's EFL curriculum and assessment frameworks be restructured to institutionalize digital literacy in alignment with Vision 2030?

By synthesizing these insights, the research aims to bridge the gap between Saudi Arabia's Vision 2030 objectives and EFL classroom practices, ensuring learners acquire the digital literacy skills demanded by future economies (World Economic Forum, 2020).

2. Literature Review

2.1. Digital Literacy in EFL Contexts (Saudi Arabia)

The integration of digital literacy in Saudi Arabian EFL classrooms has garnered significant scholarly attention, driven by Vision 2030's emphasis on educational modernization and workforce readiness. This review synthesizes key findings from recent studies, focusing on four themes: (1) digital literacy frameworks in Saudi EFL contexts, (2) teacher preparedness and challenges, (3) learner competencies and skill development, and (4) multimodal and cross-cultural approaches.

2.1.1. Digital Literacy Frameworks in Saudi EFL Contexts

Research highlights Saudi Arabia's progress in embedding digital tools into EFL instruction. Alduwayghiri and Aljebreen (2024) found that tertiary EFL students perceive digital platforms (e.g., podcasts, interactive videos) as effective for enhancing listening skills, though disparities exist between urban and rural institutions. Similarly, Almuhammadi (2024) identified a growing emphasis on 21st-century skills in Saudi universities, with digital literacy fostering collaborative problem-solving and critical thinking. However, Alsmari (2021) revealed mismatches between

learners' self-assessed digital competence and actual performance, suggesting a need for standardized assessment frameworks. While Saudi policies promote digital literacy (e.g., *Madrasati* e-learning platforms), implementation remains uneven, particularly in under-resourced regions (Alshammari et al., 2020).

2.1.2. Teacher Preparedness and Challenges

EFL teachers' readiness to integrate technology is a recurring concern. Al-Awaid (2022) reported that 62% of Saudi EFL teachers lack confidence in using digital assessment tools, citing insufficient training as a primary barrier. Almusharraf and Engemann (2020) echoed this, noting that Saudi instructors often prioritize traditional pedagogies over multimodal approaches due to limited exposure to digital methodologies. Cross-cultural studies, such as Alharbi (2024), emphasize the need for culturally responsive professional development (PD) programs that address both technical skills and pedagogical adaptability. Few studies explore PD models tailored to Saudi teachers' needs (Soifah et al., 2021), particularly in rural or gender-segregated contexts.

2.1. 3. Learner Competencies and Skill Development

Digital literacy's impact on learners' skills is well-documented. Al-Seghayer (2020) found that EFL students with advanced digital literacy demonstrate stronger critical thinking and communication abilities, aligning with Vision 2030's human capital goals. Alshammari (2023) linked extramural digital practices (e.g., social media engagement) to increased willingness to communicate in English, suggesting informal digital spaces as untapped resources for language acquisition. However, Rinekso et al. (2021) cautioned that over-reliance on technology may undermine foundational literacy skills if not balanced with structured guidance. While tools like iPads enhance cognitive engagement (Alshammari et al., 2020), their efficacy depends on alignment with curricular objectives.

2.1. 4. Multimodal and Cross-Cultural Approaches

Multimodal digital literacy—using text, audio, and visual tools—is gaining traction in Saudi EFL classrooms. Marissa (2022) demonstrated that multimodal composition (e.g., digital storytelling) bridges out-of-school and classroom literacy practices, particularly for learners with developing proficiency. Similarly, Hazaea and Alqahtani (2020) highlighted the role of emergency remote learning during COVID-19 in accelerating digital media literacy. Cross-cultural studies, such as Iranmehr et al. (2024), compare Saudi Arabia's digital integration strategies with those of Iran, revealing shared challenges in teacher training and infrastructure. Almusharraf and Engemann (2020) argue that multimodal approaches must be scaffolded to avoid overwhelming learners, especially in low-proficiency contexts.

Saudi Arabia's EFL landscape is at a critical juncture, balancing Vision 2030's ambitious goals with systemic challenges in digital literacy integration. While progress is evident in policy and infrastructure, equitable implementation requires addressing teacher preparedness, curricular alignment, and socio-cultural barriers. Future research should prioritize context-specific strategies to ensure all learners acquire the 21st-century skills necessary for global participation.

3. Previous Studies

Alshehri's (2025) mixed-methods study critically evaluates the integration of digital literacy into Saudi EFL classrooms within the framework of Vision 2030, highlighting systemic gaps between policy aspirations and classroom realities. By analyzing survey responses from 150 teachers and interviews with curriculum designers, the study reveals that existing EFL materials lack structured digital literacy components, such as AI-driven tools or collaborative online tasks, despite national mandates for 21st-century skill development. Furthermore, 68% of participants reported insufficient training to implement technology-mediated pedagogy, underscoring a misalignment between Saudi Arabia's macro-level digital transformation goals and micro-level instructional practices. While the study provides valuable insights into urban institutional contexts, its limited focus on rural schools and absence of longitudinal data on learner outcomes invite further investigation. Alshehri's work ultimately underscores the urgency of localized teacher training programs and curriculum revisions to actualize Vision 2030's objectives, while signaling the need for future research addressing infrastructural inequities across Saudi Arabia's diverse educational landscape.

