ARTÍCULOS

Círculo de Lingüística Aplicada a la Comunicación
ISSN: 1576-4737

EDICIONES COMPLUTENSE

https://dx.doi.org/10.5209/clac.84416

Developing autonomy in English writing skills: a study on EFL learners' selection criteria of open access and online self-correction tools

Silvia Sánchez Calderón[1] and Iria da Cunha[2]

Received: 25 October, 2022 / Accepted: 3 March, 2023

Abstract. In this study, we carry out a comparative analysis of the functionalities of a repository of 11 open access and online self-correction tools that contribute to the development of English writing skills and self-learning abilities in online and distance English Foreign Language (EFL) learning contexts. The repository has been designed based on Al-Ahdal's (2020) taxonomy of self-correction online tools and the embedded resources for each tool (description of the tool, video tutorials and a checklist of the functionalities) have been hosted in an institutional blog. The second objective of our study entails the wide circulation of the repository among EFL learners to explore their learning experience with the navigation and the use of the tools with their own written productions, as measured via a tailor-made research survey. The EFL learners' experience will contribute to shed light on establishing selection criteria for the use of one tool over another based on the users' learning objectives in proofreading their own written productions with the aid of technological tools. The results of this study have revealed that there are common functionalities among the interface of the 11 open access and online tools available in the repository, namely, the identification of spelling and grammar errors, along with the display of synonyms for words that have not been used in an adequate linguistic context. However, some differences have been observed and, in particular, the inclusion of more advanced functionalities in certain tools of the repository. As for the EFL learners' experience with the navigation and their self-correction practice with some of their own written productions, our findings have evidenced that, although all the tools provide a user-friendly interface, Hemingway, LanguageTool and Spell Check Plus have been reported to be more intuitive in terms of the navigation through their functionalities. Furthermore, the resources available in the repository have been considered to be highly effective in contributing to encourage learners in the process of writing texts and, in particular, for those learners that reported to have low digital competence. Finally, Hemingway, Spell Check Plus and Grammarly have been pointed out by the respondents of the survey that exhibiting a significant utility impact on improving the quality of English written texts, as explained by the functionalities that they offer.
Key words: blog; English; self-correction; writing.

Index: 1. Introduction. 2. Formal accounts on the development of English writing skills using computer software. 3. Empirical studies on the implementation of self-correction grammar checkers for the development of writing skills. 4. The methodological approach. 4.1. The institutional blog as a repository of self-correction online and open open access tools. 4.2. Self-assessment of errors in the repository. 4.3. An assessment of the EFL learners' criteria for the selection of open access and online self-correction tools based on their writing needs. 5. Results. 6. Discussion of results. 7. Conclusions. Acknowledgment. CREDiT Authorship Contribution. References. Appendix.

How to cite: Sánchez Calderón, S., Da Cunha, I. (2023). Developing autonomy in English writing skills: a study on EFL learners' selection criteria of open access and online self-correction tools, *Círculo de Lingüística Aplicada a la Comunicación*, 95, 95-112. https://dx.doi.org/10.5209/clac.84416

1. Introduction

During the last decade, the development of online self-correction tools and writing assistants has grown exponentially. Indeed, the development of word processors has been key in the domain of digital writing, together with their continuous innovations, such as formatting, spelling and grammar checkers, thesaurus and synonym finders, among other functionalities (Mahlow & Dale, 2014). However, with the emergence of the Internet and Natural Language

[1] Universidad Nacional de Educación a Distancia (Spain).
Email address: ssanchez@flog.uned.es
ORCID ID: https://orcid.org/0000-0002-1599-236X
[2] Universidad Nacional de Educación a Distancia (Spain).
Email address: iriad@flog.uned.es
ORCID ID: https://orcid.org/0000-0002-7707-1574

Processing (NLP), writing tools have become more interactive with linguistic automated feedback, even allowing intelligent tutoring (Strobl et al., 2019). These kinds of tools can be used in the context of education and, specifically, they are very useful for English Foreign Language (EFL) students. In this context, Al-Ahdal (2020) reports that mistakes are part of the process of learning English as a Foreign Language (EFL) and, in this context, the automatic detection of written errors can highlight the ways in which the mother tongue interferes in the development of language learning and, also, provides data about their academic performance.

Other digital resources that can be used in an educational environment are blogs. Davies and Merchant (2009) maintain that blogs are a well-established and widely recognized form of digital communication and should be taken seriously in educational settings. In fact, as pointed out by Deng and Yuen (2012), there is a growing body of academic work on the application of blogs in several academic specialized domains, such as teacher education, business, and language learning. In the case of language learning, different researchers have proved their usefulness in the process of EFL reading and writing through blogs, as in Ducate and Lomicka's (2008) study, and in the development of EFL meaningful interactions on blog writing, as in Mompean's (2010) study.

Considering this theoretical and empirical background as a starting point, the aim of our study is twofold. On the one hand, we conduct a comparative analysis of the functionalities available in 11 open access and online self-correction tools hosted in the blog-repository (see section 4.1) so as to explore the commonalities and differences in error detection of English written texts. On the other hand, we investigate the tools selection criteria established by EFL learners in the navigation through the interface of the 11 open access and online self-correction tools based on their experience in the self-proofreading process of their own English written texts, as measured by a tailor-made research survey also embedded in the blog-repository. The second objective of this study will contribute to advance in the self-awareness process of error identification and self-correction in EFL with the aid of technological tools that are available online and open access. Further research will tease apart the effects the 11 tools under analysis have on the fine-grained identification of error types via a comparative analysis of the implementation of a written sample in all the tools hosted in the blog-repository.

Regarding our methodology, we have carried out a pre-analysis of the functionalities of Al-Ahdal's (2020) taxonomy. We presented the data gathered in three learning resources that are available per tool at stake, namely, a description of the tool, a checklist of the main functionalities and a video tutorial that displays how users can interpret and make use of the functionalities when self-correcting their own English written texts. We also designed a tailor-made research survey so as to explore the EFL learners' selection criteria regarding the use of one tool over another. This survey was embedded in the blog-repository and responded by adult EFL learners, regardless of their language proficiency level.

This paper is structured as follows. In Section 2, we address formal accounts on the development of English writing skills using computer software. In Section 3, we discuss the main findings reported by previous studies on the implementation of grammar checkers for the development of self-correction writing skills. In Section 4, we explain the methodological approach of the study. In Section 5, the results are set out. Finally, in Sections 6 and 7, the discussion and conclusions are presented, respectively.

2. Formal accounts on the development of English writing skills using computer software

As mentioned in the introduction, learners inevitably produce different types of errors in the process of acquiring a second language. These errors can provide teachers and learners with information about what they have learned and how much they have learned, and also serve as resources through which learners find the principles for the achievement of goals in the development of English language proficiency. For example, Ellis (2008) analyzes the significance of error analysis and recommends it as a technique for eradicating errors in the process of learning a second language.

