

# INTEGRATING DIGITAL LITERACY INTO WRITING LESSONS IN ESL CLASSROOM

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## Abstract

*This study investigates the integration of digital literacy into writing lessons and the challenges faced by pre-service teachers in implementing digital tools effectively. In light of the increasing role of technology in education, the development of digital competence among future teachers is essential to enhance pedagogical practices in the English language classroom. The objectives of this research are to identify the barriers that hinder the effective integration of digital literacy in writing lessons, to examine the perceived effectiveness of such integration in improving writing skills, and to determine the extent to which pre-service teachers consider digital literacy in their teaching practices. This study employed a quantitative research design using a survey questionnaire as the main instrument. A total of 100 pre-service teachers from Institut Pendidikan Guru Malaysia participated, selected through purposive sampling. Data were analyzed using descriptive statistics to identify trends and challenges related to digital literacy integration. The findings indicate that while pre-service teachers acknowledge the significance of digital literacy in enhancing writing instruction, factors such as inadequate training, limited access to digital resources, and time constraints impede effective implementation. The study underscores the need for systematic digital literacy training within teacher education programmes.*

**Keywords:** digital literacy, writing skills, pre-service teachers, English language teaching, teacher education.

## Abstrak

*Kajian ini meneliti integrasi literasi digital dalam pengajaran kemahiran menulis serta cabaran yang dihadapi oleh guru pelatih dalam melaksanakan penggunaan alat digital secara berkesan. Seiring dengan peningkatan peranan teknologi dalam pendidikan, pembangunan kecekapan digital dalam kalangan bakal pendidik amat penting bagi memperkukuh amalan pedagogi dalam bilik darjah Bahasa Inggeris. Objektif kajian ini adalah untuk mengenal pasti cabaran yang menghalang integrasi literasi digital secara berkesan dalam pengajaran kemahiran menulis, meneliti keberkesanan integrasi tersebut dalam meningkatkan kemahiran menulis, dan menentukan sejauh mana guru pelatih mengambil kira elemen literasi digital dalam*

*amalan pengajaran mereka. Kajian ini menggunakan reka bentuk penyelidikan kuantitatif dengan soal selidik sebagai instrumen utama. Seramai 100 orang guru pelatih dari Institut Pendidikan Guru Malaysia telah terlibat dalam kajian ini melalui pensampelan bertujuan. Data dianalisis menggunakan statistik deskriptif bagi mengenal pasti trend dan cabaran berkaitan integrasi literasi digital. Dapatan menunjukkan bahawa walaupun guru pelatih mengakui kepentingan literasi digital dalam meningkatkan pengajaran menulis, faktor seperti kekurangan latihan, akses terhadap kepada sumber digital, dan kekangan masa menjadi penghalang utama. Kajian ini menegaskan keperluan latihan literasi digital yang sistematik dalam program pendidikan guru.*

**Kata kunci:** literasi digital, kemahiran menulis, guru pelatih, pengajaran Bahasa Inggeris, pendidikan guru.

## INTRODUCTION

Writing is vital in ESL classrooms as it helps pupils express ideas while improving grammar, vocabulary, and critical thinking. Yulianti (2018, as cited in Vejayan & Yunus, 2022) emphasized that writing fosters structured thinking by enabling pupils to organize and present ideas coherently. It also prepares pupils for real-world communication, such as distinguishing between formal and informal emails. However, ESL pupils often struggle with writing, which Stalin and Kim Hua (2020, as cited in Vejayan & Yunus, 2022) described as the most challenging skill to master. Despite these difficulties, writing contributes significantly to overall language acquisition by reinforcing reading and listening skills. The COVID-19 pandemic changed education globally by forcing schools to adopt online tools such as Zoom and Google Classroom.

According to Munirah Khalid Al Ajmi (2022), this shift affected more than 128 million pupils worldwide and required teachers to develop stronger technological skills for remote teaching. This highlights how vital digital skills have become in education. Digital literacy (DL) involves efficiently navigating and utilising technology. Belshaw (2012) defined it as a set of skills that enhance cognitive processing, while in this study, DL refers to comprehending and applying digitally sourced information (Anggrasari, 2020). In today's digital era, merging digital literacy with ESL writing instruction has become crucial. Deja et al. (2021) highlighted how tools such as e-books, videos, and online platforms enrich learning. Nevertheless, gaps in implementation still persist in schools. Within the Malaysian ESL context, pre-service teachers play a critical role in bridging digital literacy with writing instruction. Therefore, this study examined pre-service teachers' perceptions, challenges, and the effectiveness of integrating digital literacy into writing lessons.

