

Technologies in English as a Second/Foreign Language Writing Classes

Tecnologias em aulas
de escrita em inglês
como segunda língua/
língua estrangeira

Tecnologías en clases
de escritura en inglés
como segunda lengua/
lengua extranjera

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Abstract

This paper presents a systematic review on the use of technologies in English as a Second Language (ESL) and as a Foreign Language (EFL) writing classes. The pursued objectives were to: 1) review recent empirical studies for the use of technologies in ESL/EFL writing classes; and 2) synthesize and assess the impacts of digital technologies on written texts and the writing process. Hence, the findings of this review are relevant because the arrival of new technologies has changed the environment in which digital writing is practiced and there is a lack of rigorous literature reviews that allow a better comprehension of these impacts (Lira-Gonzales & Grégoire, 2022).

Keywords

digital writing; ESL/EFL, educational technology; writing skills; English

Resumo

Este artigo apresenta uma revisão sistemática sobre o uso de tecnologias em aulas de escrita de Inglês como Segunda Língua (ISL) e Língua Estrangeira (ILE). Os objetivos foram: 1) revisar estudos empíricos recentes para o uso de tecnologias nas aulas de redação ISL/ILE; e 2) sintetizar e avaliar os impactos das tecnologias digitais em textos escritos e no processo de escrita. Portanto, os achados desta revisão são relevantes porque a chegada de novas tecnologias mudou o ambiente em que a escrita digital é praticada e há um vácuo de rigorosas revisões bibliográficas que permitem uma melhor compreensão desses impactos (Lira-Gonzales e Grégoire, 2022).

Palavras-chave

escrita digital; ISL/ILE; tecnologia educacional; habilidades de escrita; inglês

Resumen

Este artículo presenta una revisión sistemática sobre el uso de tecnologías en clases de escritura de inglés como Segunda Lengua (ISL) y Lengua Extranjera (ILE). Los objetivos perseguidos fueron: 1) revisar estudios empíricos recientes para el uso de tecnologías en las clases de escritura de ISL/ILE y 2) sintetizar y evaluar los impactos de las tecnologías digitales en los textos escritos y en el proceso de escritura. Por lo tanto, los hallazgos de esta revisión son relevantes porque la llegada de las nuevas tecnologías ha cambiado el entorno en el que se practica la escritura digital y existe un vacío de revisiones bibliográficas rigurosas que permitan una mejor comprensión de estos impactos (Lira-Gonzales y Grégoire, 2022).

Palabras clave

escritura digital; ISL/ILE; tecnología educativa; habilidades de escritura; inglés

Introduction

The process of digitalization is leading to a fundamental social change affecting all spheres of social life (Kergel & Heidkamp, 2022). In the pedagogical field, more specifically in the field of second language pedagogy, there is a need for restructuring key concepts such as learning, teaching and education that consider socio-economic and cultural changes. Indeed, “with the ever-growing significance and diversification of media, there is a call to challenge, renegotiate and expand on current discourses that have formulated media literacy as an integral objective in 21st-centure education” (Lütge, 2022 p. 1).

This paper reports on a systematic literature review on the use of technologies in ESL/EFL writing classes. In a previous knowledge synthesis concerning the use of technologies in L1 and L2 classes (Lira-Gonzales & Grégoire, 2022), the scope of study was limited to elementary and secondary educational levels, and further research in the context of tertiary education was proposed.

The present literature review responds to that call aiming to: (1) review empirical studies carried out between 2015 and 2021 on the use of technologies in ESL/EFL tertiary writing classes and (2) synthesize and assess the impacts of digital technologies on written texts and the writing process.

We hope that this literature review contributes to analyse the implications of cultural change on second language education in the digital age by bringing together various studies engaging with electronic writing practices in second language education. In painting a picture as to the current landscape of second and foreign language writing practice in formal and informal contexts, this work aims to outline practices of use that are promising for implementation within second and foreign language education.

Method

To include only the most recent research findings, we reviewed full articles published in peer-reviewed academic journals between 2015 and 2021.