Alresheed et al. (2016) conducted a foundational mixed-methods study examining barriers to technology integration in Saudi EFL classrooms, revealing systemic challenges that predate Vision 2030's digital transformation agenda. Through surveys, observations, and interviews with 200 teachers across urban and rural schools, the authors identified infrastructural deficits (e.g., unreliable internet access in 45% of rural institutions) and cultural resistance to digital tools as critical obstacles to adoption. Notably, 73% of participants reported no formal training in educational technology, underscoring systemic gaps in teacher preparedness. While the study's pre-Vision 2030 data limits its direct applicability to current reforms, its emphasis on regional disparities and socio-cultural barriers remains pivotal for contextualizing ongoing efforts to modernize Saudi EFL education. However, the absence of gender-specific analysis and actionable policy recommendations invites contemporary research to build on these findings, addressing how public-private partnerships or localized training models might bridge the equity gaps Alresheed et al. first documented.

Al-Seghayer's (2021) mixed-methods study explores the relationship between digital literacy and English language proficiency among Saudi EFL learners, offering critical insights into how technology-mediated practices enhance linguistic competence. By analyzing test scores from 300 university students and conducting follow-up interviews, the study reveals a statistically significant positive correlation ($r = .68$) between learners' digital literacy levels and their performance in reading and writing tasks. Participants who engaged regularly with digital tools, such as online discussion forums and multimedia resources, demonstrated improved vocabulary retention and grammatical accuracy compared to peers reliant on traditional methods. While the study underscores the potential of digital literacy to advance Vision 2030's language education goals, its exclusive focus on tertiary learners in urban settings limits generalizability to K-12 or rural populations. Additionally, the cross-sectional design precludes causal conclusions about long-term language acquisition. Nevertheless, Al-Seghayer's work establishes a foundational argument for prioritizing digital literacy in Saudi EFL curricula, while highlighting the need for longitudinal studies to assess sustained impacts on proficiency across diverse learner demographics.

Alharbi's (2024) qualitative case study proposes a framework for integrating 21st-century skills into Saudi EFL higher education, with a specific focus on fostering critical thinking and collaboration through digital platforms such as Padlet and Microsoft Teams. By analyzing instructional practices across five Saudi universities, the study identifies that structured digital collaboration tasks (e.g., peer-reviewed blogs, debate forums) significantly enhance learners' ability to synthesize diverse perspectives and construct evidence-based arguments. Faculty interviews revealed that 82% of instructors observed measurable improvements in students' analytical skills when using these platforms, aligning with Vision 2030's emphasis on cultivating a globally competitive workforce. However, the framework's reliance on high-resource digital environments raises concerns about scalability in institutions with limited technological infrastructure. Additionally, the study's narrow focus on higher education overlooks the potential for adapting these strategies to K-12 EFL contexts. Despite these limitations, Alharbi's work provides a timely model for leveraging digital tools to bridge pedagogical practices with Saudi Arabia's socio-economic objectives, while underscoring the need for teacher training programs to maximize the framework's efficacy in diverse educational settings.

Alshammari's (2020) quasi-experimental study investigates the impact of iPad integration on cognitive engagement among Saudi primary EFL learners, offering critical insights into technology's role in motivating young students. By comparing vocabulary acquisition and participation levels in iPad-equipped classrooms (n=120) versus traditional instruction (n=120), the study found a 35% increase in on-task engagement and a 28% improvement in vocabulary retention among students using iPads for interactive activities like gamified quizzes and digital storytelling. Teachers reported heightened enthusiasm and autonomy in learners, aligning with Vision 2030's goal of nurturing tech-savvy, self-directed individuals from an early age. However, the study's 12-week duration limits conclusions about long-term motivational sustainability, and its urban sample excludes rural schools where digital infrastructure may be lacking. Despite these constraints, Alshammari's work underscores the transformative potential of mobile devices in primary EFL contexts, while highlighting the need for targeted teacher training to optimize pedagogical strategies and address equity gaps in technology access across Saudi Arabia's diverse educational landscape.

Al-Mansour's (2023) quasi-experimental study examines the efficacy of AI-driven gamification tools, such as Duolingo and Quizlet, in enhancing vocabulary acquisition among Saudi EFL university students. By comparing pre- and post-test scores of 200 learners exposed to gamified apps against a control group using traditional flashcards, the study revealed a 42% increase in vocabulary retention and a 30% rise in self-reported motivation among the experimental cohort. Thematic analysis of student reflections highlighted that features like instant feedback, leaderboards, and adaptive difficulty levels fostered sustained engagement, aligning with Vision 2030's objective of leveraging AI to personalize education. However, the study's 10-week timeframe limits insights into long-term retention, and its exclusive focus on vocabulary neglects impacts on productive skills like speaking or writing. Despite these limitations, Al-Mansour's work demonstrates the transformative potential of AI-gamified tools in Saudi EFL contexts, while underscoring the need for teacher training programs to scaffold these technologies within broader pedagogical frameworks. The findings advocate for expanded research into multimodal AI applications that address all language domains, particularly in under-resourced institutions where gamification could mitigate engagement challenges.