In order to ensure an efficient teaching and learning process, teachers use different methodological strategies to detect and analyze their students' errors. So far, there is a tendency to attribute the error detection task to the teacher's manual process (Al-haysoni, 2012; Fagee, 2011; Hameed, 2016). However, the analysis of errors detected by computer tools can serve as a pedagogical and didactic stimulus, since these tools devote great attention to autonomous learning in the production of written texts. In turn, automatic error detection tools account for the type of error produced, which encourages learners to become aware of their own errors and correct them based on the feedback given by the application used for this purpose. Likewise, automatic error detection tools contribute to the development of corpus linguistics through robust analyses of common errors and their nature in English language written production, and their use aids the acquisition of autonomous learning as the learner is aware of his or her own learning process (Mushtaq et al., 2019). In addition, they allow learners to repeat the process of correcting their own texts as many times as necessary until they reach a written output that is free of grammatical, lexical, content, and other errors.

One of the main studies on this topic has been carried out by Allen et al. (2016) who focused on an overview of the computer-based tools, developed until 2016, that support writing instruction and practice. Specifically, they addressed the so-called Automated Writing Evaluation (AWE), Automated Essay Scoring (AES) and Intelligent Tutoring Systems (ITS). A few years later, Strobl et al. (2019) published a review of technological tools that aid the task of writing instruction, specifically, in secondary and higher education, and for first and second language writers. They integrate the Allen et al.'s (2016) classification of writing systems, identifying tools such as AWE, AES or

ITS systems. However, they suggest an addition to this classification, namely, the inclusion of Interactive Writing Platforms (IWP) that enable planning, pre-writing and drafting processes. Moreover, they propose a refinement to distinguish AWE systems between tools that provide simple feedback on low-level aspects of writing and tools that offer more sophisticated feedback both on low-level elements and on the whole text. In the case of the latter, feedback addresses cohesion and coherence errors. Finally, Strobl et al. (2019) analyze 44 tools that aid writing instruction in secondary and higher education, by using 26 quantitative and qualitative features subdivided into four categories. These categories are mainly related to (a) writing processes (e.g., writing genres, writing domain, information about the usage policy), (b) pedagogical approaches (e.g., microlevel or macrolevel text level focus, instructional setting such as self-directed learning, target subtask such as planning or drafting, digital learner-learner or learner-teacher interaction support), (c) feedback modalities (e.g., computer only or computer and human sources, focus on the product or the process, tutoring component such as language correctness, specificity level of the whole text or a paragraph), and (d) technological specifications (e.g., backend data such as corpus, web-based context). The analyzed tools are shown in Table 1.

Academic Vocabulary	Deutsch-uni online	My Access!	Thesis Writer
Article Writing Tool	DicSci (Dictionary of Verbs in Science)	Open Essayist	Turnitin (Revision Assistant)
AWSuM	Editor (Serenity Software)	Paper rater	White Smoke
C-SAW (Computer-Supported Argumentative Writing)	Escribo	PEG Writing	Write&Improve
Calliope	Essay Jack	Rationale	WriteCheck
Carnegie Mellon prose style tool	Essay Map	RedacText	Writefull
CohVis	Gingko	Research Writing Tutor	WriteLab
Corpuscript	Grammark	Right Writer	Writer's Workbench
Correct English (Vantage Learning)	Klinkende Taal	SWAN (Scientific Writing Assistant)	WriteToLearn
Criterion	Lärka	Scribo – Research Question and Literature Search Tool	Writing Aid English
De-Jargonizer	Marking Mate (standard version)	StyleWriter	Writing Pal

Table 1. List of analyzed tools by Strobl et al. (2019)

From a pedagogical approach, the results derived from Strobl et al.'s (2019) study indicate that, at the micro-level knowledge of the text (e.g., grammar, spelling, word frequencies), the tools are well-represented. Nevertheless, tools that lend support to the development of writing strategies and self-monitoring processes to improve the macro-level text quality (e.g., argumentative structure or rhetorical moves) are not so common.

Al-Alhdal (2020) provides a grounded theoretical framework on the use of computer software focused on error analysis with an EFL writing output. The author addresses the types of writing errors that occur in EFL classrooms, and how these writing errors could be detected and removed with the help of computer tools. More specifically, 15 of the most popular and largely freely available Computer Error Analysis (CEA) tools are discussed, as illustrated in Table 2.

1. Grammarly	9. PaperRater
2. ProWritingAid	10. Online Correction.com
3. WhiteSmoke	11. Spell Check Plus
4. Ginger Online	12. Virtual Writing Tutor
5. LanguageTool	13. Slick Write
6. GradeProof	14. AutoCrit
7. Hemingway	15. After the Deadline
8. Reverso	

Table 2. List of the most popular and free CEA tools tools analyzed by Al-Alhdal (2020)

In his work, Al-Alhdal (2020) also exposes the advantages and limitations of CEA tools, which are displayed in Table 3.

Advantages	Limitations
Systematic examination	
Storage capacity	Lack of trained teachers
Compatible and time flexibility	Imperfect current CEA programs
Immediate and detailed feedback	Accessibility
Analyses of large amount of data	CEA cost
Empirical error analyses	Handling unexpected errors
Guided and repetitive practice	Changing situations
Ease of use	

Table 3. List of advantages and limitations of CEA tools (Al-Alhdal, 2020)

3. Empirical studies on the implementation of self-correction grammar checkers for the development of writing skills

Error analysis aided by technological tools is an effective pedagogical strategy in language acquisition, in general, and in the development of English written production skills, in particular. In fact, previous studies have found that English foreign language learners experience a challenge in the development of written skills when compared to other language skills such as speaking, listening and reading comprehension (Al-Ahdal & Al-Ma'amari, 2015). In other words, it has been reported that written texts produced by English second language learners produce more quantitative (number) and qualitative (type) errors. However, it is widely known that error analysis plays a crucial role in second language acquisition as it shows possible interference with the mother tongue in the English learning process (Zhang, 2010).

Previous studies have also reported that the use of error detection and self-correction tools has proven to be effective in English learning and, therefore, these applications help learners in the acquisition of language skills efficiently. Some of these studies use learner corpora to carry out empirical experiments. For example, Díaz-Negrillo and Fernández-Domínguez (2006) present a review of error tagging systems in learner corpora, including error categorizations, dimensions and levels of description. Their findings concluded that CEA is a useful learner corpus methodology that contributes to disclose insights into how languages are learnt. At university level, Botley and Dillah (2007) carry out an empirical study of spelling errors using a learner corpus of university-level English, known as CALES. This corpus also includes argumentative essays collected from university students.