To conduct the literature review we established a series of keywords connected with different aspects of digital writing. As in Lira-Gonzales and Grégoire (in press), we based all searches on the word “writing” combined with a modifier related to concepts, practices, and tools in digital technologies. Table 1 presents the keywords.

Table 1. Literature review keywords

Primary Keyword	Secondary Keywords	
	English	
Writing	+	1. Digital
		2. Educational technology/Electronic learning
		3. ICT
		4. Handheld devices
		5. Smartphone
		6. SMS
		7. Tablet (iPad)
		8. Laptop computers
		9. Computers
		10. Word processing
		11. Blog
		12. Microblog
		13. Twitter
		14. Collaborative writing

Source: Author’s own elaboration (2021).

The process of analysing the 355 references initially found followed the criteria listed in Lira-Gonzales and Grégoire (in press), except for the students’ educational levels. Therefore, the relevance of an article was determined by the following conditions:

1. It must address a form of digital writing practiced by learners.
2. It must be published in a peer-reviewed academic journal.
3. It must present the results of an original empirical study.
4. It must be focused on students (learning), not teachers.
5. It must present a study conducted at a college, university, or language institute (adult students).
6. It must present a study concerned with English language learning as an L2/FL.

We independently vetted a sample of 60 texts and achieved 98.5% intercoder reliability. After analysing the titles and abstracts of all 355 texts, 15% were identified as out of scope, 2.8% were not published in academic journals, 2% were not based on original empirical research, 0.3% focused exclusively on teachers, 11% were concerned with either elementary or secondary school, 31% were published prior to

2015, and 5% investigated languages other than English. In the end, 32.9% of the found references met all the criteria for retention according to the systematic review objectives.

We read and analysed each retained article, importing their PDFs into NVivo and coding them according to the categories in Lira-Gonzales and Grégoire (in press). Table 2 presents the text category codes.

Table 2. Text categories codes

Database	Possible values
Research questions	Objectives considered relevant for this knowledge synthesis
Country	Country in which the study took place
Data collection environment	Urban, suburban, rural environment, environment not mentioned
Teaching level	College, university, language institute
Sector	Private, public, no sector mentioned
Length of technology implementation	Less than 2 months, 2-4 months, 5-7 months, more than 8 months, no duration mentioned
Web-based tools	Blogs, computers, e-readers, Edmodo, Facebook, Instagram, messaging apps, podcasts, smartphone, storytelling websites, Twitter, wikis, word processors
Pedagogical use	Argumentative texts, collaborative writing, academic writing, peer feedback, student perceptions, summary writing
Equipment	Desktop computer, laptop computer, tablet, smartphone, e-reader, equipment not mentioned
Qualitative data collection method	Interviews, observation, questionnaire, student's productions, focus groups
Quantitative data collection method	Standardized tests, evaluation by criteria, keystroke logging
Analysis method	Inductive analysis, content analysis, descriptive statistics, inferential statistics
Research types	Experimental, quasi-experimental, case study, action-research, control group, no control group, qualitative, quantitative, mixed methods
Number of participants	0-10, 11-25, 26-50, 51-75, 76-100, 101+
Conclusions and results	Conclusions and results related to objectives considered relevant

Source: Author's own elaboration (2021).

These codes allowed us to produce a cross-reference matrix to understand the studies' characteristics, presented in the following sections.

Results and discussion

In the following sections we will present and discuss the results of this systematic review on the use of technologies in ESL and EFL tertiary writing classes.

For research purposes, we preselected 355 journal articles referencing the impact of information and communication technologies (ICTs) on ESL/EFL writing. We excluded 248 articles according to the following criteria: (1) participants not in language institutes, college, or university (n=44); (2) non-empirical studies (n=6); (3) teacher-centred studies (e.g., teachers' perceptions or practices related to the use of ICTs to improve writing) (n=1); (4) studies of

L2s other than English (n=19); (5) studies outside the scope of the knowledge synthesis (e.g., studies of ICTs used for pedagogical purposes without examining their impact on writing skills) (n=60); (6) studies not published in academic journals (n=9); and (7) studies published before 2015 (n=109). Based on the established criteria and methodology, we selected 107 articles for this review (henceforth, the retained studies).