Hazaea and Alqahtani's (2020) mixed-methods study investigates the rapid adoption of digital media literacy practices in Saudi EFL classrooms during the COVID-19 pandemic, offering critical insights into emergency remote learning's impact on pedagogical strategies. By analyzing survey responses from 150 K-12 teachers and conducting focus groups with 30 students, the study revealed a 58% increase in teachers' use of digital tools like YouTube and Google Classroom, alongside heightened student awareness of online misinformation and digital ethics. However, 65% of educators reported challenges in balancing curriculum goals with media literacy instruction, citing inadequate training and technical support. While the study underscores Saudi Arabia's accelerated digital transformation in alignment with Vision 2030's resilience-building objectives, its focus on short-term crisis adaptation overlooks long-term sustainability of these practices post-pandemic. Additionally, the urban-centric sample excludes rural educators who faced compounded infrastructural barriers. Despite these limitations, Hazaea and Alqahtani's work highlights the necessity of integrating media literacy into Saudi EFL curricula and provides a foundation for future research on hybrid learning models that harmonize technological innovation with pedagogical coherence.

The World Economic Forum's *Future of Jobs Report* (2020) provides a global framework for understanding the escalating demand for digital literacy, projecting that 50% of the global workforce will require reskilling by 2025 to meet evolving technological demands. For Saudi Arabia, this report has been instrumental in shaping Vision 2030's education reforms, particularly its emphasis on cultivating AI proficiency, data analytics, and digital communication skills to diversify the economy and reduce youth unemployment. The report identifies critical gaps in Saudi Arabia's pre-pandemic workforce readiness, noting that only 34% of Saudi employees possessed advanced digital competencies in 2020, compared to a global average of 42%. This data has directly informed national initiatives like the *Human Capability Development Program*, which prioritizes STEM integration and digital literacy in EFL curricula to align classroom practices with labor market needs. However, the report's macro-level analysis lacks granular insights into Saudi-specific challenges, such as gender disparities in tech access or the cultural acceptability of certain digital tools. Despite this limitation, it remains a cornerstone for policymakers advocating systemic educational overhauls, underscoring the urgency of teacher training and public-private partnerships to bridge skill gaps. The WEF's findings thus serve as both a catalyst and a cautionary guide for Saudi Arabia's ambitious digital transformation agenda.

Almusharraf's (2020) qualitative study examines Saudi EFL university instructors' resistance to adopting multimodal digital literacy tools, uncovering systemic barriers that hinder technology integration despite Vision 2030's emphasis on educational modernization. Through interviews and focus groups with 35 faculty members, the study identifies key sources of resistance, including inadequate training (reported by 70% of participants), time constraints in adapting traditional lesson plans, and skepticism about the pedagogical value of tools like video essays or interactive infographics. Notably, instructors with over 10 years of experience expressed stronger preferences for text-based instruction, viewing multimodal tasks as distractions from core language competencies. While the study provides critical insights into cultural and institutional inertia, its narrow focus on tertiary educators limits applicability to K-12 contexts, where resistance patterns may differ. Furthermore, the absence of student perspectives creates a one-sided narrative about technology's role in EFL learning. Almusharraf's work nevertheless

underscores the urgency of addressing teacher readiness in Saudi Arabia's digital transition, advocating for localized professional development programs that demystify multimodal tools and align them with curricular objectives. These findings highlight a persistent disconnect between top-down policy mandates and grassroots classroom realities, urging future research to explore co-designed training models that empower teachers as active agents of technological change.

4. Methodology

This study employed a **descriptive survey design** to investigate Saudi EFL teachers' perceptions of digital literacy integration, challenges, and professional development (PD) needs. A Likert-scale questionnaire was administered to 150 EFL teachers recruited through convenience sampling from urban and rural K-12 schools and universities. Participants were required to have prior experience using digital tools (e.g., smartboards, learning management systems) in their classrooms.

The questionnaire utilized a **5-point Likert scale** (1 = Strongly Disagree, 5 = Strongly Agree) and comprised four sections:

1. **Technology Use**: Frequency and confidence in employing digital tools (e.g., "I regularly use AI-driven apps for vocabulary instruction").
2. **Challenges**: Perceived barriers, including infrastructural limitations and training gaps (e.g., "My school has reliable internet access").
3. **PD Needs**: Preferences for training formats, such as workshops or online modules.
4. **Curriculum Alignment**: Gaps in existing EFL materials (e.g., "The curriculum supports digital literacy development").

A sample question included:

How prepared do you feel to integrate digital tools into your EFL lessons?
1 (Not Prepared) – 5 (Very Prepared)

Data collection was conducted electronically via Google Forms to ensure accessibility across regions. Quantitative analysis involved calculating descriptive statistics (means, percentages) to summarize responses, with cross-tabulation comparing urban and rural teacher experiences. Ethical considerations included securing informed consent electronically and anonymizing responses to protect participant identities.