One of the most widely known researchers in the field is Cotos. For example, in Cotos (2011), she presents an empirical evaluation of AWE based on the feedback used for L2 academic writing teaching and learning. In particular, she uses the Intelligent Academic Discourse Evaluator (IADE), a web-based AWE program that analyzes the introduction section of research articles and generates immediate, individualized, and discipline-specific feedback. The goal of the study was to analyze the potential of IADE's feedback from a quantitative and qualitative perspective. On the one hand, quantitative data consisted of (a) responses to Likert-scale, yes/no, and open-ended survey questions; (b) automated and human scores for first and final drafts; and (c) pre-/post-test scores. On the other hand, qualitative data contained (a) students' first and final drafts; (b) transcripts of think-aloud protocols; (c) Camtasia computer screen recordings; (d) observations; and (e) semi-structured interviews. The findings suggest that IADE is a useful technological tool that facilitates language learning.

Later, Chapelle et al. (2015) use two AWE tools (namely, Criterion and IADE) to demonstrate their usefulness in helping Iowa State University students improve their discipline-specific writing skills. In the first study, Criterion was used as one means of evaluating writing tasks in a university course designed to aid international students improve their academic English writing skills grammatically and provide sentence-level error feedback. In particular, 20 international students (five students were randomly recruited from four EFL writing courses) were asked to use Criterion in the process of drafting and revising their essays. The proportion of successful revision with this system is over 70% since the feedback provided positively influenced the students' revision process. This entails that the findings obtained from Criterion lend support to the students' improvement of the quality of their academic writings and it contributed to the process of decision-making in the students' revision of their essays. In the second study, IADE was used in a writing course designed to help 105 students write papers required in their respective disciplines (mainly, research articles). Based on a Likert-scale and yes/no survey questions, the results indicate that 92% of the students though about the meaning they wanted to convey when revising their papers with IADE. Thus, these results evidence that the tool is useful for this target, although the authors also offer a detailed analysis of the issues in which there is room for improvement.

Finally, another recent approach is proposed by Al-Alhdal (2020), who examines and compares the error detection in manually processed learners' academic writing with a small sample of twelve scripts from second-year English Academic Writing university students. It provides a ready database of freely available online error analysis tools from which EFL teachers may select the most viable one(s) and, especially, those ones that are suited to their learners' output.

4. The methodological approach

4.1. The institutional blog as a repository of self-correction online and open access tools

The institutional blog-repository is available online[3] and gives access to 11 self-correction online and open access tools: AutoCrit, Grammarly, Hemingway, LanguageTool, Outwrite, PaperRater, ProWritingAid, Reverso, Slick Write, Spell Check Plus, Virtual Writing Tutor. For each tool, the following information is provided:

- A short general description of the tool.
- A checklist in which the main free of charge functionalities of the tool are listed.
- Access to information related to the premium functionalities.
- A video tutorial between 5 and 10 minutes, where a lecturer in our team explains the free of charge functionalities of the tool, giving a representative example of each one.
- Direct access to the tool.

To set an example, a screenshot of the information discussed above is illustrated in Figure 1 for the Hemingway tool.

Figure 1. Screenshot of the embedded information related to the Hemingway tool

4.2. Self-assessment of errors in the repository

The type of correction provided by the different tools listed in the blog-repository refers to a wide range of linguistic aspects. Some examples of these linguistic aspects entail the identification of errors related to grammar or vocabulary, lexical revision, or style, among many others. Table 4 shows the main functionalities that each tool offers.

As observed in Table 4, some tools offer a more detailed revision than others. For example, ProWritingAid includes 12 functionalities, AutoCrit offers nine, and Hemingway and Grammarly have 8. On the contrary, while Spell Check Plus hosts 4 functionalities, Outwrite contains 5. Moreover, there are some similarities among some functionalities in the different tools. The most common involve the detection of grammar and orthographic errors, which are included in most tools. In addition, the possibility of searching for synonyms is shared by AutoCrit, LanguageTool, Outwrite, ProWritingAid and Reverso. Some tools include more advanced functionalities, for example, plagiarism detection (PaperRater and ProWritingAid) and revision of sentence length (Slick Write and Virtual Writing Tutor). A few tools offer information about textual features, such as the assessment of textual structure (Virtual Writing Tutor), the selection of textual typology (ProWritingAid), and the assessment of textual adequacy (PaperRater).

[3] https://blogs.uned.es/herramientasautocorreccionescrituraingles/

Name of the tool	Main functionalities							
	Comparative analyses with other texts	Detailed analyses of style, fluency, clarity and tone	General analyses of the text and report, word counter, plagiarism	Detection of grammar errors	Detection of orthographic errors	Detection of punctuation errors	Detection of repeated words and redundant elements	Thesaurus (search for synonyms)
AutoCrit	X	X	X	X	X	X	X	X
Grammarly		X	X	X	X	X	X	
Hemingway		X	X	X			X	
LanguageTool		X	X	X			X	X
OutWrite		X		X	X		X	X
PaperRater			X	X	X		X	
ProWritingAid		X	X				X	X
Reverso				X	X			X
Slick Write		X	X	X		X	X	
Spell Check Plus		X		X	X			
Virtual Writing Tutor		X	X		X	X	X	

Table 4. Main functionalities of the 11 tools included in the blog-repository

4.3. An assessment of the EFL learners' criteria for the selection of open access and online self-correction tools based on their writing needs

A tailor-made research survey was designed for examining the criteria followed by EFL learners in the process of selecting one of the 11 open access and online self-correction tools over another on the basis of their objectives in self-correcting their own English written texts. Our tailor-made research survey was structured in two parts, namely, the respondents' demographical information, on the one hand, and, on the other hand, the respondents' assessment of the resources available in the blog-repository and the selection criteria for the use of one open access and online self-correction tool over another based on their learning needs with their own English written productions. It was created with Microsoft forms[4] and later integrated in the blog-repository so that the users could analyze the resources available and provide their navigation and written output experience per tool, regardless of the users' language proficiency level. The results derived from this survey have helped to shed light on the English learners' educational needs with regards to the acquisition of written production skills and self-learning abilities aided by online Information and Communication Technology (ICT) tools. The respondents were informed that it was a 10-minute survey and the data collected were anonymized and used for research purposes.