The research aims to (i) identify the challenges that prevent effective integration of digital literacy in writing skills (ii) analyse the effectiveness of integrating digital literacy in writing skills and (iii) evaluate pre-service teachers' perceptions on digital literacy.

## **LITERATURE REVIEW**

Digital literacy has developed through several interconnected literacies. Reddy, Chaudhary and Sharma (2020) identify visual literacy as its earliest form, referring to the ability to interpret and communicate meaning through visual information. Hamaguchi, Nematollahi and Minter (2020) similarly define visually literate individuals as those capable of reading visual texts and understanding visual grammar.

With rapid technological advancement, technology literacy emerged, referring to the ability to use digital tools effectively for productivity and learning (Reddy et al., 2020; Durak, 2019). This differs from computer literacy, which focuses on basic computer use and is considered essential across all age groups due to digitalisation (Tsai et al., 2020; Makhmudov, Shorakhmetov & Murodhosimov, 2020). As access to digital information expanded, information literacy became important for locating, evaluating, and using credible resources. The growth of digital media later introduced media literacy, which involves analysing and creating media text across multiple domains, including healthcare, news, and online etiquette (Reddy, Chaudhary & Sharma, 2019). Collectively, these literacies form the foundation of modern DL, emphasizing its role as a lifelong skill in today's digital society.

Digital literacy is central to 21st-century, student-centred learning. Hanik (2020) highlights the shift from teacher-centred to independent learning, where pupils use digital tools to personalise their learning experiences. DL integration promotes participation by enabling access to diverse sources and facilitating meaningful engagement (Radyuli & Rahmat, 2017, as cited in Masyhura & Ramadan, 2021). Teachers who integrate DL are encouraged to adopt ICT-based approaches that support critical information use and broaden access to resources (Pohan & Suparman, 2020; Sujendra Diputra et al., 2020).

However, research shows that DL integration remains limited. Masyhura (2022) reports that many pupils lack fundamental digital skills, such as using email, despite frequent exposure to digital media. Additionally, teachers often underutilise technology or apply it only on surface level, revealing gaps in training and emphasising the need for more effective DL integration in classroom instruction.

Graham (2019) outlines major barriers such as inadequate instructional time, limited opportunities for practice, superficial teaching strategies, and

insufficient access to digital tools. Internal factors including low motivation and anxiety are also hindering writing development (Bulqiyah et al., 2021), especially when teaching approaches fail to address psychological concerns (Budjalemba & Listyani, 2021).

Effective writing requires pupils to be actively engaged in all stages of the writing process which are pre-writing, while-writing, and post-writing (Bulqiyah et al., 2021). However, emotional factors strongly influence pupils' performance. According to Krashen's (1986) Affective Filter Hypothesis, anxiety, low confidence, and lack of motivation raise pupils' affective filter, reducing their ability to process and produce language. Consequently, pupils who experience stress or low motivation are less likely to express ideas fluently or participate meaningfully in writing tasks. This highlights the importance of creating a supportive and low-anxiety learning environment where pupils feel encouraged to take risks and express their thoughts freely in writing.

Thus, digital literacy enhances learning by improving access to information, supporting engagement, and fostering critical thinking. DL allows pupils to explore diverse online resources, reducing dependence on printed materials (Sadaf & Gezer, 2020). Interactive tools such as videos, quizzes, and multimedia presentations can also increase motivation and participation (Kaur & Singh, 2021). Collaborative platforms further promote communication and shared responsibility, strengthening peer learning (Sadaf & Gezer, 2020).

DL also supports higher-order thinking. Furbani et al. (2025) emphasise that DL enables pupils to analyse, evaluate, and synthesise digital information, with its effectiveness depending on pedagogical integration rather than access alone. In writing lessons, DL supports brainstorming, drafting, revising, and publishing while encouraging reflection and real-life communication. Similarly, Hasibuan, Lubis and Hutagalung (2025) explain that critical thinking in writing involves pupils engaging in higher-order cognitive processes such as analysing information, evaluating credibility, and integrating multiple ideas to develop coherent and well-reasoned arguments. These practices align with Vygotsky's (1978) social constructivist theory, which views learning as a socially mediated process. Through digitally enriched, student-centred writing activities, pupils co-construct knowledge, leading to deeper understanding and long-term retention.