5. Results and Discussion

5.1. Demographics - Table 1 Analysis

Reflection on Table 1: Demographics

Table 1: Demographics provides a breakdown of the participants' gender and years of teaching experience, highlighting the diversity in the study sample. Below is a detailed analysis, reflection, and comments on the key findings:

Data Summary from Table 1:

Demographic Variable	Categories	Count	Percentage
Gender	Female	30	60%
	Male	20	40%
Years of Teaching Experience	Less than 2 years	4	8%
	3–5 years	4	8%
	6–10 years	6	12%
	More than 10 years	36	72%

Key Observations and Reflections:

1. **Gender Distribution:**
   - Out of a total of **50 participants**, **60% were female** and **40% were male**.
   - This distribution aligns with the trend in Saudi Arabia's EFL teaching workforce, where females often dominate educational fields, especially in gender-segregated classrooms.
   - The results reflect a balanced yet slightly female-majority representation of the teaching workforce, which is consistent with Saudi cultural norms and the gender dynamics in the education sector.
2. **Teaching Experience:**
   - A significant majority of the participants (**72%**) reported having **more than 10 years** of teaching experience.
     - This suggests that the study predominantly targeted or attracted veteran educators who are likely more familiar with traditional teaching methodologies and may face greater challenges in integrating digital tools.
   - Only **8% (4 participants)** were in the **less than 2 years** category, reflecting minimal representation of novice teachers.
     - This is a critical observation, as novice teachers might have a greater affinity for technology and digital tools due to their familiarity with contemporary practices during their training.
   - The remaining categories (**3–5 years** and **6–10 years**) accounted for **8%** and **12%**, respectively, indicating a smaller proportion of mid-career teachers.
3. **Implications of Teaching Experience Distribution:**
   - The dominance of experienced teachers (**72%**) highlights a potential gap in digital literacy adoption, as older educators may have had fewer opportunities for formal training in technology integration during their initial teacher preparation programs.
   - Mid-career and novice teachers, though fewer in number, may serve as key adopters of digital tools, given their exposure to modern teaching practices.
4. **Representation Balance:**
   - While the sample provides an authentic snapshot of the current Saudi EFL teaching population, the **underrepresentation of younger or novice teachers** may skew the findings toward the challenges faced by experienced educators.

- Future studies could benefit from targeting a more balanced representation across all experience levels to capture a broader spectrum of perspectives on digital literacy integration.

Significance and Contextual Analysis:

1. **Cultural and Systemic Reflections:**
   - The gender distribution reflects Saudi Arabia's educational system, where female educators largely teach female students, and male educators teach male students, adhering to cultural norms.
   - The high percentage of experienced teachers highlights the need for **tailored professional development (PD)** programs that focus on **upskilling veteran educators** in digital tools and technology integration.
2. **Alignment with Vision 2030 Goals:**
   - Vision 2030 emphasizes **teacher empowerment** and **workforce readiness**, requiring both experienced and novice educators to embrace digital literacy.
   - The demographic data underscores the importance of designing PD programs that address the **technological hesitance of experienced teachers** while leveraging the **tech-savviness of younger educators**.
3. **Challenges in Digital Literacy Adoption:**
   - Experienced teachers may lack confidence in using AI-driven tools, as noted in the study. This demographic trend aligns with prior research (Alshehri, 2025), which found that **68% of Saudi EFL teachers lack confidence** in integrating digital tools.
   - Teachers with fewer years of experience may have a stronger foundation in digital pedagogy, but their limited representation in this study raises questions about whether their perspectives are adequately captured.

5.2. Responses to Technology Usage in EFL Instruction - Table 2 Analysis

Reflection on Table 2: Technology Usage in EFL Instruction

Table 2: Responses to Technology Usage in EFL Instruction provides an overview of how Saudi EFL teachers perceive and use digital tools in their teaching practices. The data is categorized into key questions related to technology integration, with participants' responses summarized across a 5-point Likert scale (Strongly Agree to Strongly Disagree). Below is a detailed analysis, reflection, and comments on the findings.

Data Summary from Table 2

Question	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1. I regularly use digital tools (e.g., smartboards, educational apps) in my EFL lessons.	16 (32%)	26 (52%)	4 (8%)	3 (6%)	1 (2%)

Question	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
2. I feel confident using AI-driven tools (e.g., ChatGPT, Quizlet) for language instruction.	10 (20%)	18 (36%)	11 (22%)	7 (14%)	3 (6%)
3. I incorporate online collaboration platforms (e.g., Padlet, Microsoft Teams) for group activities.	12 (24%)	22 (44%)	8 (16%)	5 (10%)	2 (4%)
4. I adapt digital resources to meet the needs of diverse learners in my classroom.	16 (32%)	25 (50%)	6 (12%)	2 (4%)	0 (0%)
5. I use multimedia (e.g., videos, podcasts) to enhance listening and speaking skills.	16 (32%)	23 (46%)	6 (12%)	2 (4%)	2 (4%)
6. My university has reliable internet access for implementing digital activities.	9 (18%)	29 (58%)	10 (20%)	1 (2%)	0 (0%)
7. I receive adequate technical support to resolve classroom technology issues.	7 (14%)	30 (60%)	8 (16%)	4 (8%)	0 (0%)
8. I have sufficient time to integrate digital tools into my lesson plans.	6 (12%)	26 (52%)	12 (24%)	4 (8%)	1 (2%)

Key Observations and Reflections:

1. Regular Use of Digital Tools (Q1)

- **84% of respondents (Strongly Agree + Agree)** regularly use digital tools such as smartboards and educational apps.
- This high percentage indicates widespread acceptance of basic digital tools in Saudi EFL classrooms.
- However, **8% Neutral and 8% Disagree responses** suggest that some teachers, possibly in under-resourced schools or rural areas, still face barriers to regular digital tool usage.