The survey (see Appendix I) was designed in Spanish given that our blog-repository users spoke this language as their L1 and was structured in two sections. The first one addressed issues related to the students' profiles, namely, age, biological gender (male, female or other), and level of studies (Bachelor's Degree, Master's, PhD or other studies). The users were also asked about their English proficiency level, namely, from A1 to C2 (*Common European Framework of Reference for Languages*, CEFR, Council of Europe, 2001) or native, and whether they held one of the following official certificates: (a) APTIS (an English multilevel exam that certifies the level obtained in the four language skills, namely, reading, writing, listening and speaking; www.aptisweb.com); (b) Cambridge University (www.cambridgeenglish.org); (c) IELTS (International English Language Testing System, designed by Trinity College London; www.ielts.org); (d) Oxford English (www.oxfordenglishtesting.com); or (e) others. Finally, users were also asked about whether they considered themselves to be competent in using online resources and technological tools, using a 4-point Likert scale answer from 1 (very little) to 4 (a lot).

The second part of the survey investigated the users' learning experience with the blog-repository use, as analyzed via 9 questions, 7 of which have a 4-point Likert scale answer format and 2 which present an open format. With regards to the former, we asked users whether they agreed or disagreed with (a) the easy navigation through the blog-repository; (b) the fact that video tutorials can help in learning written production skills in English; and (c) the length adequacy of the videos. In the case of having selected the options "totally disagree" or "disagree" in (c), they were asked to justify the reasons between two possible answers, namely, the video tutorials were too long or they were considered to be too short. Further Likert scale answers that ranged from "very difficult" to "very easy" targeted the easiness (or lack thereof) of using the tools included in the blog-repository. An analogous question addressed whether users found these tools useful when self-correcting their written texts in English; the plausible answers ranged from "not very useful" to "very useful". Dual yes-no answers were designed for examining whether the users previously knew the 11 online tools available in the blog-repository.

[4] Available in https://forms.office.com/r/vx0ZYfaYWV

The last two questions had an open format. On the one hand, the blog-repository users were asked why they considered that the tools they used were useful after they self-corrected their English textswriting English texts. On the other hand, the blog-repository users were asked whether they knew of other tools for the self-correction of English texts that can aid the acquisition of written production skills and that were not integrated in the blog-repository.

The results derived from this survey were analyzed statistically with IBM-SPSS Statistics (version 25) and the statistical tests that were run are illustrated in Table 5.

Statistical test	Aim
Cronbach's coefficient "Alfa" of internal consistency	To measure the reliability of the participants' responses to the survey. The coefficient obtained was .90 (.73 - .98; p <.0001) (a value above .60 indicates acceptable reliability)
Chi-square	To examine the relation (or lack thereof) between two categorical variables derived from the participants' answers
Non-parametric statistical tests: Mann-Whitney and Kruskal-Wallis	To analyze the contrast between means from independent participant group samples because the variables did not show a normal distribution

Table 5. Statistical tests

We recruited data from 33 participants (18 boys (54.5%) and 15 girls (45.5%)) from 21 to 69 years old (mean: 44 years old; Standard Deviation: 10.99). According to their academic studies, half of the sample (17 cases; 51.55%) holds a Bachelor's Degree and the remaining participants hold a Master's (6 cases, 18.2%), a PhD (2 cases, 6.1%) and other studies (8 cases, 24.2%). A high rate of the participants reports to have an English intermediate level (21 cases, 63.6%), followed by an advanced level (8 cases, 24.2%) and basic competence (3 cases, 9.1%). Among these participants, 9 report that they have a Cambridge University official certificate (27.3%), 2 hold the APTIS certificate (6.1%), 1 has IELTS (3%) and 1 holds the Oxford English certificate (3%). The 20 remaining participants marked the option "other certificates" (60.6%), namely, they either enrolled in an Official School of Languages or in English language studies at university. One participant has a native proficiency level in English (1 case).

With regards to the competence level that the participants consider they have regarding the use of online resources and technological tools, 88% (29 cases) responded that they have a high level of digital competence and 12% (4 cases) reported they have a low competence level.

5. Results

This section discusses the responses derived from the survey items (see Appendix I) concerning their experience with the blog-repository "*Open access tools for the online self-correction of written production in English*". In turn, these items have been compared to the following factors associated with the participants' profiles: age, English level and technological competence.

Factors	The blog-repository navigation is easy			Chi-square test		Effect: R^2
	Total disagreement	Agreement	Total agreement	Value	*P*-Value	
AGE				5.43 NS	.220	.087
<=35 years old (n=8)	0.0 % (--)	25.0 % (2)	75.0 % (6)			
36-50 years old (n=17)	5.9 % (1)	64.7 % (11)	29.4 % (5)			
>= 51 years old (n=8)	0.0 % (--)	37.5 % (3)	62.5 % (5)			
ENGLISH PROFICIENCY LEVEL				3.99 NS	.407	.061
Basic (n=3)	0.0 % (--)	100 % (3)	0.0 % (--)			
Intermediate (n=21)	4.8 % (1)	42.9 % (9)	52.4 % (11)			
Advanced / Native (n=9)	0.0 % (--)	44.4 % (5)	55.6 % (5)			
TECHNOLOGICAL COMPETENCE				2.17 NS	.705	.033
Low (n=4)	0.0 % (--)	75.0 % (3)	25.0 % (1)			
Quite a lot (n=23)	4.3 % (1)	47.8 % (11)	47.8 % (11)			
A lot (n=6)	0.0 % (--)	33.3 % (2)	66.7 % (4)			

N.S. = Non-statistical Significance.

Table 6. Blog-repository navigation easiness in terms of the participants' profiles (n=33)

Most users agree (16 cases, 48.5%) or totally agree (16 cases, 48.5%) with the blog-repository navigation easiness where the resources available per tool are embedded. In particular, the findings revealed a mean of 3.42 points out of 4 in the Likert scale. Only one participant did not agree with the navigation easiness of the blog-repository. Table 6 summarizes this variable considering the three factors discussed earlier. Statistically significant differences have not been observed in any of these factors ($p > .05$). However, the sample size could have influenced the statistical significance of the results since some of the values of the effect size can be taken as evidence of a potential relation between the variable and the factor.

In particular, with the age (moderate effect size: 8.7%), the data point to a greater agreement with the blog-repository navigation in the two extreme groups (75% and 62.5%, with total agreement) when compared to a lower degree of agreement in the central group (64.7%, with only agreement). As for the English proficiency level (moderate effect size: 6.1%), while 100% of the cases with basic level agree, the more advanced proficiency level group tends to totally agree (52.4% and 55.6%).

We also examined the blog-repository users' experience with the display of the video tutorials embedded in each open access and online self-correction tool so as to elucidate whether these tools contributed to the learning process of writing English texts. The results evidenced high agreement levels in this respect (57.6% agree and 33.3% totally agree). The mean value with this type of finding reaches 3.21 points out of 4 in the Likert scale. Table 7 compares this variable to the three factors of the sample profile, showing absence of statistical significance and tendencies towards it ($p > .05$ and $p > .10$). However, the existence of some effect size indicates a possible relation between this variable and the three factors. In particular, regarding age (moderate effect size: 8.6%), the data show that the agreement regarding the experience with the visualization of the video tutorials appears to be higher in the extreme groups and a bit lower in the central group (70.6% only agree). In the case of the digital competence level, the effect size is high (19.7%) and statistically significant ($p > .05$). This relation is especially seen in those participants that have either little digital competence or a lot of digital competence (50% with total agreement).

