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Digital Skills for Teaching English to Special Education Students

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ABSTRACT

This study investigates the integration of digital tools in English as a Foreign Language (EFL) instruction for students with special educational needs (SEN) in Saudi Arabia. Drawing on a quantitative survey of 204 special education teachers across various regions, it explores the frequency and types of technology use, the relationship between teachers' digital competencies and their pedagogical practices, and the extent of institutional and administrative support provided. The findings reveal that digital tools, such as language learning applications, interactive platforms, and assistive technologies, have become increasingly embedded in daily instructional practices, irrespective of teachers' academic qualifications, years of experience, or school type. Nonetheless, the study uncovers notable disparities in access to technological resources, training opportunities, and institutional support across different educational settings. Although many educators demonstrate solid technical proficiency, persistent challenges remain in adapting digital tools to meet diverse learner profiles and in receiving specialized professional development tailored to inclusive EFL instruction. The research highlights the urgent need for systematic, ongoing training, equitable distribution of digital infrastructure, and curriculum reforms that integrate

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assistive technologies meaningfully. By addressing these gaps, the study provides valuable implications for policymakers and educators seeking to foster genuine digital inclusion and enhance learning outcomes in special education EFL contexts.

Keywords: EFL; Special Education; Digital Literacy; Educational Technology; Instructional Practices

1. Introduction

The last decade has seen digital technologies fundamentally transform EFL instruction, with particularly significant implications for special education. While these tools offer powerful new ways to personalize learning and engage students, they also present distinct challenges for educators addressing diverse learning needs. This reality raises crucial questions about how teachers develop the necessary digital competencies and what institutional support they receive to effectively implement technology.

A scholarly consensus now positions digital literacy not as a supplementary skill, but as an essential component of teacher professionalism^[1]. International educational frameworks further reinforce this view, emphasizing technology's vital role in preparing students for contemporary society. Yet research consistently reveals a persistent implementation gap in language education: merely providing digital resources proves insufficient, as successful integration is often hindered by inadequate teacher preparation and fragmented institutional approaches^[2].

This challenge is especially pronounced in the Gulf region, where classrooms typically include students from a wide range of cultural and linguistic backgrounds^[3,4]. In this context, special education EFL teachers face a dual task: they must respond to this diversity while simultaneously mastering digital teaching methods for both in-person and online environments. The COVID-19 pandemic acted as a powerful catalyst for this transition, forcing the rapid uptake of digital tools—a great many of which have become permanent fixtures in the post-pandemic classroom^[5,6].

Although studies confirm that digital integration in special education EFL enhances student motivation and performance^[7–9], these benefits are neither automatic nor uniform. Their realization is heavily dependent on teacher proficiency and robust institutional support systems, without which the full potential of educational technology remains untapped.

It is within this context that the present study investigates the critical intersection of teacher digital competencies

and institutional support in special education EFL settings, seeking to identify the factors that enable successful and equitable digital integration.

This study examines a significant deficiency in current literature by exploring educators' viewpoints on digital competences and support initiatives in the context of EFLSE. As education experiences swift technological advancement, comprehending these elements is essential for developing effective pedagogy, teacher training initiatives, and institutional policies.

Study Questions

To elucidate the objectives of this study, the following research questions were formulated:

RQ1: What is the frequency of digital tool use among EFL teachers in special education, and how does this correlate with their access to reliable internet and participation in professional development initiatives?

RQ2: Are there statistically significant differences in digital tools usage based on the years of experience and educational background of EFL teachers in special education?

RQ3: To what extent do EFL teachers' digital competencies in special education influence their teaching practices?

RQ4: What is the perceived availability and adequacy of institutional resources and pedagogical support mechanisms for the integration of digital technologies in EFL instruction within special education contexts?

These four questions constitute the essence of our inquiry, seeking to yield significant findings that can enhance instructional practices and contribute to the continuing dialogue around digital integration in EFL special education.

2. Literature Review

In the last ten years, integrating digital resources has become crucial for teaching EFL in special education. These teachers balance individualized learning with language objectives. This review examines four key factors shaping their technology use: digital skills, institutional support, personal

attitudes, and practical classroom opportunities and barriers.