The following subsections present a synthesis of the 107 studies selected for systematic review.

Research designs. Research on L2/FL digital writing was conducted following qualitative (n=37), quantitative (n=18), and mixed method (n=52) designs.

For research type, 47 studies were quasi-experimental, while 17 were experimental. Only 34 used a control group. In certain cases, authors qualified their studies as experimental even though they did not meet the defining characteristics of true experimental studies (i.e., random selection, experimental treatment, pre- and post-testing). In Altakhaineh and Al-Jallad (2018) and Alharbi's (2015) studies, for example, the participants were not randomly selected nor assigned to research groups. Finally, case study (n=39) was a more frequent methodology than action project (n=4).

The most common instruments used in these studies were students' written productions (n=107), questionnaires (n=64), and evaluations by criteria (n=46). Interviews (n=30), standardized tests (n=21), observation grids (n=9), focus groups (n=6), and keystroke logging analysis (n=1) were less frequent.

This section describes the research contexts of the retained studies, including data collection, educational level, number of participants, and duration of technology use.

Data collection. Thirty-seven studies were conducted in urban areas and one rurally. For 69 studies, no information was provided on data collection. Thirty-two specified taking place in public institutions, 17 were conducted in the private sector, two dealt with both private and public sectors, and the remaining 60 did not specify.

Educational level and number of participants. Eight studies were conducted at colleges, 91 at universities, and 8 at language institutes. Low numbers of participants were reflected in the methodologies; 6 studies had fewer than 10 participants; 22 had between 11 and 25; 32 studies had 26 to 50; 28 had 51 to 75; 13 had 76 to 100; and only 6 studies had more than 101 participants.

Duration of technology use. Most of the retained studies (n=82) mentioned the amount of time students spent using writing technologies in language classrooms. Fifty-four studies indicated duration of 2 to 4 months; 7 were carried out in 5 to 7 months; 1 lasted more than 8 months; and 20 took less than 2 months. Twenty-five studies did not mention the duration of technology use. Since these timeframes often reflect the study's total duration and not the amount of class time spent using technology, it is difficult to know if technology use was extensive or limited to specific tasks.

Approaches towards digital writing in ESL/ EFL tertiary language writing classes

In general, the retained studies approached digital writing from two distinct perspectives: they either examined students' writing performance through specific pedagogical uses of digital technologies (n=32) or focused on students' perceptions toward a particular emerging digital technology (n=37). Most investigated students' writing performance and perceptions (n=42). In this review, we used "perceptions" as an umbrella term for students' attitudes, preferences, and opinions regarding the use of digital technologies in ESL/EFL writing classes.

One common pedagogical use of digital technologies is feedback provision, both for teacher (n=13) and peer feedback (n=26). The studies' findings share the positive impact of feedback on students' writing performance in different areas, such as academic writing (e.g., Chiang, 2020), argumentation skills (e.g., Kathpalia & See, 2016) summary writing (e.g., Termsinsuk, 2015) and student perception (e.g., Chen, W. C. et al., 2015). Findings also agree on students' positive perceptions towards peer and

teacher feedback provision (e.g., Alvira, 2016). One of the advantages of using digital technology in classrooms is that it allows students to receive formative feedback—not only from their teachers, but also their peers and, potentially, the public at large, rather than being limited by traditional classroom affordances (Lira-Gonzales & Nassaji, 2019).

Writing non-traditional textual genres

Blog writing. Among the 24 studies related to blogs, 12 reported positive outcomes in terms of: reading and writing learners' performance (Alharbi, 2015; Asoodar et al., 2016; Lin, 2015; Sauro & Sundmark, 2016; Tan, 2017); metalinguistic awareness and critical thinking (Chen, 2016; Gunduz, 2016), self-regulation (Fathi et al., 2019), argumentation structure (Kathpalia & See, 2016), collaboration skills (Roy, 2016; Zenouzagh, 2018) and summary writing ability (Termsinsuk, 2015). Five studies reported positive student perceptions towards the use of blog writing in L2 classes and showed that students who hold positive perceptions towards non-traditional textual genres participated actively in online activities (Chen, 2015; Chen, W. C. et al., 2015; Rashid et al., 2017; Sakamoto, 2017; Yang, 2018). Three studies also reported students' perceptions of corrective feedback through blog writing; whereas the findings of two of them were positive (Pollard, 2015; Xu & Yu, 2018), 1 study (Huang, 2016) found that students' perceptions towards blogs were positive, even though they were mixed in terms of the suitability of peer feedback.