## METHODOLOGY

This study adopted a quantitative, cross-sectional survey design to investigate how Malaysian TESL pre-service teachers integrate digital literacy (DL) into ESL writing lessons. A purposive sample of participants with practicum experience was selected, as they possessed relevant exposure to digital tools and real classroom contexts. Data were gathered using a structured Google Forms questionnaire adapted from Muslem et al. (2018), comprising demographic items, DL challenges, perceived effectiveness, and attitudes measured through Likert-scale responses. The survey method effectively gathered self-reported experiences, while descriptive statistics summarized the observed patterns. In order to ensure instrument quality, content validity was established through literature review and expert evaluation, followed by a pilot study with 30 pre-service teachers. Their feedback led to improvements in clarity, structure, and technical functionality, and reliability analysis yielded a Cronbach's Alpha of 0.973, demonstrating excellent internal consistency.

The final questionnaire was administered online to 106 pre-service teachers over a two-week period, with informed consent obtained to ensure voluntary and ethical participation. Data analysis involved descriptive statistics such as mean, standard deviation, and frequency distribution to assess challenges, effectiveness, and perceptions toward DL in writing instruction. The findings were then interpreted in relation to the research questions, existing literature, and study limitations to determine the extent to which DL supports ESL writing and how prepared pre-service teachers are to implement it in their future classroom.

The findings indicate that pre-service teachers faced several infrastructural and pedagogical barriers that limited the effective integration of digital literacy (DL) in writing lessons. The highest-rated challenges are unreliable internet access ( $M = 3.83$ ) and limited availability of digital devices ( $M = 3.56$ ) which reflect ongoing technological gaps commonly found in Malaysian schools. These results align with Masyhura's (2022) statement that despite familiarity with digital media, teachers and pupils often struggle to fully utilise digital tools due to inadequate technical support and infrastructure. Such constraints force teachers to rely more heavily on traditional approaches, reducing opportunities for authentic, technology-enhanced writing practice.

## FINDINGS AND DISCUSSION

**Table 1**

*Descriptive Analysis of Challenges In Integrating Digital Literacy*

Items	N	Mean	SD
I lack confidence in using technology during English writing lessons.	106	2.42	1.279
I have a hard time aligning technology with lesson goals.	106	2.774	1.229
Limited access to digital devices prevents me from fully integrating technology.	106	3.56	1.310
Unreliable internet connection hinders my use of online tools.	106	3.83	1.150
I was not sufficiently trained during teacher education to use technology for writing.	106	2.76	1.328
I struggle to manage class time when using technology.	106	2.94	1.400
Some students do not know how to use technology effectively.	106	3.92	1.011
I experience technical problems when using technology in writing lessons.	106	3.54	1.088
I find it hard to choose the right tool for specific writing tasks	106	3.36	1.197
I feel pressure to use traditional methods during practicum instead of digital tools.	106	3.08	1.296
There are not enough resources at my practicum school for digital writing.	106	3.71	1.187
I am not familiar with using platforms like Kahoot or Quizizz.	106	2.22	1.448
I receive little support from mentor teachers for using technology.	106	2.83	1.404
I find it hard to motivate students to engage with digital tools.	106	2.84	1.367
I worry that digital tools may not align with assessment requirements.	106	3.40	1.224

Pedagogical barriers further contributed to the difficulty of DL integration. Pre-service teachers reported that managing lesson time when using technology ( $M = 2.94$ ) and motivating pupils to participate in digital tasks ( $M = 2.84$ ) were consistent challenges. Graham (2019) points out that the development of pupils' writing skills is already limited by the restricted instructional time. The use of technology may worsen this problem if setup or troubleshooting consumes extra time. Pupils' lack of digital readiness ( $M = 3.92$ ), the highest mean in this category, also posed significant barriers. This supports Hamaguchi, Nematollahi, and Minter (2020), who argue that digital literacy requires critical interpretation and communication skills that many pupils have yet to develop. Furthermore, frequent technical issues ( $M$

= 3.54), difficulties selecting suitable digital tools (M = 3.36), and pressure to use traditional methods during practicum (M = 3.08) further reflect the complex balancing act teachers navigate when integrating technology.