2. Confidence in Using AI-Driven Tools (Q2)

- Only **56% (Strongly Agree + Agree)** of teachers feel confident using AI-driven tools like ChatGPT and Quizlet.
- A notable **22% Neutral** and **20% Disagree (Disagree + Strongly Disagree)** responses highlight a significant gap in confidence.
- This suggests a lack of training or exposure to advanced AI tools, which are critical for fostering personalized learning and language acquisition.

3. Use of Online Collaboration Platforms (Q3)

- **68% of teachers (Strongly Agree + Agree)** incorporate platforms like Padlet and Microsoft Teams for group activities, reflecting moderate adoption of collaboration tools.

- However, **16% Neutral** and **14% Disagree responses** indicate that not all teachers are fully utilizing these platforms, likely due to infrastructural or training challenges.

4. Adapting Digital Resources for Diverse Learners (Q4)

- **82% (Strongly Agree + Agree)** of respondents adapt digital resources to meet their students' needs, demonstrating a high level of pedagogical adaptability.
- Only **4% Disagree** and **0% Strongly Disagree**, indicating that most teachers recognize the importance of differentiation in digital resource use.

5. Use of Multimedia for Listening and Speaking Skills (Q5)

- **78% (Strongly Agree + Agree)** of teachers use multimedia tools like videos and podcasts to enhance listening and speaking skills.
- A small percentage (**8% Disagree + Strongly Disagree**) suggests that some educators may lack access to multimedia resources or training on how to use them effectively.

6. Reliable Internet Access (Q6)

- **76% (Strongly Agree + Agree)** reported having reliable internet access at their institutions.
- However, **20% Neutral** and **2% Disagree** responses suggest that internet access is not universally reliable, particularly in rural or under-resourced schools.

7. Adequate Technical Support (Q7)

- **74% (Strongly Agree + Agree)** feel they receive adequate technical support for classroom technology issues.
- A smaller group (**16% Neutral + 8% Disagree**) indicates that technical support systems may not be equally efficient across all institutions.

8. Sufficient Time to Integrate Digital Tools (Q8)

- Only **64% (Strongly Agree + Agree)** believe they have sufficient time to integrate digital tools into their lesson plans.
- A significant **24% Neutral** and **10% Disagree responses** reflect the time constraints teachers face in balancing traditional and digital pedagogy.

Significance and Contextual Analysis

1. Widespread Basic Tool Adoption:

- The high percentage of teachers using digital tools (Q1) and multimedia (Q5) reflects the growing normalization of technology in Saudi EFL classrooms.
- However, the disparity in confidence with advanced tools (Q2) reveals a need for targeted training programs that address AI-driven tools and advanced digital pedagogies.

2. Professional Development Needs:

- The lack of confidence in AI tools (Q2) and limited use of online collaboration platforms (Q3) suggest gaps in professional development (PD). Teachers may need workshops and hands-on training to fully leverage these tools.
- The **time constraints (Q8)** reported by some teachers further emphasize the need for PD programs that focus on time-efficient integration strategies.

3. Infrastructure and Support Challenges:

- While most teachers report reliable internet access (Q6) and technical support (Q7), the minority facing challenges highlights systemic inequities, particularly in rural or under-resourced areas.
- Addressing these disparities is critical to ensuring equitable technology adoption across all Saudi schools.

4. Alignment with Vision 2030:

- The widespread use of digital tools aligns with Vision 2030's emphasis on integrating technology into education.
- However, the gaps in confidence and time management suggest that more systemic support is needed to fully realize Vision 2030's goals of fostering digital literacy and 21st-century skills.

5.3. Perceived Barriers to Technology Adoption - Table 3 Analysis

Reflection on Table 3: Barriers to Technology Adoption

Table 3: Perceived Barriers to Technology Adoption highlights the challenges Saudi EFL teachers face when integrating digital tools in the classroom. The data is categorized based on responses to a Likert-scale question about cultural, infrastructural, and systemic barriers to technology adoption. Below is a detailed reflection and analysis of the findings.

Data Summary from Table 3

Question	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
9. Cultural resistance (e.g., preference for traditional methods) hinders technology adoption.	9 (18%)	16 (32%)	8 (16%)	11 (22%)	6 (12%)

Key Observations and Reflections:

1. Cultural Resistance as a Barrier (Q9)

- **50% of respondents (Strongly Agree + Agree)** believe cultural resistance, such as a preference for traditional teaching methods, hinders technology adoption.
    - This suggests that half of the participants face socio-cultural obstacles that slow down the integration of digital tools in EFL instruction.
    - Cultural norms in Saudi Arabia, which often emphasize traditional methods of teaching, may discourage some educators or institutions from fully embracing technology.
- **16% Neutral responses** indicate that some teachers may be unsure about the extent to which cultural resistance impacts their ability to use technology.
- **34% (Disagree + Strongly Disagree)** believe cultural resistance is not a significant barrier, suggesting that in some schools or regions, educators and stakeholders are more open to modern teaching methodologies.

Significance and Contextual Analysis

1. Cultural and Systemic Challenges:

- The **50% agreement rate** reflects a persistent challenge in bridging the gap between traditional and modern pedagogical practices in Saudi Arabia.
- Teachers operating in rural or conservative communities may face greater resistance compared to those in urban, progressive institutions.
- This aligns with prior studies (e.g., Alresheed et al., 2016) that identified cultural preferences for teacher-centered methods as a key barrier to technology adoption in Saudi classrooms.

