



ICT and eLearning in L2 Writing Classrooms: Challenges and Opportunities

Hajar Mahfoodh¹, Shadiya AlHashmi², Sofia Hashim³

¹ English Language Centre, University of Bahrain, Bahrain

² Department of English Language and Literature, University of Bahrain, Bahrain

³ Bahrain Teachers' College, University of Bahrain, Bahrain

Abstract

Since the emergence of COVID-19, eLearning and Information and Communication Technology (ICT) have become essential pedagogical tools in second language (L2) classrooms. This research aims to expose overlooked gaps in L2 pedagogies in digital and computer-based classrooms, with a focus on writing courses at the university level. It employs triangulation in its methodology, combining semi-structured interviews with twenty-four L2 instructors and twenty-four students in the Middle East, a comprehensive literature review, and a thematic analysis conducted using NVIVO. Results reveal three significant findings among the L2 students: they demonstrate strong enthusiasm for integrating digital innovations and AI to aid their L2 writing, acknowledge ICT as crucial for enhancing creativity in L2 writing, and utilise these technologies to such an extent that they hinder their active engagement with their L2 writing. It also indicates insightful findings among teachers: instructors still struggle to customise ICT and AI to develop students' L2 writing skills, and some express strong resistance, preferring the traditional paper-and-pen method. The research concludes with a reflection that signals the need to explore alternative assessment criteria and methods to adapt to changes in L2 classes using ICT within eLearning environments.

Keywords: L2 Pedagogy, eLearning, L2 Writing Classroom, ICT in L2 classrooms.

1. Introduction

This paper examines potential gaps in digital and e-learning-based L2 writing classrooms. To begin with, pedagogical practices in L2 classrooms have become increasingly dependent on Information and Communication Technology (ICT), resorting to various modes of eLearning, whether asynchronous, synchronous, or desynchronous, since the COVID-19 pandemic [1], [2], [3]. However, this ICT trend in L2 is not a mere result of the pandemic; instead, it has become emblematic of pedagogical practices in the last two decades, bringing significant change to "the ways we write, the genres we create, the authorial identities we assume, the forms of our finished products, and the ways we engage with readers" [4]. Consequently, educational research has investigated the ongoing changes that are producing new forms of L2 writing assignments, such as online collaborative writing, automated writing feedback, the use of infographics, and digital multimodal tasks [5], [6]. It has also examined the new software and technological platforms that facilitate L2 writing assessment, including *Turnitin* and *SafeAssign* [7]. These ongoing changes in technology have, hence, created many shifts in both assessment and course design in L2 courses.

L2 writing comprises the highest-order skill, as it requires students to produce correct texts in another language through their cognitive skills, as well as their aptitude, which has led to this field receiving more attention in both educational research and pedagogical practices. With the emergence of ICT and eLearning, the task of producing accurate texts requires further consideration and a second review, as it can be corrected through AI and ICT software, including ChatGPT, Pilot, and Grammarly [8] [9]. These software programs and platforms also require both students and educators to learn how to use them correctly, whether in teaching or learning. Some critics are positively in favour of changing the way educators think about L2 writing assessment and teaching, insisting that these technological changes could lead to a greater focus on creativity and design once they are employed after careful planning and continuous assessment of their use in class [7] [10]. Others are more resistant to ICT use, arguing that ICT would lead students to rely substantially on software rather than fostering creativity and completing tasks correctly [3] [11]. However, most L2 writing educators agree that knowledge delivery and assessment require alternative readings to account for the fact that such



software and technology platforms are constantly changing. This research suggests that educators should explore the gaps in these readings to learn from mistakes when implementing software tools, thereby making ICT a successful companion to L2 Writing classrooms.

To address the main issues occurring in the L2 Writing course, this research raises the following:

- What are the advantages of adopting ICT in L2 courses for both students and educators?
- What makes ICT and digital classrooms feasible to enhance L2 writing courses in both teaching and learning?
- What are the problems that students and educators encounter when employing ICT and digital platforms in L2 Writing courses?