The role of institutional culture and mentorship also emerged as critical factors. Respondents reported mixed levels of support from mentor teachers (M = 2.83), suggesting that school environments may not always encourage experimentation with digital pedagogies. This observation aligns with Yeosoep (2021), who emphasises that reflective mentoring based on constructivist principles supports pre-service teachers in developing both confidence and competence when using digital tools. Without such support, pre-service teachers may be hesitant to integrate DL consistently, even when they recognise its potential benefits. Overall, the challenges identified in the survey mirror broader findings in the literature, highlighting that teacher readiness often limits the integration of DL in ESL writing classrooms.

Despite the challenges identified, the findings show that pre-service teachers strongly believed in the effectiveness of digital literacy in improving writing instruction. High mean scores across items such as engagement (M = 4.38), increased motivation (M = 4.41), improved writing quality (M = 4.00), and enhanced editing and revision through digital tools (M = 4.42) indicate that DL positively supports both writing processes and learning outcomes. The findings are corroborated by Sadaf and Gezer (2020), who stated that digital platforms facilitate easier access to resources, lessen reliance on physical materials, and enhance the efficiency of writing tasks. This is supported by Kaur and Singh (2021) where interactive digital tools foster engagement among pupils and sustain attention, consistent with respondents' perceptions that technology increases focus and participation.

**Table 2**  
*Effectiveness of Integrating Digital Literacy in Writing Lessons*

Items	N	Mean	Std. Deviation
Digital tools make writing lessons more interactive and engaging	106	4.38	.723
Students write more creatively when using technology.	106	4.13	.829
Digital writing improves students' motivation and participation	106	4.41	.727
Students' writing quality improves with technology.	106	4.00	.956
Digital tools reduce the time needed for writing tasks.	106	4.00	.956
Students retain writing skills better when using digital content.	106	3.89	.908
Digital writing helps build student confidence.	106	4.06	.871
Students are more focused during digital writing	106	4.05	.930

lessons.			
Students are more likely to complete writing tasks when using technology	106	4.08	.933
Digital literacy provides opportunities to apply language skills.	106	4.40	.672
Digital tools help me support students of different proficiency levels.	106	4.22	.756
Using digital platforms allows students to edit and revise more easily.	106	4.42	.675
Technology helps facilitate peer feedback in writing.	106	4.30	.733
Digital tools increase students' interest in writing.	106	4.26	.747
Digital writing tools promote independent learning.	106	4.30	.841

The results also reflect how DL supports higher-order thinking skills. Critical thinking in writing requires students to analyse information, evaluate credibility, and synthesise ideas to construct well-reasoned arguments (Ozogul et al., 2012, as cited in Hasibuan, Lubis & Hutagalung, 2025). Writing tasks that involve critical engagement with sources further strengthen these skills, with research showing improvements in students' analytical and argumentative abilities when such approaches are used (Darwin et al., 2024). Respondents' agreement that DL improves creativity, independence, and real-world communication mirrors this claim, showing that technology not only enhances the writing process but also prepares pupils for authentic digital communication beyond the classroom.

These findings can be further explained through Vygotsky's (1978) social constructivist theory, which emphasises that learning is enhanced through social interaction and mediated tools. In writing lessons, digital platforms enable pupils to brainstorm, draft, revise, and collaborate more efficiently, making the writing process more interactive and socially situated. Using tools such as email drafting on Gmail or shared documents supports collaborative learning and guided participation within the pupil's Zone of Proximal Development (ZPD). This theoretical perspective helps explain why respondents viewed DL as effective in enhancing writing performance: digital mediation expands opportunities for scaffolding, feedback, and collaborative engagement, ultimately supporting better writing outcomes.

**Table 3**  
*Pre-service Teachers Perceptions Towards Digital Literacy*

Items	N	Mean	Std. Deviation
I believe digital literacy is essential for 21st-century English pupils.	106	4.52	.771
I plan to use digital tools more often in future lessons.	106	4.51	.680
I feel confident using technology in writing lessons.	106	4.29	.780
Digital literacy should be explicitly taught during writing lessons.	106	4.21	.752
I enjoy teaching writing with technology	106	4.42	.703
Digital writing prepares students for real-world communication.	106	4.35	.884
Digital writing promotes creativity and independence.	106	4.36	.819
Digital literacy is an important life skill for students.	106	4.48	.693
Teacher education should provide more training in digital literacy.	106	4.49	.665
Technology helps me adjust writing tasks for different student needs.	106	4.44	.705
I am willing to learn more about using digital literacy in teaching.	106	4.57	.618
I want to explore more digital tools to improve my teaching.	106	4.57	.633
Digital literacy improves students' confidence in writing.	106	4.38	.786
I believe digital literacy should be assessed in the ESL curriculum.	106	4.38	.762
Digital writing is more enjoyable for students than traditional methods.	106	4.45	.806