Finally, 4 studies reported no effect on writing skills (Jayaron & Abidin, 2016; Özdemir & Aydin, 2017; Pham & Usaha, 2016; Thomas, 2017).

Facebook. The 19 studies on the use of Facebook in L2 writing comprised 10 illuminating positive outcomes for students' performance including: intrinsic motivation and self-efficacy improvement (Alberth, 2019), vocabulary acquisition (Alkurdi et al., 2019), writing accuracy (Bailey & Judd, 2018; Barrot, 2016; Elfatah & Ahmed, 2016; Ho et al., 2020; Rodliyah, 2016; Yen et al., 2015) and writing fluency improvement (Dizon, 2016) as well as increased engagement with task review (Saeed & Ghazali, 2017).

Seven studies outlined positive perceptions towards Facebook as an online learning, five of them reported on students perceiving Facebook as an environment facilitating learning English (AbuSa'aleek, 2015; Alam & Mizan, 2019; Bailey et al., 2017; Kitchakarn, 2016; Razak & Saeed, 2015); positive perceptions were also found towards using Facebook to provide and receive peer corrective feedback on grammatical errors (Amin et al., 2016) and as a means to improve students' motivation to writing in English (Yu, 2018). Finally, two studies noted no effect on students' writing attributable to Facebook use (Altakhaineh & Al-Jallad, 2018; Dizon & Thanyawatpokin, 2018).

Wikis. Of 18 studies, ten denoted positive effects on students' performance stemming from the use of wikis including improvement in: writing accuracy (Akbari & Erfani, 2018; Estaji & Salimi, 2018; Li & Zhu, 2017; Zou et al. 2016), collaborative learning (Castillo et al., 2017; Franco-Camargo & Camacho-Vásquez, 2018; Hsu, 2019; Kioumarsis et al., 2018) and summarization skills (Wu, 2016). One study reported that wiki mediated peer feedback led to writing abilities improvement (Gharehbag et al., 2019).

Two studies found learners' perceptions and preferences towards the use of wikis to be positive, showing students' preferring wikis to pen-and-paper writing (Chen, C. J. et al., 2015; Wang, 2015). Studies also reported that the use of wikis in L2 classes reduced writing anxiety levels (Iksan & Halim, 2018; Kassem, 2017) and showed that student enjoyed wiki mediated peer feedback (Vahedipour & Rezvani, 2017). 2 studies underscored that although participants were motivated using wikis and the interaction they allow, students experienced certain difficulties using these tools (Hudson, 2018; Ramanair et al., 2017). Finally, 1 study (Hsu & Lo, 2018) reported no effect on writing performance.

Messaging apps. Messaging apps were also of interest. Of 10 related studies, 7 found positive effects on students' performance and 1 found positive student perceptions. Only 1 reported no signs of significant long-term improvement (see Table 3).