2. Literature Review

Within the 21st-century learning paradigm, the ability to use ICT creatively and critically has become indispensable [12]. Current educational rubrics emphasise the importance of incorporating technology, collaborative digital practices, and creating authentic writing experiences that are consistent with the demands of the digital era [13]. The use of ICT has transformed many writing concepts in the L2 context over the last decade [14]. Not only has the integration of ICT developed students' digital literacy, but, together with AI, it has reshaped L2 writing instruction for current and future learners [15]. This integration has revolutionised L2 writing by incorporating digital technologies that draft, revise and provide feedback, enabling learners to make rapid progress towards accuracy in their writing [16].

Similarly, the Gulf Cooperation Council (GCC) countries have significantly embedded the use of ICT and AI in their education systems, especially during and after the COVID-19 pandemic [17]. This move has contributed to consolidating their education systems, despite some challenges related to restricted accessibility and resource limitations [18]. Integrating ICT purposefully into the GCC countries' writing curricula enables a reflective, inclusive, and critically engaged educational environment that aligns L2 learners with future demands [19]. The implementation of ICT has played a transformative role in advancing L2 writing instruction in GCC language-learning classrooms, such as in Oman, where findings indicate that incorporating ChatGPT into ESL classrooms has improved students' writing skills, particularly in paragraph structure, grammatical accuracy, and conceptual development [20]. Nonetheless, effective implementation requires adequate educator training and reliable technical resources, support, and infrastructure.

2.1 Advantages of ICT Integration in L2 Writing

Through the use of technology in L2 writing, which includes various multimedia interfaces and online writing platforms, ICT facilitates students' engagement and provides opportunities for authentic linguistic expression and production, aligning with modern approaches to effective L2 writing pedagogy [21]. Generative AI technologies, such as ChatGPT, enable the delivery of effective feedback, stimulate idea development, and enhance learners' revision quality and habits [22], [23]. Research also suggests that ICT has increased the quantity of L2 writers, implying that learners are encouraged to write more when supported by digital platforms [24]. Within the English as a foreign language (EFL) and English as a second language (ESL) writing domain, the implementation of ICT and AI mechanisms has shifted how L2 writing is delivered and learnt. ICT tools, ranging from spelling and grammar checkers to automatic feedback systems, have brought substantial benefits to L2 writing practices in EFL/ESL classrooms, enhancing writing efficiency, stimulating learners' motivation, and advancing autonomous learning [22]. One key finding of integrating ICT in ESL classrooms is its ability to scaffold students' writing practices, enhancing their understanding and engagement. A study reports that a major advantage in their investigation was that the learners' ability to structure their writing tasks with digital support, including vocabulary platforms, blogs, and online templates, which provided direct, responsive, tailored feedback and linguistic support [25]. Research also suggests that the application of ICT in L2 writing increases learners' motivation, participation and enthusiasm through the inclusion of multimedia interactive exercises and immediate responses [26].

ICT integration into L2 writing practices provides many pedagogical benefits. Engagement in the Computer-Assisted Language Learning (CALL) study framework also empowers teachers to master a technology-integrated pedagogy that develops their technology literacy, empowers their professional confidence, and strengthens their motivation [27], [28]. Teachers' participation in collective lesson design, analysis, and evaluation processes encouraged them to employ ICT and digital technologies, which helped them recognise their value and build confidence when facilitating L2 writing instruction [27]. Engagement in this sense stimulates the teachers' instructional motivation and deepens their



commitment to ongoing development [27]. Besides, gamification and learning through the use of digital tools, such as PowerPoint games, have positively enhanced ESL students' writing proficiency and vocabulary [29]. Another benefit of employing ICT in L2 education is that it expands students' opportunities to practice and explore L2 outside school hours, enhancing L2 learning autonomy [28]. This continuous engagement among L2 students develops their writing fluency and strengthens their awareness of the strategic and cognitive processes of L2 writing [28].