2.1. Digital Competencies in Education

Digital tools have reshaped modern classrooms, making digital competence a core teaching requirement rather than an optional skill^[10]. This expectation is now embedded in international educational standards that emphasize preparing students for a technology-driven world^[10].

However, technical knowledge alone doesn't guarantee success. While digital skills help teachers customize lessons and support diverse learners^[11], their actual implementation depends significantly on teachers' confidence in using these tools effectively^[8].

In answer to this need, experts have created frameworks to define what this digital competence should look like^[12]. Although these models differ, they all share a common focus: using technology for teaching, creating content, and working with others. Most importantly, they call for a kind of teacher training that builds more than just technical skill—it must also nurture a teacher's ability to think critically, act ethically, and adapt flexibly to the dynamic classroom environment.

2.2. Institutional Support and Training

While a teacher might be personally tech-savvy, that skill alone doesn't guarantee they can use technology effectively in the classroom. True integration hinges on having strong, consistent backing from their school or institution. Studies confirm that when teachers are given not just the tools, but also reliable infrastructure and ongoing training, they are far more likely to weave technology seamlessly into their lessons^[13,14]. Yet, in reality, the level of support teachers receive is a patchwork, varying dramatically from one place to another^[15].

We can see this inconsistency starting from the very beginning of a teacher's career. Research examining teacher training programs found a striking unevenness in how they prepare future educators for the digital classroom^[15]. Some programs excelled at embedding digital skills throughout their curriculum, while others lagged behind, failing to meet contemporary standards^[5]. This tells us that even with national policies in place, the commitment at the institutional level is inconsistent, leaving many new teachers underprepared for the digital realities of modern teaching^[16].

2.3. Perceptions of Digital Integration in Special Education

Whether digital tools become transformative or remain underutilized is greatly influenced by teachers' perceptions. Research continuously demonstrates that teachers are more likely to successfully integrate technology and see increased student engagement when they believe in its pedagogical value^[17,18]. In a similar vein^[19], a positive correlation was discovered between increases in student performance and positive teacher attitudes regarding technology.

Perceptions, however, are not one-way. According to Fälth and Selenius^[20], many inclusive primary teachers already use technology to help students with special needs develop their reading and writing skills, and many more have plans to teach digital literacy. However, Alsolami^[21] found that many special education teachers were unconfident when it came to using assistive technology and knew very little about the terms involved. This contrast emphasizes how professional support and previous training, rather than the mere availability of digital tools, influence teachers' perspectives.

2.4. Challenges and Opportunities

Teachers still encounter practical and structural obstacles in spite of the benefits associated with digital integration. Lack of time, unreliable resources, and reluctance to alter ingrained routines are typical obstacles^[22,23]. These obstacles are far from insignificant; they restrict even highly qualified and driven teachers.

A conflict between potential and reality has also been brought to light by research. Badia et al.^[24] showed how curriculum planning and evaluation can be transformed by digital tools, but they also pointed out that the advantages were constantly mediated by practical considerations like workload and internet access. Similarly, Rintaningrum^[25] noted a wide range of benefits, including improved cooperation, multilingual learning, and the availability of translation tools, but emphasized that ongoing challenges include uneven digital literacy, rapid technological change, and unequal access. These results imply that rather than being viewed as a simple innovation, digital integration should be viewed as a process that calls for consistent institutional and policy-level attention.

2.5. Research Gaps and Future Directions

Although the body of research on educational technology has grown rapidly, most studies focus on mainstream classrooms or broad EFL contexts. Far fewer investigations explicitly examine EFL in special education, where the relationships among teacher competence, institutional provision, and educator perceptions might take on distinctive forms. The existing evidence highlights promising directions—such as the value of professional development and the positive association between digital confidence and classroom practice—but it also underscores gaps in how these findings translate to learners with disabilities.

The present study aims to address this gap by examining teachers' digital integration practices in Saudi special education EFL contexts. By drawing attention to the intersection of competence, institutional support, and teacher perspectives, it seeks to advance a more contextually grounded understanding of how digital technologies can serve diverse learners.

Even though the majority of the studies covered in this review were carried out in Saudi Arabia and the Gulf, it's crucial to place these results in a larger global context. Similar challenges in integrating digital tools within inclusive EFL settings have been brought to light by recent research from other contexts, including Europe, East Asia, and North America^[20,25,26]. Including such comparative data highlights the study's worldwide applicability and the fact that the problems with institutional support and digital competency are prevalent in all educational systems.