Factors	**I consider that the blog-repository video tutorials can help me in learning about writing English texts**				**Chi-square test**		**Effect: R^2**
	Total disagreement	**Disagreement**	**Agreement**	**Total agreement**	**Value**	***P*-value**	
AGE					5.70 NS	.457	.086
<=35 years old (n=8)	0.0 % (--)	12.5 % (1)	37.5 % (3)	50.0 % (4)			
36-50 years old (n=17)	5.9 % (1)	5.9 % (1)	70.6 % (12)	17.6 % (3)			
>= 51 years old (n=8)	0.0 % (--)	0.0 % (--)	50.0 % (4)	50.0 % (4)			
ENGLISH PROFICIENCY LEVEL					1.99 NS	.921	.030
Basic (n=3)	0.0 % (--)	0.0 % (--)	66.7 % (2)	33.3 % (1)			
Intermediate (n=21)	4.8 % (1)	9.5 % (2)	52.4 % (11)	33.3 % (7)			
Advanced / Native (n=9)	0.0 % (--)	0.0 % (--)	66.7 % (6)	33.3 % (3)			
TECHNOLOGICAL COMPETENCE					12.99 *	.043	.197
Low (n=4)	0.0 % (--)	0.0 % (--)	50.0 % (2)	50.0 % (2)			
Quite a lot (n=23)	4.3 % (1)	0.0 % (--)	69.6 % (16)	26.1 % (6)			
A lot (n=6)	0.0 % (--)	33.3 % (2)	16.7 % (1)	50.0 % (3)			

N.S. = Non-statistical Significance * = Statistically significant.

Table 7. The blog-repository video tutorials contribute to the learning process of writing English texts (n=33)

The video tutorials have been reported to show an adequate length by the users (72.7% of the sample [24 cases] agree and 21.2% [7 cases] totally agree). Thus, the mean value regarding this variable is 3.15 points out of 4 in the Likert scale. Table 8 illustrates the comparative analyses regarding the participants' responses and the four sample profile factors.

Factors	I consider that the length of the blog-repository video tutorials is adequate			Chi-square test		Effect size: R^2
	Disagreement	Agreement	Total agreement	Value	*P*-value	
AGE				3.25 NS	.517	.049
<=35 years old (n=8)	12.5 % (1)	62.5 % (5)	25.0 % (2)			
36-50 years old (n=17)	5.9 % (1)	82.4 % (14)	11.8 % (2)			
>= 51 years old (n=8)	0.0 % (--)	62.5 % (5)	37.5 % (3)			
ENGLISH PROFICIENCY LEVEL				3.72 NS	.446	.056
Basic (n=3)	0.0 % (--)	100 % (3)	0.0 % (--)			
Intermediate (n=21)	9.5 % (2)	61.9 % (13)	28.6 % (6)			
Advanced / Native (n=9)	0.0 % (--)	88.9 % (8)	11.1 % (1)			
TECHNOLOGICAL COMPETENCE				6.91 *	.047	.146
Little (n=4)	0.0 % (--)	75.0 % (3)	25.0 % (1)			
Quite a lot (n=23)	0.0 % (--)	78.3 % (18)	21.7 % (5)			
A lot (n=6)	33.3 % (2)	50.0 % (3)	16.7 % (1)			

N.S. = Non-statistical Significance * = Statistically significant.

Table 8. Length of the blog-repository video tutorials based on the participants' profiles (n=33)

The results have reflected a statistical significance with the technological competence factor ($p < .05$) with a high effect size (14.6%). The data indicate that the degree of agreement with the length of the video tutorials is less in those users that have a high digital competence (33.3% disagree, 2 cases) as they consider that they are "too long". These results are higher in those participants that present a low digital competence (75% agree) or intermediate digital competence (78.3% agree). The remaining factors do not evidence statistical significance ($p > .05$) or tendency ($p > .10$) and the effect size is lower (namely, < 6%) when compared to what we considered earlier as evidence of possible relations.

Figure 2 represents the number of participants that claimed to have prior knowledge about the 11 open access and online tools of the blog-repository. As depicted here, Reverso and Hemingway were previously known by 36.4% of the sample (12 participants) and the other tools have been selected by a range of 1 and 3 participants (between 3% and 9.1% of the sample) and, therefore, they are little or very little known.

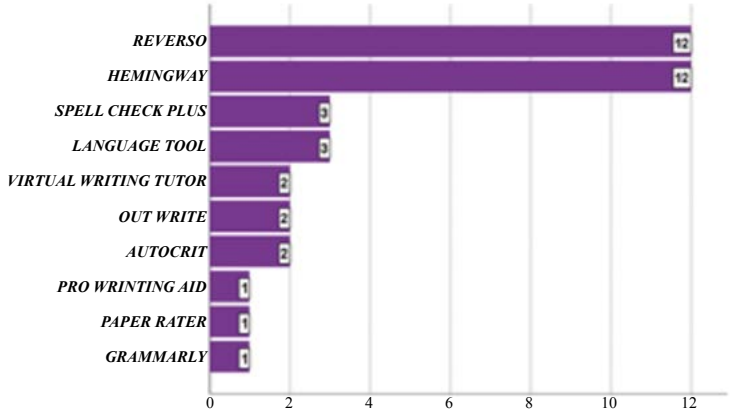

Figure 2. Knowledge about the open access and online tools included in the blog-repository (n = 33)

Previous knowledge of Reverso is especially high in the participants of the central group (that is, between 36 and 50 years old, 76.5%), as opposed to the extreme age groups (50%) (moderate effect size with age: 7.6%). In turn, with the English proficiency level (moderate effect size: 6%), the data seem to indicate that Reverso is less known when the participants increase their English competence level (from 100% basic level to 55.6% advanced level). The participants' prior knowledge of Hemingway gradually decreases as the users' English proficiency level increases (from 100% of the cases with a basic level to 44.4% of the cases with an advanced level).

We also asked the blog-repository users if the 11 open access and online self-correction tools for writing English texts are easy to use. This variable has been analyzed with consideration to those participants that acknowledged having used them: between a minimum of 10 users (33.3%) of Virtual Writing Tutor and Paper

Rater and a maximum of 20 users (60.6%) of Language Tool. The ease of use has been examined via a Likert scale of 4 points (from 1 = very difficult to 4 = very easy). Figure 3 displays the mean values, which are quite homogeneous and indicate a high ease of use given that the mean values are above 3 points. However, three tools stand out over the others, namely, Hemingway (mean = 3.55 points; n = 15), Language Tool (3.50 points; n = 20) and Spell Check Plus (mean 3.50 points; n =13), followed by Reverso and Virtual Writing Tutor with a mean of 3.36 points each.