2.2 Challenges of Applying ICT to L2 Writing

Despite its many advantages, integrating ICT into L2 writing is still challenged by barriers, including a lack of technological user skills, inadequate professional training and preparation for both learners and educators, and limited access to ICT [18]. Recurring technical disruptions, including network outages, hardware and software malfunctions, and poor Wi-Fi, interrupt the writing flow and reduce instructional efficiency, potentially frustrating both instructors and students [30]. Some L2 teachers have reported that they lack digital literacy and sufficient professional development, which makes them unconfident and hesitant when implementing ICT in their classrooms [31]. L2 students may also become distracted and could rely on autocorrect and digital platforms to generate their writing tasks. This overreliance can reduce students' engagement with their writing tasks, leading them to present their writing with only minor corrections, which could negatively impact their learning process [32]. Another challenge is inequity in access to ICT, technology, and digital devices. Students from disadvantaged and lower socioeconomic backgrounds have limited access to essential digital resources, potentially leading to marginalisation in ICT-integrated classrooms [33]. Furthermore, implementing generative AI in L2 writing raises ethical and pedagogical concerns regarding student dependency, transparency, data privacy and ethical responsibility. Finally, institutional barriers, including teacher resistance and curricular constraints, hinder the integration of ICT into L2 writing and limit its adoption in L2 writing pedagogy [30].

2.3 Global Applications of ICT and E-Learning

ICT and e-learning have been employed across different educational contexts globally for several reasons [34]. One significant reason is to enrich L2 writing pedagogy and instruction. For instance, in the Kingdom of Saudi Arabia, higher education institutions have implemented several digital systems and platforms, such as Blackboard, to manage online formative assessment, provide online instructor feedback, facilitate assignment submission, and assess students' progress [30]. In Turkey, the use of Padlet and Edmodo has enhanced their students' engagement, reflective writing, participation, and even their confidence in writing [28]. Similar outcomes have been reported in East Asia, where automated feedback, collaborative technologies and learning management systems have enabled grammatical control, sustained revision, drafting quality, and peer revision among L2 writers [35]. As a form of e-learning, several teachers have even started utilising social media platforms, such as Snapchat and Instagram, to connect their L2 classrooms and academic content with real-world learning contexts and experiences [36]. By doing this, educators can familiarise their L2 students with professional environments and help them develop 21st-century competencies and skills, thereby enhancing their L2 writing compositions. Conclusively, the potential for successfully implementing ICT and e-learning to develop L2 writing rests on overcoming the existing pedagogical and strategic challenges.

3. Methodology

This research employs a blended methodology, combining semi-structured interviews, a comprehensive literature review, and NVivo as a tool to facilitate thematic analysis. This triangulation is reported to be a substantially reliable method for validating gathered data, allowing researchers to compare and contrast the results in a comprehensive manner, drawing on both findings from the literature review [22], [23]. After signing a letter of consent, the interviews are conducted with twenty-four educators, from different age groups, who employ ICT in their L2 writing classrooms in the Middle East and twenty-four students who are seniors and have experienced ICT usage in their L2 writing classes during their university education; their responses are compared with the findings of the paper's literature review. All participants had the opportunity to withdraw after reviewing their responses, with identities kept confidential to protect their privacy. The gathered data is then processed in NVivo to produce a thematic analysis that focuses on common ideas, words, and statistics, primarily the



hurdles to the successful use of ICT in L2 writing courses identified in the interviews. Finally, the research explores potential solutions and implications to pave the way for future research.

4. Findings

4.1 L2 Writing Educators: Pros and Cons of ICT in L2 Classrooms

In line with the literature review, the twenty-four educators across the various universities offered diverse opinions on ICT in L2 writing classrooms. The researchers categorised faculty members into three groups based on their attitudes toward ICT and digital platforms in L2 writing classrooms (Table 1).