3. Methodology

3.1. Research Design

To explore these research questions, this study employs a quantitative, non-experimental approach, specifically utilizing a cross-sectional survey design. This methodological framework is particularly well-suited for capturing and describing the current behaviors, practices, and perceptions of a specific population at a single point in time^[27]. The survey was designed to systematically investigate how EFL teachers in special education settings integrate digital tools into their instructional practices.

3.2. Participants

The study involved 204 EFL teachers (78 male, 126 female) from various public and private Saudi institutions, all experienced in teaching English to students with special educational needs (see **Table 1**). After obtaining Ministry of Education approval, we distributed the survey electronically via WhatsApp and email to reach eligible educators nationwide. We strictly followed ethical research standards throughout the study. The institutional ethics committee granted formal approval before data collection began^[28]. All participants provided informed consent after learning about the study's purpose, and participation was completely voluntary. We anonymized all responses and followed strict confidentiality protocols to protect participant privacy, demonstrating our commitment to ethical research practices.

3.3. Instrumentation

To capture the complex realities of teaching in special education EFL contexts, we developed a structured online survey informed by a thorough review of established digital competence frameworks like DigCompEdu^[5] and the TPACK model^[29]. The instrument was specifically tailored to measure the unique factors influencing technology use, as identified in prior research^[16,30].

The survey was organized into three focused sections:

1. Professional Background: Capturing key demographics such as teaching experience and technology access.
2. Digital Competencies: Seven items evaluating teachers' confidence, perceived skill importance, and impact on student engagement.
3. Institutional Support: Seven items assessing the availability of training, infrastructure, and peer collaboration.

This multi-dimensional design provides a holistic understanding of the interplay between teacher capability, institutional backing, and classroom practice in this specialized field.

3.4. Tool Validation

Prior to its deployment, the research instrument underwent a rigorous validation process. A panel of five experts

in special education, technology integration, and psychometrics assessed the instrument's content and face validity, in accordance with established methodological guidelines^[31]. Following revisions based on their feedback, a pilot study was conducted with 73 educators. This pilot served to con-

firm the expert recommendations and evaluate the instrument's psychometric properties—particularly its reliability and internal consistency. The design of the instrument was also grounded in existing theoretical frameworks and contemporary literature, further supporting its construct validity.

Table 1. Sample Characteristics of Study Participants.

Variables	Level	Counts	Proportion
Gender	Male	78	0.382
	Female	126	0.618
Age	25–35	32	0.157
	36–45	94	0.461
	46–55	67	0.328
	56 and above	11	0.054
Educational Background	EFL Teacher	101	0.495
	Special Education Teacher	21	0.103
	Both EFL and Special Education	82	0.402
Stage of Teaching	Preschool/Early Childhood Education	14	0.069
	Elementary School	33	0.162
	Intermediate School	18	0.088
	Secondary School	31	0.152
	Higher Education/College/University	108	0.529
Experience	Less than 5 years	17	0.083
	5–10 years	56	0.275
	11–15 years	45	0.221
	16 years and above	86	0.422
Total		204	1.000

As shown in **Table 2**, all reliability indices—including McDonald's ω (0.951), Cronbach's α (0.950), and Guttman's λ_2 (0.952)—indicated excellent internal consistency. Item-rest correlations were also strong, with values such as 0.818

(Q4) and 0.807 (Q5), confirming that each item contributed meaningfully to the overall scale. These results affirm the robustness and measurement precision of the instrument for use in this study.

Table 2. Reliability Analysis of Scale Items.