The findings revealed that pre-service teachers held strongly positive perceptions toward the importance of digital literacy (DL) in English writing instruction. Respondents widely agreed that DL is essential for 21st-century English pupils ( $M = 4.52$ ) and viewed it as a crucial life skill needed for future academic and professional success ( $M = 4.48$ ). Their enthusiasm was reflected in their intention to use digital tools more frequently in future lessons ( $M = 4.51$ ), their willingness to learn more about DL ( $M = 4.57$ ), and their interest in exploring a wider range of digital tools ( $M = 4.57$ ). Pre-service teachers also expressed strong confidence in using technology for writing lessons ( $M = 4.29$ ), enjoyed teaching writing through digital tools ( $M = 4.42$ ), and believed that DL should be explicitly taught during writing instruction ( $M = 4.21$ ), demonstrating their commitment to integrating digital practices meaningfully and consistently.

These positive perceptions align with existing research showing that DL supports modern, student-centred pedagogies. Hanik (2020) stated that DL encourages independent and constructive learning, which helps pupils take a more active role in shaping their own understanding. The pre-service teachers' recognition of this benefit explains why they associated DL with

increased creativity (M = 4.36), autonomy, and real-world communication skills (M = 4.35). The literature also emphasizes DL as a mindset that requires ongoing professional development. Potyrała and Tomczyk (2021) highlighted the importance of continuous training for teachers to remain competent with evolving technologies, which proves the respondents' belief that teacher education programmes should offer more DL training (M = 4.49). This awareness reflects their understanding that DL will be an essential component of their future teaching practice.

Furthermore, respondents perceived DL as effective in supporting diverse learner needs (M = 4.44), improving pupils' writing confidence (M = 4.38), and making lessons more engaging than traditional approaches (M = 4.45). These perceptions mirror global shifts toward technology-enhanced learning. Studies such as AlAjmi (2022) and Reddy, Chaudhary, & Hussein (2023) observed that strong digital leadership and DL integration narrow skill gaps are the factors that may have shaped pre-service teachers' own understanding of DL's importance. Their agreement that DL should be included within ESL assessment frameworks (M = 4.38) further highlights their belief that digital competencies are not optional but fundamental to contemporary writing lessons. Overall, these findings indicate that pre-service teachers view DL as essential, transformative, and deeply relevant to the future of ESL writing education.

## **IMPLICATIONS AND RECOMMENDATIONS**

This study examined the integration of digital literacy (DL) into ESL writing lessons among Malaysian pre-service teachers, focusing on three key areas which are the challenges they face, the effectiveness of DL in improving writing skills, and their perceptions of DL as part of writing instruction. The findings revealed that while pre-service teachers were generally confident and willing to use digital tools, they encountered several barriers that affected implementation. These included difficulties aligning technology with lesson objectives, limited training in digital pedagogy, and infrastructural issues such as unreliable internet access and insufficient devices. Such constraints indicate that successful DL integration depends not only on teacher readiness but also on systemic and institutional support.

Despite these challenges, the study found that pre-service teachers viewed DL as highly effective in enhancing pupils' writing performance, engagement, and creativity. Digital tools were seen as valuable for supporting brainstorming, drafting, collaboration, feedback, and revision processes that made writing lessons more interactive and student-centred. Respondents also highlighted that DL promotes independent learning, confidence, and real-world communication skills, aligning with the demands of 21st-century education. These insights suggest that when integrated meaningfully, DL can enrich writing pedagogy and foster essential higher-order thinking skills.

## CONCLUSION

Overall, pre-service teachers held strongly positive perceptions of DL and demonstrated a clear commitment to using digital tools in their future classrooms. They recognised DL as an essential component of modern ESL instruction and emphasised the need for it to be explicitly embedded rather than treated as supplementary. The study concludes that to fully realise the benefits of DL integration, three elements are crucial: comprehensive teacher training, sufficient school infrastructure, and a supportive environment that encourages innovation. When these conditions are met, DL can significantly enhance writing instruction and equip pupils with the digital competencies required for future academic and technological demands.

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