Faculty Member Categories	Reasons	Age Variable	AI and ICT Literacy
Against ICT and AI (6 participants)	- Distracting students in class - Plagiarism issues - Students forget how to take notes and write for a pen-and-paper test - Students use the social media "chat" language - Students' spelling mistakes get worse - Low levels of creativity	Most of this category have more than 16 years of teaching experience. The age of the majority: above 41 years old	2 average 2 familiar 2 experts
Support ICT and AI (10 participants)	- Allows self-assessment due to automated feedback - Creates a comfortable, accommodating educational environment - High levels of creativity, especially in design, charts, infographics, and choice of words - Saves time to detect plagiarism/ accuracy - Allows teachers and students to respond faster - Students learn from their mistakes (Grammarly and Word Review) - Students learn how to facilitate the digital world to produce quality writing, a step towards coping with the real world, the marketplace	Most of this category have teaching experience of 11 to 14 years. The age of the majority: 34 – 40 years old	3 familiar 7 experts
Alternative articulations on ICT and AI (8 participants)	- You need to remember to customise ICT for the needs of the classroom. - AI, ICT, and digital platforms are the language of the future, but we need to remind the students that they should be in control. - The challenge is to teach students how to utilise digital assets to refine their work. - If I, the teacher, use digital tools, I cannot deny the students' need to use them. - It is the responsibility of the L2 writing teacher to design assignments that incorporate ICT and digital aids while still scaffolding tasks to prevent copying and plagiarism.	Participants vary in both age and years of experience.	All Experts

Table 1. Summary of Educators' Responses

4.2 Students: ICT Is A Lifesaver in L2 Writing

Unlike the educators' responses, all senior students opt for ICT and digital aids in L2 classrooms. They stressed that digital aids are their lifesavers in their writing assignments, and reflected as follows:

- In the marketplace, managers demand speed in task accomplishments, which means fast submission of reports, studies, and letters.
- We can always use automated corrections to save our time; this is what we use in the market, which is moving towards more digitalisation.
- It saves our work, unlike physical papers, which can be easily lost or forgotten.



- It enables us to identify mistakes and understand L2 weaknesses (e.g., subject-verb agreement).
- Teachers can use digital tools to detect plagiarism.
- ChatGPT is challenging for teachers, but this requires further education on their part.
- Students can produce creative charts and infographics; they learn how to prioritise and emphasise when preparing Posters through digital aids.

On the other hand, students signalled valid disadvantages of digital tools in L2 writing classrooms:

- Some students get distracted, especially if the teacher does not check on us in class.
- Some students struggle to complete their tasks at home due to digital distractions; time management workshops could help address this issue.
- Some students use digital aids to write their entire responses to general questions.
- AI cannot generate creative questions or those related to local topics; "it is difficult to use digital aids to generate a description about our parking lot or a certain garage in our neighbourhood."
- "My teacher gave us a project on a local barber and asked us to develop a marketing plan for it, including an interview and an interview analysis; no ChatGPT or similar tools could help."

4.3 NVivo: Common Themes, Great Opportunities

The interviews (11,560 words) with students and educators were analysed using NVivo to identify main themes based on selected repeated clusters (relevant to the topic of this paper), as shown in Table 2.

Word cluster	Count	Percentage
Use ICT	481	4.16 %
Use digital aids	390	3.37%
With ICT	484	4.19%
Against ICT	95	0.82%
Plagiarism	114	0.99%
Distraction	243	2.02%
Tailor-made project	386	3.34%
ICT - Creativity	189	1.63%
ICT Training	354	3.06%
ICT-Distraction	295	2.55%

Table 2. Most Frequently Used Clusters Based on the Explore-Query of NVIVO

Using NVivo, the literature review papers were auto-coded individually to identify the most frequent issues: themes that hinder the successful/constructive implementation and incorporation of ICT, AI, and digital platforms in L2 classrooms. The results are summarised in Table 3.

Top Five Frequent Words Based on (Thematic Coding) Auto Code – all within L2 Writing Context	
ICT pros and cons	Procrastinators in digital education
ICT advantages/ disadvantages	ICT distracting tools
ICT customised	AI and plagiarism
Lack of ICT education	Student autonomy
Digital aids training	Creativity
AI and digital aids	Collaborative work issues
Technology in L2 writing	Digital marketplace gap
Digital literacy/illiteracy	Real-world education gap

Table 3. Thematic Analysis-Based Outcome of Individual Literature Review Papers

5. Discussion and Analysis

The research findings reveal four main themes that comprise the hurdles encountered by L2 writing students and teachers, categorised as follows.