Item	McDonald's ω	Cronbach's α	Guttman's λ_2	Item-Rest Correlation/Average Interitem Correlation
Q1	0.949	0.948	0.950	0.668
Q2	0.949	0.949	0.950	0.659
Q3	0.948	0.948	0.949	0.690
Q4	0.944	0.944	0.946	0.818
Q5	0.945	0.945	0.946	0.807
Q6	0.947	0.946	0.948	0.741
Q7	0.946	0.946	0.947	0.771
Q8	0.948	0.948	0.949	0.695
Q9	0.949	0.949	0.950	0.640
Q10	0.948	0.947	0.949	0.716
Q11	0.946	0.946	0.947	0.775
Q12	0.946	0.945	0.947	0.789
Q13	0.946	0.945	0.947	0.785
Q14	0.945	0.945	0.946	0.803
PDC	0.932	0.932	0.932	0.662
RS	0.936	0.936	0.936	0.676
Total	0.951	0.950	0.952	0.578

3.5. Format and Delivery

An online questionnaire was distributed to teachers across Saudi Arabia, enabling broad participation from a geographically dispersed population. Participants responded using a five-point Likert scale (1 = strongly disagree, 5 = strongly agree), a well-established method for measuring attitudes in educational research^[32].

The survey was designed to explore teachers' views on their digital skills and the institutional support they receive when teaching English to students with special needs. This approach supports thorough quantitative analysis and meaningful interpretation of the results.

3.6. Data Collection and Analysis

We collected data through an online survey created with Google Forms, distributing the link via official emails to reach special education EFL teachers across Saudi Arabia.

The platform's automatic submission allowed for efficient, real-time data gathering.

For analysis, we used SPSS software. Descriptive statistics summarized the overall response trends, while ANOVA tests helped determine if factors like teaching experience or education level significantly affected technology use. This combined method aligns with standard research practice for understanding behaviors and their influencing factors.

4. Results

Our analysis tested if survey responses significantly differed from a neutral baseline, particularly regarding how often digital tools were used and how this related to internet access and training. As **Table 3** shows, responses in all categories consistently leaned away from the expected neutral distribution.

Table 3. Descriptive Analysis of Digital Tool Usage, Internet Access, and Professional Development Enrollment.

Variables	Level	Counts	Proportion
Frequency of Digital Tool Usage	Rarely	21	0.103
	Occasionally	35	0.172
	Frequently	70	0.343
	Always	78	0.382
Internet Connectivity Access	No	17	0.083
	Partially	23	0.113
	Yes	164	0.804
Enrollment in Digital Tool PDPs	No	100	0.490
	Planning to Enroll	32	0.157
	Yes	72	0.353

Note: PDPs = Professional Development Programs.

Table 3 outlines digital tool usage, internet access, and professional development engagement among participating special education EFL teachers. Results indicate strong digital adoption, with 72.5% of teachers reporting frequent (34.3%) or constant (38.2%) use. By contrast, only 27.5% used tools occasionally (17.2%) or rarely (10.3%), confirming a clear trend toward digital integration in this context.

Furthermore, internet connectivity—a critical prerequisite for digital tool implementation—was widely available. The vast majority of teachers (80.4%) reported having reliable access. A smaller proportion indicated only “partial” access (11.3%), while a minimal segment reported having no reliable connectivity (8.3%). This high rate of internet avail-

ability suggests that infrastructural conditions are generally favorable for digital pedagogy.

In contrast to tool usage and connectivity, participation in professional development programs (PDPs) focused on digital tools was more varied. Nearly half of the respondents (49.0%) were not enrolled in any such programs. While over a third (35.3%) were currently enrolled, a notable portion (15.7%) reported plans to enroll in the future. This distribution underscores a significant gap between the high rate of tool usage and the formal training supporting it, highlighting a substantial opportunity for institutions to expand professional development initiatives to better support their educators.

To determine whether differences in digital tool us-

age are influenced by years of experience and educational background among EFL teachers in special education, an ANOVA was conducted. **Table 4** displays the results, detail-

ing the sum of squares, degrees of freedom, mean square, F-value, p-value, and effect size (η^2) for each variable and their interaction.

Table 4. ANOVA Results for Education Background, Experience, and Their Interaction.

Source	Sum of Squares	df	Mean Square	F	p	η^2
Education Background	0.290	2	0.145	0.156	0.856	0.001
Experience	1.676	3	0.559	0.601	0.615	0.009
Education Background * Experience	12.950	6	2.158	2.323*	0.035*	0.066
Residuals	178.382	192	0.929			

Note: Type III Sum of Squares; * $p \leq 0.05$.