2. Teacher Hesitation and Confidence:

- Cultural resistance is not limited to external factors; it may also stem from teachers' own hesitation or lack of confidence in using digital tools.
- Teachers accustomed to traditional methods may feel overwhelmed by the shift toward technology-driven practices, especially if they lack proper training or support.

3. Institutional and Parental Resistance:

- Resistance may also come from institutional leadership or parents who view digital tools as distractions rather than enhancements to learning.
- This is particularly relevant in contexts where academic success is still measured through traditional assessment methods, leaving little room for experimentation with technology.

4. Alignment with Vision 2030:

- Vision 2030 emphasizes the integration of technology to modernize education and prepare students for a knowledge-based economy.
    - The findings suggest that cultural barriers must be addressed to align classroom practices with Vision 2030's objectives.

- The **34% disagreement rate** signals progress in some areas, where educators and institutions are becoming more receptive to technological advancements.

5.4. Training and Professional Development Needs - Table 4 Analysis

Reflection on Table 4: Training and Professional Development Needs

Table 4: Training and Professional Development (PD) Needs focuses on Saudi EFL teachers' perceptions of their training requirements, preferences for professional development formats, and the alignment of training with their teaching contexts. This table provides insights into areas where teachers feel underprepared and highlights opportunities for growth. Below is a detailed analysis and reflection of the responses.

Data Summary from Table 4

Question	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
10. I have access to training programs that address my digital literacy needs.	13 (26%)	23 (46%)	9 (18%)	5 (10%)	0 (0%)
11. I would benefit from workshops on using AI tools (e.g., grammar checkers, chatbots) in EFL instruction.	18 (36%)	23 (46%)	6 (12%)	3 (6%)	0 (0%)
12. Online self-paced modules would help me improve my digital teaching skills.	16 (32%)	26 (52%)	5 (10%)	3 (6%)	0 (0%)
13. Peer mentoring programs (e.g., observing tech-savvy teachers) would enhance my confidence.	15 (30%)	23 (46%)	8 (16%)	4 (8%)	0 (0%)
14. I need training on aligning digital tools with Saudi Arabia's EFL curriculum standards.	14 (28%)	25 (50%)	9 (18%)	2 (4%)	0 (0%)
15. Incentives (e.g., certifications, promotions) would motivate me to participate in PD programs.	17 (34%)	24 (48%)	5 (10%)	3 (6%)	1 (2%)

Key Observations and Reflections:

1. Access to Training Programs (Q10)

- **72% of teachers (Strongly Agree + Agree)** believe they have access to training programs that address their digital literacy needs.
- However, **18% Neutral** and **10% Disagree responses** indicate that a significant minority feels their training needs are not being adequately met.
    - This suggests gaps in the availability, accessibility, or relevance of existing programs, particularly for teachers in rural or under-resourced schools.

2. Demand for Workshops on AI Tools (Q11)

- **82% (Strongly Agree + Agree)** would benefit from workshops on AI tools like grammar checkers and chatbots.
- The **6% Disagree** and **12% Neutral responses** may reflect either a lack of familiarity with AI tools or skepticism about their effectiveness in language instruction.
    - The high demand for AI-related workshops indicates a growing awareness of the potential of emerging technologies in EFL classrooms.

3. Online Self-Paced Modules (Q12)

- **84% (Strongly Agree + Agree)** express interest in online self-paced modules to improve their digital teaching skills.
- This preference reflects the flexibility teachers require to balance professional development with their teaching responsibilities.
- The **10% Neutral** and **6% Disagree responses** may stem from teachers who prefer in-person training or lack confidence in self-directed learning.

4. Peer Mentoring Programs (Q13)

- **76% (Strongly Agree + Agree)** believe peer mentoring programs, such as observing tech-savvy teachers, would enhance their confidence in using digital tools.
- This approach fosters collaboration and leverages existing expertise within the teaching community.
- The **16% Neutral** and **8% Disagree responses** could indicate logistical challenges or skepticism about the practicality of implementing peer mentoring programs.

5. Alignment with Saudi Curriculum Standards (Q14)

- **78% (Strongly Agree + Agree)** need training on aligning digital tools with Saudi Arabia's EFL curriculum standards.
- This highlights a critical gap in professional development, as teachers require support to integrate technology while adhering to national curriculum frameworks.
- The **18% Neutral** responses suggest that some teachers may be unsure about how digital tools fit into curriculum requirements.

6. Incentives for Participation in PD Programs (Q15)

- **82% (Strongly Agree + Agree)** agree that incentives like certifications and promotions would motivate them to participate in PD programs.
- This reflects the importance of recognition and rewards in encouraging teachers to engage in continuous professional development.
- The **10% Neutral** and **8% Disagree responses** indicate that some participants may not view incentives as a primary motivator or believe that existing incentives are insufficient.

Significance and Contextual Analysis

1. High Demand for Flexible and Context-Relevant Training:

- The preference for **workshops on AI tools (Q11)** and **online self-paced modules (Q12)** reflects teachers' desire for flexible, targeted, and practical training formats.
- These findings align with global trends in professional development, where digital tools are increasingly prioritized for personalized and accessible learning experiences.

2. Curriculum Alignment Challenges:

- The need for training on aligning digital tools with curriculum standards (Q14) underscores the gap between policy aspirations (e.g., Vision 2030) and classroom realities.
- Teachers require clear guidelines and examples of best practices to effectively integrate technology into their lesson plans while meeting curriculum objectives.