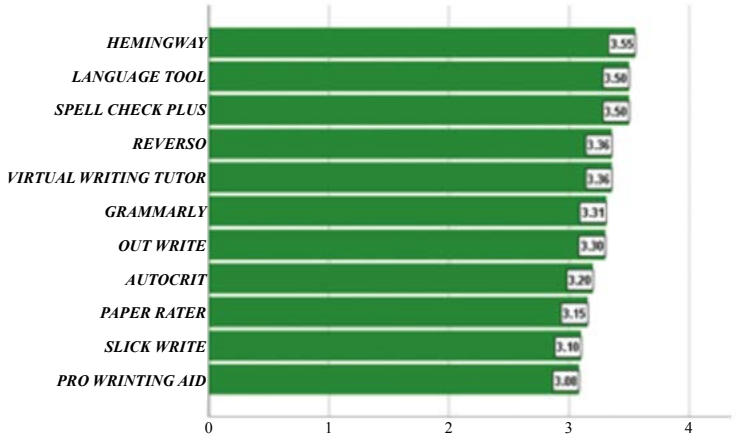

Figure 3. Ease in the use of the blog-repository tools (mean value)

The mean values illustrated in Figure 2 were compared to the three factors that define the participants' samples. The results are summarized in the tables that follow (Tables 9 to 11).

In terms of age (Table 9), statistical significance is observed in the ease of use regarding (a) AutoCrit ($p < .05$; high effect size: 68.8%), especially by the youngest participants (3.75), as opposed to the other two groups (3.00); (b) OutWrite ($p < .05$; high effect size: 64.3%) where the mean is statistically high in the youngest group (3.75) when compared to the other two groups and, above all, the central group (2.00); and (c) Spell Check Plus ($p < .05$; high effect size: 46.4%) in which the mean is especially high in the youngest group (4.00) in comparison to the other two groups (3.20 and 3.50, respectively). Although there is not statistical significance or tendency ($p < .10$) in the other tools, there are some effects that suggest a relation to age. This is particularly the case with Virtual Writing Tutor, Language Tool, Grammarly, Reverso and Slick Write (high effect size: > 25%), and where the mean in the youngest group is the highest.

Tool	AGE			Kruskal-Wallis test		Effect: R^2
	21-35 years old	36-50 years old	51-69 years old	Value	*P*-value	
AutoCrit	3.75	3.00	3.00	9.62**	.008	.688
OutWrite	3.75	2.00	3.00	5.79 *	.033	.643
Spell Check Plus	4.00	3.38	3.00	6.04 *	.049	.464
Virtual Writing Tutor	4.00	3.20	3.50	4.51 ^{NS}	.105	.347
LanguageTool	4.00	3.40	3.00	4.09 ^{NS}	.130	.314
Grammarly	3.67	3.14	3.33	2.51 ^{NS}	.285	.290
Reverso	3.75	3.20	3.20	3.50 ^{NS}	.174	.269
Slick Write	3.33	3.00	3.00	2.33 ^{NS}	.311	.259
PaperRater	3.33	3.00	3.33	2.54 ^{NS}	.280	.212
ProWritingAid	2.67	3.29	3.00	0.62 ^{NS}	.732	.119
Hemingway	3.60	3.50	3.60	0.19 ^{NS}	.909	.010

N.S. = Non-statistical Significance * = Significant ** = Highly significant.

Table 9. Ease of use of the blog-repository open access and online tools as per the participants' ages

Although statistically significant differences are not present ($p > .05$) in the participants' English proficiency levels (Table 10), there are two high effect sizes in Grammarly (high effect size: 27.8%) and Language Tool (high effect size: 22%). In both tools, the highest mean value corresponds to intermediate proficiency levels, which are,

therefore, the ones that report the ease of use of these two open access and online self-correction grammar checkers. Along with these variables, two further tools also reveal moderate–high effect sizes (between 12.9% in Reverso and 9.1% in AutoCrit), where those participants that have an intermediate English proficiency level are the ones that consider these tools as the easiest.

Tool	English Proficiency Level			Kruskal-Wallis test		Effect: R^2
	Basic	Intermediate	Advanced	Value	*P*-value	
Grammarly	3.00	3.50	3.00	3.33 ^{NS}	.189	.278
LanguageTool	3.50	3.71	3.20	2.86 ^{NS}	.239	.220
Reverso	3.00	3.50	3.20	1.68 ^{NS}	.433	.129
Virtual Writing Tutor	3.00	3.50	3.20	1.68 ^{NS}	.433	.129
Hemingway	3.00	3.67	3.43	2.18 ^{NS}	.336	.115
PaperRater	3.00	3.25	3.00	1.36 ^{NS}	.506	.114
Slick Write	3.00	3.20	3.00	1.00 ^{NS}	.607	.111
AutoCrit	3.00	3.27	3.00	1.27 ^{NS}	.529	.091
OutWrite	3.00	3.40	3.25	0.64 ^{NS}	.725	.071
ProWritingAid	3.00	3.00	3.17	0.17 ^{NS}	.920	.012
Spell Check Plus	3.50	3.50	3.50	0.00 ^{NS}	1	.000

N.S. = Non-statistical Significance

Table 10. Ease of use in the blog-repository tools based on the participants' English proficiency levels

And, finally, regarding technological competence (Table 11), two tools have presented an almost statistically significant difference ($p < .10$) with high effect size, namely, OutWrite (effect size: 39.2%, valued as the easiest tool by high digital competence participants) and Reverso (effect size: 34.7%, valued as the easiest tool by low digital competence participants). Regarding the mean values provided by the other tools (Hemingway, Language Tool, AutoCrit, PaperRater and Virtual Writing Tutor), the participants that have a low digital competence also consider these tools to be easy to use.