The ANOVA results indicated that neither educational background, $F(2, 192) = 0.156, p = 0.856, \eta^2 = 0.001$, nor years of experience, $F(3, 192) = 0.601, p = 0.615, \eta^2 = 0.009$, exerted a statistically significant independent influence on the frequency of digital tool usage. This suggests that, by themselves, these factors have limited explanatory power in predicting technology integration. In contrast, a significant interaction effect was observed between educational background and years of experience, $F(6, 192) = 2.323, p = 0.035, \eta^2 = 0.066$. This finding indicates that the combination of a teacher's formal training and their practical tenure in the profession collectively shapes their patterns of digital tool use. Although the effect size is modest, it underscores the importance of considering these variables

in tandem to fully understand the nuances of technology engagement. The results point to a complex interplay between a teacher's preparation and their career stage, warranting further investigation into how specific background and experience profiles influence pedagogical technology use in special education contexts.

Table 5 provides the descriptive statistics underpinning the significant interaction effect between educational background and experience reported in **Table 4**. However, caution is warranted in interpreting cells with very low sample sizes ($N < 10$), particularly for Special Education Teachers (e.g., $N = 2$ for '<5 years', $N = 3$ for '16+ years'), as these estimates are highly unstable and not reliable for drawing definitive conclusions.

Table 5. Descriptive Statistics of Digital Tool Usage Frequency by Educational Background and Years of Experience.

Education Background	Experience	N	Mean	SD	SE
Both EFL and Special Education	11–15 years	18	2.500	0.924	0.218
	16 years and above	37	2.865	1.206	0.198
	5–10 years	22	2.864	0.774	0.165
	Less than 5 years	5	3.600	0.894	0.400
EFL Teacher	11–15 years	22	3.500	0.598	0.127
	16 years and above	46	3.152	0.942	0.139
	5–10 years	23	3.043	0.976	0.204
	Less than 5 years	10	2.500	1.269	0.401
Special Education Teacher	11–15 years	5	3.200	0.837	0.374
	16 years and above	3	3.667	0.577	0.333
	5–10 years	11	2.909	0.701	0.211
	Less than 5 years	2	2.500	2.121	1.500

The data suggest nuanced patterns in digital tool usage. For instance, among EFL Teachers, those with 11–15 years of experience reported the highest frequency of use ($M = 3.500, SD = 0.598$), whereas those with the least experience (<5 years) reported the lowest ($M = 2.500, SD = 1.269$). A different pattern emerged for teachers dually qualified in Both EFL and Special Education, where the least experienced group re-

ported the highest usage frequency ($M = 3.600, SD = 0.894$), though this is based on a small sample ($N = 5$). Due to the very small number of pure Special Education Teachers in several experience categories, clear patterns for this group cannot be reliably discerned from the present data.

The significant ANOVA interaction effect signifies that the relationship between experience and digital tool usage is

not uniform but depends on the teacher's specific educational background. This complexity highlights that the factors influencing technology integration are not straightforward and are likely mediated by the specific type of training a teacher has received.

To evaluate the extent to which EFL teachers' digital competencies in special education impact their teaching practices, a descriptive analysis was conducted to classify competency levels. **Table 6** provides the frequency and percentage distribution across five levels, ranging from "Very High" to "Very Low," based on teachers' self-assessed competency scores.

Table 6 reveals a varied distribution of digital competency levels among EFL teachers in special education. The most significant proportion of teachers, 47%, fall within the "High" competency range (scores 28–34), while 25% are classified as "Moderate" (21–27). Thirteen percent of

teachers report "Very High" competency (35 and above), reflecting digital solid skills within this subgroup. Lower competency levels are less common, with 11% categorized as "Low" (14–20) and only 4% as "Very Low" (7–13). This distribution indicates a far-reaching spectrum of digital competencies, highlighting both areas of strong proficiency and the potential for additional support among teachers.

To enhance the interpretability of the data, **Figure 1** presents a bar chart depicting the distribution of teachers' digital competency levels across five categories (Very High, High, Moderate, Low, and Very Low). The visual clearly shows that the majority of teachers fall within the "High" and "Moderate" ranges, while a smaller proportion demonstrate "Very High" or "Low" competency levels. These percentages are illustrated in **Figure 1** to understand the distribution across digital competency levels better.

Table 6. Distribution of Digital Competency Levels Among EFL Teachers.