Table 3. Messaging apps

Studies	Participants and setting	Methods	Results
Aghajani and Adloo (2018)	70 ESP university students in Iran	Quasi-experimental, quantitative 1 EGR, 1 CGR Tasks: Essay writing using Telegram (EGR) or pen and paper (CGR).	EGR outperformed CGR in content, organization, and vocabulary. Students had positive attitudes toward using Telegram.
Andujar and Salaberri-Ramiro (2019)	64 EFL university students in Spain	Quasi-experimental, mixed methods 2 EGR, no CGR Task: Discussion threads on mobile environment (EGR1, WhatsApp; EGR2, Facebook)	EGR1 outperformed EGR2 in affective engagement, but not cognitive engagement. No difference was found in behavioural engagement in both groups.
Awada (2016)	52 EFL university students (no country specified)	Quasi-experimental, mixed methods 1 EGR, 1 CGR Task: Critiquing essay writing on WhatsApp (EGR) or with pen and paper (CGR)	EGR outperformed CGR in critique writing proficiency and motivation for learning.
Azodi and Lotfi (2020)	74 EFL university students in Iran	Quasi-experimental, quantitative 1 EGR, 1 CGR Tasks: Essay writing using Telegram (EGR) or conventional instruction (CGR)	EGR outperformed CGR in writing accuracy and complexity.
Heidari et al. (2018)	60 EFL university students in Iran	Quasi-experimental, quantitative 1 EGR, 1 CGR Task: Narrative essays using Telegram instructions (EGR) or face-to-face instructions (CGR)	There was an improvement in EGR's English narrative writing performance.
Li, L. et al. (2019).	79 ESL language institute students in China	Quasi-experimental, quantitative 2 EGR, no CGR Task: Argumentative essays (EGR, wikis; EGR1, small messaging group [SMG], EGR2, big messaging group [BMG])	SMG students significantly outperformed BMG students in essay quality.
Pourdana et al. (2021)	42 EFL language institute students in Iran	Quasi-experimental, mixed methods 1 EGR, no CGR Task: Revision of writing assignment in WhatsApp	There was no significant long-term improvement in discourse markers after receiving instructor written corrective feedback.
Rostami and Khodabandeh (2019)	30 EFL university students in Iran	Quasi-experimental, mixed methods 2 EGR, no CGR Task: Essay writing using e-mail (EGR 1) or Telegram (EGR2)	Essays from Telegram were significantly more informal than essays sent by e-mail.
Villafuerte and Romero Andonegi (2017)	40 EFL university students in Spain and 80 EFL university students in Ecuador	Questionnaire, quantitative 2 EGR, no CGR Task: Questionnaire	Spanish learners showed a preference for WhatsApp, whereas Ecuadorian learners preferred Facebook.
Yan (2019)	88 EFL university students in China	Quasi-experimental, mixed methods 1 EGR, no CGR. Task: Collaborative essay writing using WeChat	WeChat was found to improve students' efficiency of writing practice, frequency of interaction, and critical thinking.

Source: Author's own elaboration (2021).

Smartphones and tablets. Four studies honed in on the use of smartphone applications. Three found positive outcomes (2 in terms of improvement of

writing skills and 2 in terms of students' perceptions), while 1 noted no improvement in students' writing achievement in the experimental setting (see Table 4).

Table 4. Smartphones and tablets

Studies	Participants and setting	Methods	Results
Klimova and Polakova (2020)	28 EFL university students in the Czech Republic	Survey questionnaire, quantitative 1 EGR, no CGR Tasks: Word/phrase translation from L1 to English using an EFL vocabulary-learning mobile application	Students found the corrective feedback provided through the app useful.
Lin et al. (2020)	34 EFL university students in Taiwan	Case study, mixed methods 2 EGR, no CGR Task: Essay writing using augmented-reality context-aware ubiquitous writing (ARCAUW) and mobile-assisted classroom-based writing	Both groups improved in essay writing. ARCAUW led to the development of task schema in long-term memory, motivation, and self-regulation in writing.
Lin (2019)	57 EFL college students in Taiwan	Quasi-experimental, mixed methods 1 EGR, 1 CGR. Task: Face-to-face using pen and paper (CGR) and online using tablets (EGR) for peer feedback	No significant difference in writing achievement was found.
Siddique (2017)	90 ESL college students in Pakistan	Quasi-experimental, mixed methods 1 EGR, 1 CGR. Tasks: Descriptive essay writing using mobile phone instructions (EGR) or PowerPoint instructions (CGR)	EGR outperformed CGR in the post-tests. EGR students reported being more motivated to write essays than those in CGR.

Source: Author's own elaboration (2021).

Twitter. Three studies focused on using Twitter, with all reporting positive findings—two regarding writing performance and one regarding students' perceptions (see Table 5).