5.1 Lack of Training and Literacy



Although some educators and students expressed reluctance to use digital aids, their responses reveal a lack of digital literacy that requires further training. Most educators are reluctant to integrate digital work into L2 writing due to concerns about plagiarism, which can be mitigated by using multiple plagiarism checkers, such as *Turnitin*, *Grammarly*, and *SafeAssign*, as indicated by previous research [7]. When students realise that these tools reveal their copied sections, they will naturally seek alternative methods, particularly AI applications and platforms, such as Gemini and ChatGPT. Since these resources are relatively recent, tracing the writing they produce is challenging; however, teachers can customise their L2 writing task by adding another form of assessment, such as a presentation or a short talk, to reflect on their work. In this instance, L2 educators can compare the registers and vocabulary to determine whether the output is similar in terms of language competency and accuracy. Some applications can also detect AI-generated writing, such as GPTZero and Copyleaks AI Content Detector [24]. While they are not 100% effective, they can still quickly expose substantial parts generated by AI.

5.2 Behavioural and Attitude Issues

Most of the auto-coded themes generated by NVivo relate to personal behaviour and attitudes among both educators and students. While some researchers and interviewees claim that the growth of procrastination in L2 writing classrooms is due to digital aids, we argue that this problem could be addressed by assigning clear, yet feasible, deadlines for educators/students. Setting deadlines serves as an effective scaffolding tool that can potentially minimise assignment submission and grading delays. Another related issue is the distraction caused by digital aid tools, whose causes are often overlooked; it includes responding to emails and messages, following the news, and, for students, entertainment, aligning with the literature findings [31]. While this hurdle is significant, it can be addressed through time management workshops for both students and teachers. Finally, collaborative writing using L2 is another issue that needs further development. Collaborating through digital media and writing on digital platforms requires advanced digital literacy and digital communication skills [2]. Online collaborative writing could create an educational environment that lacks equity due to unequal digital literacy among educators/students and differences in economic background. Such issues require further consideration and awareness to ensure the successful use of digital aids in L2 writing classrooms.

5.3 Lack of Customised/Tailor-Made Approaches

The interviews with both students and educators reveal a significant underlying issue in L2 writing assignments, namely, the lack of tailor-made projects. Most assignments are written in general terms and lack detailed descriptions of expected responses, making them vulnerable to AI-generated texts. In other words, L2 writing educators should consider how to prevent students from relying entirely on AI to generate their tasks by providing carefully crafted guidelines and rubrics. Designing projects based on drafting also enables educators to detect when students resort to AI and, hence, address such incidents professionally. Another significant outcome of L2 writing is teaching students that writing is a process that requires drafting and redrafting. Thus, suggestions to design tailor-made assignments could include assigning specific vocabulary and a particular tense (with a specific count of verb tenses) for the prompt. Educators can also align projects with tasks specifically assigned from the local marketplace/surroundings. They can create a reflective talk on the paper to identify similarities and mastery of vocabulary and structure. Additionally, they can ask students to generate a writing task through AI and then apply corrections to make the text meaningful and readable.

5.4 Defining Creativity As Per the Marketplace

Aligning L2 writing tasks with marketplace needs is highly challenging, particularly amid the growing digital world. The real world of business heavily relies on high-tech solutions, making creativity closely aligned within this context. Thus, the concept of creativity warrants further consideration, as the literature suggests [3]. One main issue that needs to be assessed as creative is the layout and presentation when submitted to digital platforms, as these two points are key factors in the marketplace's ethics of communication. Hence, some ideas could help pair creativity with the marketplace within the digital writing of the L2 classrooms, such as:

- Involving a real-world business representative in the assessment.



- Turning the writing task into a competition that involves third-party reviewers.
- Allocating grades for creative designs and presentations.
- Reviewing pedagogical practices to implement changes to cope with digital changes and needs in the marketplace.