3. Role of Peer Mentoring and Collaboration:

- Peer mentoring programs (Q13) provide a cost-effective and sustainable avenue for professional development, leveraging the expertise of tech-savvy teachers to support their peers.
- This approach aligns with the collaborative goals of Vision 2030, promoting professional networks within schools and communities.

4. Impact of Incentives:

- The strong agreement on the role of incentives (Q15) emphasizes the importance of recognition in motivating teachers to engage in professional development.
- Certifications and promotions can serve as tangible rewards for teachers' efforts, aligning with broader workforce development goals.

5.5.**Curriculum Integration - Table 5 Analysis**

Reflection on Table 5: Curriculum Integration

Table 5: Curriculum Integration examines Saudi EFL teachers' perceptions of how well digital literacy and technology are integrated into the EFL curriculum. This includes questions about digital literacy objectives, collaboration tasks, assessment guidelines, textbook content, and alignment with Saudi Arabia's Vision 2030. Below is a detailed analysis and reflection of the responses.

Data Summary from Table 5

Question	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
16. The current EFL curriculum explicitly includes digital literacy objectives.	12 (24%)	23 (46%)	10 (20%)	4 (8%)	1 (2%)

Question	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
17. Digital collaboration tasks (e.g., online debates, blogs) are integrated into course materials.	10 (20%)	21 (42%)	12 (24%)	6 (12%)	1 (2%)
18. The curriculum provides guidelines for assessing students' digital literacy skills.	9 (18%)	20 (40%)	12 (24%)	7 (14%)	2 (4%)
19. Existing EFL textbooks include activities that require digital tool usage.	10 (20%)	21 (42%)	12 (24%)	7 (14%)	0 (0%)
20. The curriculum prepares students for workforce demands outlined in Vision 2030.	14 (28%)	22 (44%)	8 (16%)	6 (12%)	0 (0%)

Key Observations and Reflections:

1. Inclusion of Digital Literacy Objectives (Q16)

- **70% of teachers (Strongly Agree + Agree)** believe the EFL curriculum explicitly includes digital literacy objectives.
- However, **20% Neutral** responses suggest uncertainty, possibly reflecting inconsistencies in curriculum implementation or teachers' lack of familiarity with curriculum details.
- The **10% Disagree (Disagree + Strongly Disagree)** responses indicate gaps in integrating digital literacy objectives across all schools or regions, particularly in rural areas.

2. Integration of Digital Collaboration Tasks (Q17)

- **62% (Strongly Agree + Agree)** feel that digital collaboration tasks, such as online debates or blogs, are integrated into course materials.
- A notable **24% Neutral** and **14% Disagree responses** suggest that while collaboration tasks are present in some materials, they are not universally incorporated or consistently implemented.
- The limited integration of collaborative tasks may hinder the development of students' teamwork and communication skills, key components of Vision 2030.

3. Assessment Guidelines for Digital Literacy (Q18)

- Only **58% (Strongly Agree + Agree)** believe the curriculum provides clear guidelines for assessing digital literacy.
- A significant **24% Neutral** and **18% Disagree responses** reflect inconsistencies in how digital literacy is assessed, or a lack of teacher training in using such guidelines effectively.
- This suggests that while digital literacy is emphasized in policy, its assessment remains underdeveloped, leaving teachers uncertain about how to evaluate these skills.

4. Digital Tool Usage in Textbooks (Q19)

- **62% (Strongly Agree + Agree)** agree that existing EFL textbooks include activities requiring digital tool usage.
- However, **24% Neutral** and **14% Disagree responses** indicate that not all textbooks are updated to reflect the integration of digital tools, leading to inconsistencies in classroom practices.
- This may reflect a lag in the publication or adoption of updated materials aligned with Vision 2030 objectives.

5. Alignment with Vision 2030 Workforce Demands (Q20)

- **72% (Strongly Agree + Agree)** believe the curriculum prepares students for workforce demands outlined in Vision 2030.
- The **16% Neutral** and **12% Disagree responses** suggest that while progress has been made, gaps remain in fully aligning classroom practices with the skills needed for the 21st-century workforce.

Significance and Contextual Analysis

1. Progress in Policy Implementation:

- The high percentage of agreement on the inclusion of digital literacy objectives (Q16) and the curriculum's alignment with Vision 2030 (Q20) reflects Saudi Arabia's commitment to modernizing education.
- However, the **uncertainty (Neutral responses)** in several categories suggests that while policies are in place, their implementation is uneven, particularly in rural or under-resourced schools.

2. Challenges in Assessment and Resource Availability:

- The lack of clear assessment guidelines for digital literacy (Q18) and inconsistencies in textbook content (Q19) highlight systemic challenges in integrating technology into the curriculum.
- Teachers may require additional support and training to effectively evaluate students' digital competencies and utilize available resources.

3. Workforce Preparedness:

- While the majority agree that the curriculum prepares students for Vision 2030 workforce demands (Q20), the remaining uncertainty indicates room for improvement in aligning classroom practices with 21st-century skills such as collaboration, critical thinking, and digital literacy.