Table 5. Twitter

Studies	Participants and setting	Methods	Results
Ahmed (2015)	60 female university EFL students in Saudi Arabia	Quasi-experimental, quantitative 1 EGR, 1 CGR Tasks: Essay writing using Twitter (EGR) or pen and paper (CGR)	EGR outperformed CGR on the development of ideas, content, organization, voice, and style.
Cabrer and Castillo (2017)	15 EFL university students in Ecuador	Quasi-experimental, mixed methods 1EGR, no CGR Task: Using Socrative, Padlet, and Twitter to prepare for writing activities	Significant progress was achieved in the organizational structure of the text, correct usage of language, punctuation, coherence, and cohesion.
Taskiran et al. (2018)	90 EFL university students in Turkey	Questionnaire survey 1 EGR, no CGR Tasks: Writing Tweets	Students held positive perceptions toward Twitter activity in language learning.

Source: Author's own elaboration (2021).

Instagram. Five studies investigated the use of Instagram and its effects on students' writing skills. Four reported positive perceptions stemming from the use of Instagram and one reported that while

students agreed Instagram helped improve their language proficiency, they preferred in-class instruction (see Table 6).

Table 6. Instagram

Studies	Participants and setting	Methods	Results
Akhiar et al. (2017)	101 EFL university students in Malaysia	Questionnaire, focus groups, mixed methods 1 EGR, no CGR. Tasks: Writing on Instagram	Although students had positive perceptions toward using Instagram to improve their writing skills, most (67%) reported a preference for class instruction over Instagram.
Gonulal (2019)	97 EFL/ESL participants from various countries	Mixed methods 1 EGR, no CGR Task: Self-report survey	Participants perceived Instagram as a good platform for language learning. Negative perceptions were marginal.
Handayani et al. (2018)	34 EFL university students in Indonesia	Pre-experimental, quantitative 1 EGR, no CGR Tasks: Opinion essays, peer feedback on Instagram	Students improved their scores on the post-tests. They held positive perceptions toward the use of Instagram in writing classes.
Mustain et al. (2019)	100 EFL university students in Indonesia	Quasi-experimental, mixed-methods 1 EGR, no CGR. Tasks: Writing assignments on Instagram	Students held positive perceptions toward the use of Instagram in writing classes, feeling more engaged in meaningful interaction.
Rinda et al. (2018)	70 EFL adult students (no country specified)	Case study, mixed methods 1 EGR, no CGR. Task: Writing on Instagram	Students believed that peer feedback and Instagram helped them correct their spelling, learn new vocabulary, and find ideas.

Source: Author's own elaboration (2021).

Edmodo. Three studies used Edmodo, all noting that the experimental groups outperformed the control groups and students' perceptions were positive (see Table 7).

Table 7. Edmodo

Studies	Participants and setting	Methods	Results
Alsmari (2019)	80 EFL university students in Saudi Arabia	Experimental 1 EGR, 1 CGR Task: Paragraph writing using Edmodo (EGR) or pen and paper (CGR)	EGR group outperformed CGR in the post-test. The use of Edmodo increased EGR's motivation to learn.
Hosseinpour et al. (2019)	53 EFL university students in Iran	Quasi experimental, mixed methods 1 EGR, 1 CGR Task: Essay writing using Edmodo (EGR) or pen and paper (CGR)	EGR outperformed CGR in the post-test on organization, vocabulary, and mechanics. EGR had positive perceptions of using Edmodo.
Ma'azi and Janfeshan (2018)	40 EFL adult learners in Iran	Experimental, quantitative 1 EGR., 1 CGR Task: Writing compositions using Edmodo (EGR) or pen and paper (CGR)	EGR outperformed CGR in the post-test. Participants had positive attitudes toward Edmodo.

Source: Author's own elaboration (2021).

Storytelling websites or apps. As can be seen in Table 8, 2 studies focused on storytelling websites and both found positive effects on learning and student perceptions.