6. Conclusion

This research has examined existing hurdles that affect the successful incorporation of ICT aids in L2 writing classrooms. Through a comprehensive literature review and 48 interviews, the study examined the advantages and pitfalls of adopting ICT in L2 courses, aiming to offer feasible suggestions for enhancing digital integration in the classroom. After analysing the gathered data, four main issues are identified: the need to pair creativity with the marketplace, behavioural issues, the lack of customised, detailed tasks, and the imminent need for digital literacy education and training. While such suggestions sound feasible on paper, the research acknowledges that the policies and regulations governing the use of digital aids need to be articulated and assessed in a timely manner to allow for improvements in the digital content of curricula. In addition, digital aids are designed to help humans work more proficiently and efficiently in the digital business world. Hence, it is the educator's duty to convey this concept to students rather than resist the dramatic change afflicting all fields, including education. Finally, the limitations of this study include the sample size, the university level, and the age group. However, these points could pave the way for further research in this context.

REFERENCES

- [1] Mahfoodh, H. & H. AlAtawi, "Higher Education in COVID-19: From Emergency to Sustainable Remote Education", Sustainable Leadership and Academic Excellence International Conference (SLAE), 2021, 1-7.
- [2] Mahfoodh, H. & Al-muqahwi, R., "Potential Reforms in the GCC Higher Education Post COVID-19," in Challenges and Reforms in Gulf Higher Education: Confronting the COVID-19 Pandemic and Assessing Future Implications, Ed. Segumpan, R. & McAlaney, J., 2023, London, Routledge, 2023.
- [3] Li, M., "Researching and Teaching Second Language Writing in the Digital Age", Cham, Palgrave Macmillan, 2021.
- [4] Hyland, K. "Teaching and researching writing, New York, Routledge, 2022, 47.
- [5] Abe, M., "Interactional practices for online collaborative writing", Journal of Second Language Writing, 49, 2020, 100752.
- [6] Li, M., & Zhang, M., "Collaborative writing in L2 classrooms: A research agenda", Language Teaching, 56(1), 2023, 94-112.
- [7] Li, M., & Li, J., "Online peer review using Turnitin in first-year writing classes", Computers and Composition, 46, 2017, 21-38.
- [8] Hsu, H. C., "Wiki-mediated collaboration and its association with L2 writing development: An exploratory study," Computer Assisted Language Learning, 32(8), 2019, 945–967.
- [9] Hafner, C. A., & Ho, W. Y. J., "Assessing digital multimodal composing in second language writing: Towards a process-based model", Journal of Second Language Writing, 47, 2020, 100710.
- [10] Elola, I., & Oskoz, A., "Writing with 21st century social tools in the L2 classroom: New literacies, genres, and writing practices", Journal of Second Language Writing, 36, 2017, 52-60.
- [11] Pakdel, F., Khojasteh, L., Kafipour, R., & Shahsavar, Z., "Navigating AI writing tools in medical education: A SWOT analysis of L2 academic writing perspectives", Language Teaching Research, 2025, 1-34.
- [12] Voogt J., & Pareja Roblin N., "A comparative analysis of international frameworks for 21st century competences: Implications for national curriculum policies", *Journal of Curriculum Studies*, 44(3), 2012, 299–321.
- [13] Tan C., & Liu M., "Using ICT in teaching the Chinese language: Practices and reflections from Singapore", in K. Soh (Ed.), *Teaching Chinese as a Second/Foreign Language: Practices and Reflections*, Springer, Singapore, 2016, 55–72.
- [14] Stiefenhöfer L., & Michel M., "Investigating the relationship between peer interaction and writing processes in computer-supported collaborative L2 writing: A mixed-methods study", *Language Learning and Language Teaching*, 15(1), John Benjamins Publishing Company, 2020, 123–146.
- [15] Amengual-Pizarro M., "Exploring the relationship between out-of-class engagement with English and academic achievement at university level", *Journal of Research in Applied Linguistics*, 15(2), 2024, 103–116.