Levels	Category	Frequency	Percentage
Very High	35 and above	26	13
High	28–34	97	47
Moderate	21–27	51	25
Low	14–20	22	11
Very Low	7–13	8	4
Total	-	204	100

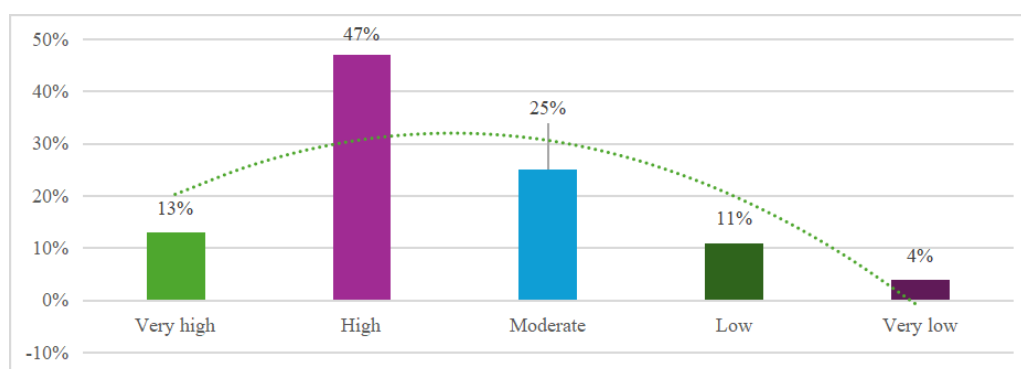


Figure 1. Distribution of digital competency levels among EFL teachers in special education.

This bar chart shows the distribution of teachers' digital competency levels across five categories: very high (13%), high (47%), moderate (25%), low (11%), and very low (4%). Nearly half of the respondents reported high competency, while only a small proportion indicated low or very low proficiency.

To examine the availability and sufficiency of institutional resources and support for integrating digital tools in special education for EFL teachers, a descriptive analysis was conducted. **Table 7** displays the distribution of responses,

outlining the frequency and percentage of teachers across five levels, from "Very High" to "Very Low" in perceived resource adequacy and support.

Table 7 reveals varying levels of perceived availability and sufficiency of institutional resources and support for digital tool integration among EFL teachers in special education. A significant proportion of teachers (43%) rate the resources and support as "High" (scores 28–34), suggesting that many find their institutions relatively well-equipped.

Another 31% report a “Moderate” level of support (scores 21–27), indicating adequate but potentially improvable resources. Lower levels of satisfaction are evident, with 18% of teachers rating support as “Low” (scores 14–20) and 5% as “Very Low” (scores 7–13), pointing to a subset of teachers who experience substantial gaps in institutional support. Only 3% report “Very High” support (scores 35 and above), suggesting limited instances of optimal resource availability. This distribution underlines the need for enhanced institu-

tional resources and support to facilitate digital integration in special education contexts.

Figure 2 displays teachers’ perceptions of institutional resource adequacy and pedagogical support across five categories: very high (3%), high (43%), moderate (31%), low (18%), and very low (5%). The figure highlights that most teachers rated institutional support as high or moderate, with fewer reporting low or very low levels, indicating uneven access to digital resources across schools.

Table 7. Institutional Resources and Support for Digital Tool Integration.

Levels	Category	Frequency	Percentage
Very High	35 and above	5	3
High	28–34	87	43
Moderate	21–27	64	31
Low	14–20	37	18
Very Low	7–13	11	5
Total	-	204	100