Table 8. Storytelling websites or apps

Studies	Participants and setting	Methods	Results
Chiang (2020)	18 EFL university students in Taiwan	Exploratory case study, mixed methods 1 EGR, no CGR Tasks: Academic essays using Storybird	Students self-rated digital literacy improved after the treatment. They held positive perceptions towards integrating Storybird with L2 writing classes.
Li, K. L. et al. (2019)	6 ESL university students in Malaysia	Quasi-experimental, qualitative 1 EGR, no CGR. Tasks: Narrative essays using i-Spring Pro 6.2	Using e-book writing software for process-based writing enhanced students' motivation and writing outcomes.

Source: Author's own elaboration (2021).

Word processors. Twenty studies concentrated on the use of word processors. Fifteen studies noted positive effects on writing skills including: students' engagement in feedback writing through the use of Google Docs (Alharbi, 2020; Alsubaie & Ashuraidah, 2017; Jeong, 2016; Lin, 2019; Sherafati et al., 2020; Yang, 2018), writing motivation (Alvira, 2016; Liu & Lan, 2016; Yilmaz, 2018), use and awareness of learning strategies (Bailey & Cassidy, 2019), writing accuracy (Ebadi & Rahimi, 2017; Pham et al., 2020; Seyyedrezaie et al., 2016; Wang, 2017), and writing apprehension lessening (Marandi & Seyyedrezaie, 2017). However, 1 study (Cequeña, 2020) reported that no significant difference was found in students' writing performance.

Five studies found positive perceptions towards the use of Google Docs in L2 writing (Aqiera et al., 2017; Bikowski & Vithanage, 2016; Ebadi & Rahimi, 2019, Sevilla-Pavón, 2015; Vakili and Ebadi, 2019).

Conclusion

While multiliteracies and related pedagogies have been established as a priority within general pedagogy for some time, there remains a lack of consensus as to how this fact interfaces with established practice in second and foreign language education (concerning teacher education, teaching methodology and curricular development), particularly considering rapid developments in digital

technologies in the past decades (Lütge, 2022). The findings of this literature review provide a portrait of the scope of media and literacies for second and foreign language education in the digital age and provide examples of best practices for working with media in formal language learning contexts.

In second and foreign language classrooms writing assessment traditionally uses paper-based writing tasks. However, as the studies reported in this literature review show, students can employ digital media to produce their writing; they can write with the computer using word process instead of handwriting their essays (e.g., Lin, 2019; Wang, 2017) and compose their writing online on blogs (e.g., Asoodar et al., 2016; Tan, 2017), wikis (e.g., Hsu, 2019). Moreover, students can produce digital compositions that allow them entering into relationships with new kinds of audiences in different platforms such as Twitter (e.g., Ahmed, 2015) or Instagram (e.g., Mustain et al., 2019). This shows that “technology-enhanced writing tasks involve both technical and social elements —the former mainly using Web 2.0 and the latter involving a broader understanding of the role of audience in writing” (Lee, 2017, p. 123).

In addition, ESL/EFL teachers should consider that integrating technologies in writing classes not only promote student collaboration, but also allow students to comment on their peers' writings and

receive feedback in return (e.g., Amin et al., 2016; Castillo et al., 2017). This finding is particularly important since although second and foreign language learners tend to be reliant on teacher feedback the teacher feedback alone is inadequate to help students develop independence and self-editing skills (Lee, 2017). Peer feedback allows that by temporarily taking on the role of the teacher through peer review, students actively engage in their own learning and assume responsibility of their learning (Liu & Hansen, 2002). At the same time, students can identify strengths and weaknesses in their writing, hence improving writing proficiency and driving them further toward autonomy (Hansen & Liu, 2005).

The findings of this literature review show that students hold positive perceptions of social networking and online publishing which provide a powerful source of incentives for writing; and yielded positive outcomes stemming from the use of these technologies to improve student writing performance. However, as mentioned in Lira-Gonzales and Grégoire (2022), this may create an impression that Web 2.0 technologies are more effective than they truly are, as studies with negative or neutral outcomes may be less disseminated. Furthermore, studies with positive outcomes often looked at multiple aspects of writing, making it harder to attribute students' success to the use of digital technologies specifically.

Finally, in this systematic review, we identified certain recurring experimental weaknesses, such as lack of control groups, experimental periods of insufficient length, and low participant numbers. Further research avoiding such design flaws is required.

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