Tool	Digital Competence			Kruskal-Wallis test		Effect: R^2
	Low	Quite high	High	Value	*P*-value	
OutWrite	3.00	3.14	4.00	3.14 †	.070	.392
Reverso	4.00	3.30	3.00	3.08 †	.079	.347
Slick Write	3.00	3.00	3.33	0.00 ^{NS}	.995	.259
LanguageTool	3.00	3.45	4.00	0.71 ^{NS}	.398	.221
AutoCrit	3.00	3.13	3.50	0.38 ^{NS}	.540	.219
PaperRater	3.50	3.10	3.00	1.76 ^{NS}	.185	.173
Spell Check Plus	4.00	3.42	4.00	1.17 ^{NS}	.280	.167
Virtual Writing Tutor	3.50	3.22	3.67	0.58 ^{NS}	.447	.153
Hemingway	4.00	3.50	3.50	1.70 ^{NS}	.192	.091
Grammarly	3.50	3.22	3.50	0.58 ^{NS}	.447	.077
ProWritingAid	3.00	3.10	3.00	0.14 ^{NS}	.711	.002

N.S. = Non-statistical Significance † = Almost significant

Table 11. Ease of use in the blog-repository tools based on the participants' digital competence

We have also examined the responses derived from the participants' perceptions towards the utility of the tools embedded in the blog-repository. Figure 4 represents the mean values of the participants that assessed this variable in each tool (n = between 10 and 23). All these mean values have shown that the 11 tools have been considered as useful, and, in particular, Hemingway (3.70 points) and Spell Check Plus (3.57 points). These tools are followed by a block of mean values around 3.40 points, namely, Reverso, Virtual Writing Tutor and Paper Rater.

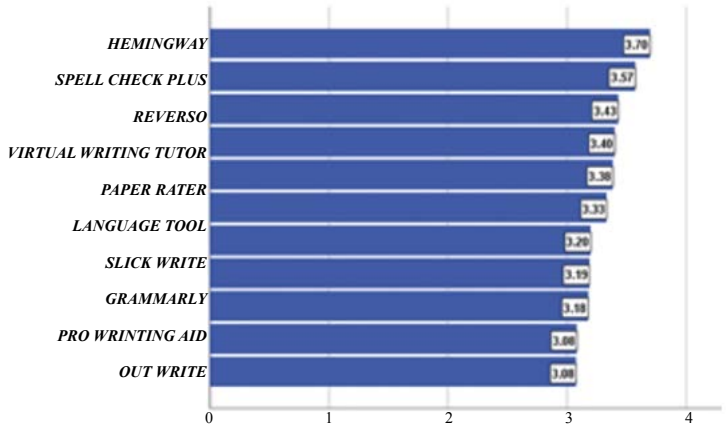

Figure 4. Utility of the tools embedded in the blog-repository (mean value)

The mean values of the variable discussed in Figure 4 have been examined taking into account the three factors that define the participants' profiles. Concerning age (Table 12), statistically significant differences ($p < .05$) with a high effect size (33.5%) are observed in Grammarly, which is considered as the most useful tool by the youngest group, 21-35 years old (4.00 points) and as the least useful tool by the intermediate group, 36–50 years old (2.80 points). Also, there is an almost statistically significant difference ($p < .10$) with a high effect size (3.7%) in Spell Check Plus that is considered as the most useful tool by the youngest group. The remaining tools do not show statistically significant differences in terms of age; the effect sizes are high or, at least, high–moderate effect size in almost all the tools (except for OutWrite).

Tool	AGE			Kruskal-Wallis test		Effect: R^2
	21-35 years old	36-50 years old	51-69 years old	Value	*P*-value	
Grammarly	4.00	2.80	3.67	6.08 *	.039	.335
Spell Check Plus	4.00	3.38	3.50	4.00 †	.096	.307
Slick Write	3.67	3.00	3.00	2.45 NS	.293	.259
Reverso	3.75	3.20	3.40	2.57 NS	.276	.198
LanguageTool	4.00	3.18	3.00	3.12 NS	.210	.150
ProWritingAid	2.67	3.14	3.50	0.86 NS	.649	.129
AutoCrit	3.17	3.33	2.50	2.23 NS	.327	.109
PaperRater	3.33	3.29	3.67	1.23 NS	.541	.102
Hemingway	3.86	3.55	3.80	2.19 NS	.334	.100
Virtual Writing Tutor	3.67	3.30	3.50	1.30 NS	.748	.093
OutWrite	3.25	3.00	3.00	0.51 NS	.777	.035

N.S. = Non-statistical Significance † = Almost significant * = Significant.

Table 12. Utility of the use of the blog-repository tools in terms of the participants' ages

Although statistically significant differences are not reflected in the participants' English proficiency levels ($p > .05$), the effect sizes point to possible relations. In particular, all those effect sizes that are high–moderate (> 10%) refer to the first six tools listed in Table 13. The participants with an intermediate English proficiency level are the ones that consider these tools as the most useful ones and those participants with a low English proficiency level value these tools as the least useful ones.

Tool	English proficiency level			Kruskal-Wallis test		Effect: R^2
	Basic	Intermediate	Advanced	Value	*P*-value	
Reverso	3.00	3.62	3.20	2.86 NS	.240	.220
Spell Check Plus	3.50	3.75	3.25	2.57 NS	.276	.198
Virtual Writing Tutor	3.00	3.56	3.20	2.25 NS	.325	.160
Hemingway	3.00	3.80	3.57	3.41 NS	.182	.155
Grammarly	2.50	3.44	3.00	3.57 NS	.168	.138
PaperRater	3.00	3.50	3.25	1.28 NS	.529	.106
AutoCrit	3.00	3.08	350	0.89 NS	.642	.053
OutWrite	3.00	3.00	3.20	0.26 NS	.879	.025
Slick Write	3.00	3.20	3.25	0.16 NS	.924	.014
LanguageTool	3.50	3.25	3.40	0.07 NS	.964	.012
ProWritingAid	3.00	3.00	3.17	0.17 NS	.920	.012

N.S. = Non-statistical Significance

Table 13. Utility of the blog-repository tools in terms of the participants' English proficiency level

In relation to the participants' digital competence (Table 14), Language Tool and OutWrite are observed as the most useful tools by those participants that have a medium digital competence ($p < .05$) with a high effect size (33.4%). These results are followed by Hemingway (effect size: 7.6%) and Spell Check Plus (effect size: 14.9%) in which there is not a digital competence group that considers them as the most useful tools.

Tool	Digital Competence			Kruskal-Wallis test		Effect: R^2
	Low	Quite a lot	A lot	Value	*P*-value	
LanguageTool	2.50	3.64	2.50	3.99 *	.046	.334
OutWrite	2.50	3.22	3.00	2.74 †	.098	.176
Spell Check Plus	3.00	3.58	4.00	1.17 NS	.280	.149
Grammarly	3.67	3.18	2.50	1.03 NS	.309	.131
PaperRater	3.50	3.44	3.00	0.02 NS	.892	.115
AutoCrit	3.00	3.33	2.75	0.36 NS	.548	.101
Virtual Writing Tutor	3.50	3.30	3.67	0.28 NS	.600	.093
Hemingway	3.50	3.67	4.00	0.21 NS	.648	.076
Slick Write	3.00	3.17	3.33	0.17 NS	.683	.028
Reverso	3.50	3.40	3.50	0.06 NS	.802	.008
ProWritingAid	3.00	3.10	3.00	0.14 NS	.711	.002

N.S. = Non-statistical Significance † = Almost significant * = Significant

Table 14. Utility of the blog-repository tools based on the participants' English proficiency levels

The correlation between two factors, namely, easiness and utility in the 11 tools available in the blog-repository has also been examined. All the coefficients indicate an association, that is, the tools that were considered as easy to use are associated with high utility. The coefficients of Virtual Writing Tutor (0.86), ProWritingAid (0.69) and Hemingway (0.60) show high statistical significance ($p < .01$). The correlation coefficients are also statistically significant ($p < .05$) in Spell Check Plus (0.58), Paper Rater (0.53), Language Tool (0.47) and Slick Write (0.46).