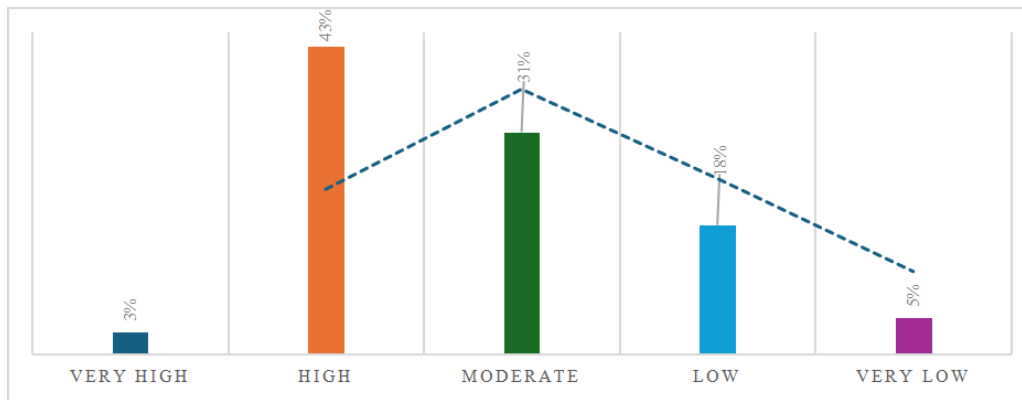


Figure 2. Levels of institutional resource availability and support for digital tool integration among EFL teachers in special education.

5. Discussion

5.1. RQ1: Frequency of Digital Tool Use, Internet Access, and Professional Development

The data reveals widespread adoption of digital tools among special education EFL teachers, with 72.5% reporting frequent or consistent use. This trend aligns with broader shifts toward technology-enhanced learning^[33]. Reliable internet access appears to be a key facilitator, reported by 80.4% of respondents, providing the necessary infrastructure for interactive digital pedagogy^[34]. However, the 8.3% of educators lacking reliable connectivity highlights a persistent access gap that can hinder the full implementation of digital methods^[35].

A more varied picture emerges regarding professional

development. While digital tool use is high, only 35.3% of teachers reported currently being enrolled in relevant training, compared to 49% who were not. This suggests that institutional support for building digital competency is inconsistent. There is a clear need for more structured and accessible professional development opportunities, as sustained, practical training is critical for effective technology integration^[36]. Ultimately, targeted professional development is essential to build teacher self-efficacy and unlock the full educational potential of these tools^[8].

5.2. RQ2: Differences in Usage Based on Experience and Educational Background

The results reveal a nuanced picture: a teacher’s years of experience or their formal education level, by themselves,

are not reliable indicators of how often they will use digital tools. The key finding, however, is that the combination of these background factors does significantly influence technology integration. This supports the core premise of the TPACK framework—that effective technology use emerges from the dynamic blend of technological, pedagogical, and content knowledge^[29]. It also confirms that neither qualifications nor experience in isolation guarantees proficiency with digital teaching^[16].

This complexity points directly to a critical need: professional development for teachers must be designed to address the interconnected nature of their backgrounds. Since successful technology integration depends on weaving together pedagogical knowledge with hands-on classroom practice^[30], training for special education EFL teachers must be comprehensive, rather than treating their experience and education as separate issues.

When we view these findings through the complementary lenses of TPACK and Universal Design for Learning (UDL), their theoretical significance becomes clearer. The interplay between teacher background and tool use echoes TPACK’s emphasis on interconnected knowledge, while the diverse ways teachers apply technology resonates with UDL’s call for flexible instructional methods. In this way, the study connects established theoretical models to the realities of specialized practice, showing how digital competence takes shape in the distinct world of EFL education for students with disabilities.

5.3. RQ3: Influence of Digital Competencies on Teaching Practices

Findings on digital competencies show that nearly half (47%) of teachers demonstrated a “High” level, while 13% were rated “Very High.” This suggests a substantial segment of educators possesses a strong foundational ability to integrate technology into their teaching—a factor correlated with more effective and engaging instructional practices^[37]. Nonetheless, 25% of educators fell into the “Moderate” category, indicating that a significant portion may not be fully leveraging the capabilities of digital tools. This variance echoes existing literature documenting uneven digital competence among educators^[38].

The presence of highly proficient teachers offers a valuable resource for peer mentoring and collaborative profes-

sional learning^[39]. To address remaining gaps, systematic and ongoing PD is essential—particularly that which embeds digital literacy within specialized pedagogical training for diverse learners^[40]. Institutions should prioritize building digital competencies to ensure all teachers are equipped to navigate technology-rich educational environments.

5.4. RQ4: Perceived Institutional Resources and Support

Teachers reported mixed perceptions of institutional support. While 43% rated resources and support as “High,” a combined 54% described them as “Moderate” (31%) or “Low/Very Low” (23%). This variation suggests an uneven distribution of technological infrastructure and pedagogical backing across schools. Since adequate institutional support is a well-established prerequisite for successful technology integration^[14,41], these gaps likely hinder the effective use of digital tools.