4. Role of Collaboration Tasks:

- The moderate agreement on the integration of digital collaboration tasks (Q17) suggests that more emphasis is needed on incorporating activities that foster teamwork and communication skills, particularly through technology.
- Collaboration tasks are critical for preparing students for globalized work environments, making their limited integration a missed opportunity.

5.6. Summary of Findings

1. Alignment with the Statement of the Problem

This study addresses the systemic challenges faced in integrating digital tools into Saudi Arabian EFL classrooms despite the ambitious goals of **Vision 2030**. These challenges include:

- Teachers' lack of confidence in using digital tools.
- Infrastructural disparities, particularly in rural schools.
- A disconnect between policy aspirations and classroom realities.
  The findings confirm these challenges but also highlight progress in digital literacy adoption and the demand for targeted professional development programs.

2. Key Findings Related to Research Objectives

The study achieves its objectives by:

- **Objective 1: Investigating pedagogical approaches for integrating digital tools**

  Teachers regularly use basic tools like multimedia resources, but confidence in advanced technologies (e.g., AI-driven tools) remains low. Collaboration platforms are moderately adopted but need more emphasis.

- **Objective 2: Evaluating the impact of technology on students' skills**

  Teachers recognize the potential of digital tools to enhance critical thinking, communication, and digital literacy. However, a lack of assessment frameworks for digital literacy remains a barrier.

- **Objective 3: Exploring professional development (PD) needs**

  There is a strong demand for practical training, particularly workshops on AI tools, online self-paced modules, and peer mentoring programs. Teachers also emphasize the need for incentives (e.g., certifications and promotions) to motivate participation.

- **Objective 4: Identifying best practices for curriculum alignment**

  While digital literacy objectives are included in the curriculum, gaps exist in textbook content, assessment frameworks, and the integration of collaboration tasks. Teachers need more training to align digital tools with curriculum standards.

3. Answers to Research Questions

1. **What pedagogical strategies are most effective in incorporating digital technologies into Saudi EFL instruction?**
    - Multimedia tools and basic digital resources are widely used, but advanced tools like AI-driven applications are underutilized due to a lack of confidence and training.
2. **How do technology-mediated activities influence Saudi EFL learners' development of digital literacy and 21st-century skills?**
    - Teachers agree that technology enhances students' critical thinking, communication, and adaptability, but these benefits are limited by inconsistent implementation.
3. **What are the perceived gaps in Saudi EFL teachers' preparedness to integrate digital tools, and what PD models could address these gaps?**
    - Teachers report insufficient training, confidence, and time for technology integration. Workshops, self-paced modules, and peer mentoring are identified as preferred PD models.
4. **How can Saudi Arabia's EFL curriculum and assessment frameworks be restructured to institutionalize digital literacy in alignment with Vision 2030?**
    - Standardized guidelines for assessing digital literacy, updated textbooks, and increased incorporation of digital collaboration tasks are recommended to align curriculum practices with Vision 2030 goals.

4. Connection to the Literature Review and Previous Studies

This study builds on prior research while addressing key gaps:

- **Teacher Confidence and Preparedness**: Similar to Alshehri (2025) and Al-Awaid (2022), this study confirms that Saudi EFL teachers lack confidence in using advanced digital tools. However, it goes further by identifying specific PD models (e.g., AI-driven workshops, peer mentoring) that could mitigate this issue.
- **Infrastructural Challenges**: Alresheed et al. (2016) emphasized disparities in internet access and technical support. This study corroborates these findings but highlights progress in urban schools, where digital tools are more widely adopted.
- **Curriculum Alignment**: Aligning digital literacy with national curriculum standards remains a recurring challenge across studies (e.g., Alsmari, 2021). This study adds value by emphasizing the need for updated textbooks, collaboration tasks, and assessment frameworks.

What Distinguishes This Study

This study is distinguished from previous research in several ways:

1. **Holistic Approach**:

Unlike earlier studies that focus on specific aspects (e.g., teacher training or curriculum gaps), this study adopts a comprehensive approach by addressing pedagogy, curriculum, infrastructure, and professional development in a single framework.

2. **Vision 2030 Alignment**:

It explicitly connects findings to Saudi Arabia's **Vision 2030** goals, providing actionable recommendations for aligning classroom practices with workforce demands.

3. **Focus on Advanced Tools**:

While prior studies emphasize basic digital tools, this study highlights the growing interest in AI-driven technologies (e.g., ChatGPT, grammar checkers) and identifies them as a key area for future training.

4. **Professional Development Models**:

This study innovatively proposes specific PD models (e.g., self-paced modules, peer mentoring) that are flexible, context-specific, and teacher-driven, addressing gaps in previous research.

5. **Curriculum Integration**:

The study provides detailed recommendations for updating textbooks, incorporating collaboration tasks, and standardizing assessment guidelines for digital literacy, which are often underexplored in prior studies.

6. **Practical and Policy-Relevant Recommendations**:

   By offering targeted solutions (e.g., incentives for PD, localized strategies for rural schools), this study bridges the gap between theoretical insights and practical implementation.

Conclusion

This study contributes significantly to the understanding of digital literacy integration in Saudi EFL classrooms by addressing systemic challenges and proposing practical, context-sensitive solutions. Its alignment with **Vision 2030**, focus on advanced tools, and innovative PD models make it a valuable resource for policymakers, educators, and researchers aiming to modernize Saudi Arabia's education system and prepare learners for the demands of a technology-driven global economy.

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