- [16] Li W., Lu N., & Zhuang J., "A review of empirical studies on second language writing feedback in the background of AI (2014–2024)", **Transactions on Comparative Education**, 7(1), 2025.
- [17] Michaleczek I. J. D., Kayan-Fadlelmula F., & Sellami A. L., "Research on higher education during the COVID-19 in the Gulf Cooperation Council: An overview of publications in the journal Sustainability", **Sustainability**, 14(17), 2022, 10886.
- [18] Noreen U., Shafique A., & Yakubu B. M., "Higher education in the COVID-19 environment: ICT-based perspective for GCC countries", in A. Al-Youbi, M. Khan, & A. M. Abdel-Mohaimen (Eds.), **Challenges and Reforms in Gulf Higher Education: Confronting the COVID-19 Pandemic and Assessing Future Implications**, Springer, 2023, 125–142.
- [19] Ozfidan B., El-Dakhs D. A. S., & Alsalam L. A., "The use of AI tools in English academic writing by Saudi undergraduates", **Contemporary Educational Technology**, 16(4), 2024.
- [20] Chirciu A. R., & Wren J., "A balancing act?: Opportunities for using ChatGPT along with teacher instruction in the English as a second language writing classroom", **Progress in Education**, 78(1), Nova Science Publishers, 2024, 97–113.
- [21] Pan J., & Teng L. S., "Can digital collaborative writing intervention promote L2 learners' writing performance and co-regulated learning: A mixed-methods design", **Journal of Second Language Writing**, 2025.
- [22] Liyan B., & Selvaraj V., "Peer assessment and evaluation tools: Impact on writing skills development in online language learning – A review of recent studies", **ResearchGate**, 2023.
- [23] Mahapatra S., "Impact of ChatGPT on ESL students' academic writing skills: A mixed methods intervention study", **Smart Learning Environments**, 11, 2024, Article 9.
- [24] Wen X., & Walters S. M., "The impact of technology on students' writing performances in elementary classrooms: A meta-analysis", **Computers and Education Open**, 3, 2022, 100082.
- [25] Karunakaran B., & Jebakumar A. N., "The effective use of ICT tools for ESL classroom to improve writing skills", **AIP Conference Proceedings**, 2794(1), 2023, 020024.
- [26] Jeyabalan V. D., & Cynthia P. C., "Information and communication technology for teacher development", in S. P. Dhanavel (Ed.), **Continuing Professional Development of English Language Teachers**, Springer, 2022, 151–167.
- [27] Karimi M. N., Nami F., & Asadnia F., "Professional development through CALL lesson study: L2 writing teachers' perception and practice", **Computer Assisted Language Learning**, 36(7), 2023, 1364–1385.
- [28] Toprak Yildiz T. E., "The use of ICTs in second language education: Opportunities and challenges", in **Recent Developments in Individual and Organizational Adoption of ICTs**, IGI Global, 2021, 202–213.
- [29] Rafiqah K. R. M., Pazilah F. N., Tong G. Y., Yunus M. M., & Hashim H., "Game on! Development and evaluation of computer games for ESL classroom", **International Journal of Scientific and Technology Research**, 9(2), 2020, 1976–1980.
- [30] Alamri B., "Challenges of implementing technology in ESL writing classrooms: A case study", **English Language Teaching**, 14(12), 2021, 36–36.
- [31] Ng M., & Yunus M. M., "Perceptions and challenges to ICT use in ESL lessons among Malaysian primary teachers", **Creative Education**, 12, 2021, 1532–1557.
- [32] Wang Y., & Kamarul Kabilan M., "Integrating technology into English learning in higher education: A bibliometric analysis", **Cogent Education**, 11, 2024, 2404201.
- [33] Wang Y., & Kamarul Kabilan M., "Evaluating impact: South Africa's e-education white paper on digital equity and post-COVID education leadership", **Cogent Education**, 11(1), 2024, 2415749.
- [34] Mahfoodh H., & Al-Atawi H., "Sustaining higher education through eLearning in post COVID-19", in **2020 Sixth International Conference on e-Learning (econf)**, IEEE, 2020.
- [35] Kim S. J., "Evaluating the impact of automated writing evaluation tools on grammatical accuracy among Korean EFL learners", **Computer Assisted Language Learning**, 35(7), 2022, 1359–1378.
- [36] Mahfoodh H., & Hashim S., "Integrating employability skills in EFL speaking and writing curricula through digital platforms", **TESOL International Journal**, 16(1), 2021, 66–87.