The concerns of a significant minority underscore the necessity for institutions to enhance their support systems. Essential enhancements must encompass the assurance of dependable technology access, the provision of ongoing and pertinent training, and the cultivation of a culture that promotes collaborative professional development^[42]. Consistent and equitable support is essential, as teacher confidence and competence are closely associated with institutional backing^[43], particularly in specialized areas such as special education.

5.5. Implications

Regarding EFL instruction for students with special needs, these findings provide important new information for Saudi Arabian educational policy and practice. Teachers’ extensive use of digital tools highlights the need for formal regulations to guarantee that technology is successfully and consistently incorporated into these specialized classrooms.

Although teachers exhibit a high level of digital competency, professional development ought to concentrate on using these abilities particularly in special education settings. Additionally, the differences in institutional support necessitate a fairer allocation of technological resources and support among educational institutions.

In the end, curriculum designers need to stop consider-

ing digital tools as add-ons. Rather, they ought to be carefully incorporated as fundamental, central elements of the pedagogical design of EFL instruction for special needs.

Practical Recommendations

To address these needs, institutions should develop targeted professional development focusing on pedagogical applications of technology in special education EFL, including workshops on assistive technologies and inclusive digital lesson design. Teacher education programs should integrate digital inclusion frameworks into their core curricula.

At the systemic level, we recommend:

- Establishing national digital competency standards aligned with frameworks like DigCompEdu;
- Creating university-training center partnerships for ongoing professional development;
- Implementing school-based digital mentorship programs;
- Ensuring equitable resource allocation through dedicated funding;
- These measures would help create consistent support systems across all educational regions.

6. Conclusions

This study identifies a pivotal dynamic in special education EFL: while digital tools are extensively adopted, their effectiveness hinges more on teachers' specific digital competencies and perceived institutional support than on general experience or qualifications. Teachers with advanced digital literacy employed more sophisticated integration strategies, yet widespread concerns remained regarding inconsistent access to adequate technology and sustained, specialized support.

These findings point to a clear need for action. To be truly effective, institutional strategies must move beyond simply providing technology. They should include equitable resource distribution and sustained, practical professional development focused specifically on adapting digital tools for diverse learners. Empowering teachers in this way is fundamental to creating more inclusive and effective learning environments for special education students.

We acknowledge that this study, focused on teacher perceptions within Saudi Arabia, has limitations. Its scope may not be generalizable to other contexts, and the use of self-

reported data and a cross-sectional design means we cannot establish causality or track evolution over time. Future research should incorporate direct classroom observations and measure student learning outcomes to build a more complete picture of digital tool efficacy.

It is important to recognize that the study relied on self-reported data, which may be subject to social desirability bias or inaccuracies in participants' perceptions of their own digital competence. Additionally, the ANOVA results should be interpreted with caution due to the small cell sizes in certain subgroups, which can limit the robustness and generalizability of statistical comparisons. Future research should employ mixed-methods approaches, incorporating classroom observations or interviews to triangulate self-reported findings and capture richer, context-specific insights.

Future studies should:

- Use longitudinal designs to monitor changes over time;
- Include qualitative techniques such as observations and interviews;
- Examine the relationships between student outcomes and teacher competencies;
- Perform cross-cultural comparative studies;
- Assess particular professional development programs;
- Look into the reasons behind institutional resource disparities; and
- Examine how digital competencies are reflected in classroom practices.

Addressing these issues would promote more efficient teaching methods and improve knowledge of technology integration in special education EFL contexts.

Author Contributions

Conceptualization, data collection, analysis, writing—original draft, review & editing, supervision, A.A.M.M.A.E.D., A.M.M., H.A.J., R.O.A., T.S.S., M.N.A., and A.M.I. All authors have read and agreed to the published version of the manuscript.

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Institutional Review Board Statement

The study was conducted in accordance with the Declaration of Helsinki and approved by the Scientific Research Ethics Committee of Northern Border University (24/13/30-23/05/2024).

Informed Consent Statement

Informed consent was obtained from all subjects involved in the study.

Data Availability Statement

The datasets produced and analyzed in the current investigation can be obtained from the corresponding author upon request.

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Conflicts of Interest

The authors declare no conflict of interest.

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