With regards to the qualitative questions, the participants explained why they considered the self-correction tools available in the blog-repository to be useful for writing English texts. In particular, as summarized in Table 15, they provided information for six tools, namely, AutoCrit, Hemingway, LanguageTool, PaperRater, Grammarly and ProWritingAid.

Tool	Reasons
AutoCrit	It offers different sections to use a wide range of lexicon
Grammarly	It provides clear and accurate error explanations and suggestions for improvement in written texts It also offers effective aid in building the register of the text (formal and informal) It is an accessible and complete tool
Hemingway	It helps build shorter and simpler sentences It focuses on text style
LanguageTool	It is intuitive and easy to use If focuses on grammar errors
PaperRater	It presents similar functionalities to LanguageTool regarding the easiness to copy a text and self-correct it
ProWritingAid	It offers a report with the users' percentage of errors and text accuracy

Table 15. Qualitative responses for the utility of the tools that users used for writing English texts

Other participants observed an equal usefulness for the 11 tools. They reported that all the tools available in the blog (a) help achieve readability in their written productions, avoiding unnecessary words and complex constructions; (b) contribute to improve the self-correction skills in English learning (for example, lexical redundancy); and (c) indicate the error type (for example, grammar, spelling or meaning) via the use of a legend of colors.

Other tools that the users suggest including in the blog-repository include (a) Write and Improve (https://writeandimprove.com/); (b) DeepL translator (www.deepl.com); and (c) Linguee (www.linguee.es).

6. Discussion of results

The results analyzed in our survey revealed that the blog-repository and, in particular, the 11 self-correction online and open access tools, were considered to be effective learning tools for the development of English written skills (Davis & Merchant, 2009; Deng & Yuen, 2012; Ducate & Lomicka, 2008; Mompean, 2010). These findings are in line with the new trends on digital writing as current computer tools and, more specifically, the implementation of grammar checkers in EFL classrooms, boost automated error detection and offer feedback on the basis of a wide range of functionalities (Mahlow & Dale, 2014; Strobl et al., 2019). In the case of our study, the use of the 11 online and open access self-correction tools has been facilitated by ease of navigation of the blog-repository and the resources embedded in each tool, namely, a video tutorial, a checklist and a brief description of the main functionalities.

As evidenced by the participants' total agreement with the display of the video tutorials, these audiovisual resources demonstrated having contributed to the learning process of writing English texts. The length of the video tutorials was closely related to the users' digital competence, that is, those participants that presented a low and intermediate digital competence considered that the length was adequate. This contrasts to high digital competence users for whom the video tutorials length was too long.

Out of the 11 open access and online self-correction tools, two of them (that is, Reverso and Hemingway) were previously known by 36.4% of the sample. Therefore, these data suggest the blog-repository contributed positively in the development of self-correction skills for the writing of English texts since the participants did not have a deeper knowledge about open access tools available online, as is also the case in the results discussed by earlier empirical studies (Botley & Dillah, 2007; Chapelle et al., 2015; Díaz-Negrillo & Fernández-Domínguez, 2006). This means that automated error detection via computer tools contributes to autonomous learning by being self-aware of the errors produced (Al-Ahdal, 2020; Cotos, 2011; Ellis, 2008; Mushtaq et al., 2019), based on the feedback provided (Allen et al., 2016; Strobl et al., 2019). From a pedagogical approach, online self-correction tools can also account for the role played by the learners' L1 in the process of learning a second language (Zhang, 2010). This will encourage teachers to search for didactic strategies, such as the implementation of computer tools in EFL classrooms, that will enable English second language learners to produce written texts free of errors (Al-Alhdal, 2020).

Despite their previous knowledge about Reverso and Hemingway, users pointed out that Hemingway, Language Tool and Spell Check Plus are the tools that were considered to be the easiest to use, followed by Reverso and Virtual Writing Tutor. Our findings also showed that five tools revealed a statistically significant correlation between easiness and utility, namely, Hemingway, Paper Rater, ProWritingAid, Spell Check Plus and Virtual Writing Tutor, as also reported by previous studies in the field (for example, Al-Alhdal, 2020 and Strobl et al., 2019). These results are explained by the shared wide range of functionalities that these tools exhibit: (a) detection of grammar errors and illegible sentences; (b) identification of lexical inconsistencies and suggestions for improvement; (c) linguistic assessment of text accuracy; (d) systematic analysis; (e) automatic and detailed feedback; and (f) continuous practice. In turn, PaperRater, ProWritingAid, Spell Check Plus and Virtual Writing Tutor also share spelling and punctuation error identification that is not embedded in Hemingway.

7. Conclusions

Taking as a starting point Al-Ahdal's (2020) taxonomy, this study has conducted a comparative analysis of the functionalities of 11 open access and online self-correction tools. Based on this analysis, we have designed and hosted three EFL learning resources per tool at stake in an institutional blog-repository, namely, a description, a checklist of the main functionalities and a video tutorial of the use and the interpretation of the information displayed by each tool. The second objective of our study involved the exploration of the effectiveness of the 11 online and open access self-correction tools via the users' assessment of the selection criteria for the use of one tool over another, as analyzed through a tailor-made research survey also embedded in the blog-repository.

The findings analyzed in this study revealed that the online and open access self-correction tools hosted in the blog-repository reflect common functionalities and, in particular, those ones related to the identification of spelling and grammar errors as well as the provision of synonyms. Nevertheless, some differences are addressed: while some tools offer more detailed and advanced functionalities (for example, plagiarism detection, revision of sentence length, among others), other tools only embed the basic common functionalities. As for the EFL learners' experience with the 11 tools, the results examined in the research survey reflected that all the respondents agreed with the navigation easiness of the three resources available in each tool hosted in the blog-repository. With regards to the internal use of the 11 open access and online self-correction tools, the users also pointed out that they had previously used Hemingway and Reverso and reported that these tools proved to be useful for the improvement of written texts in English, as reflected in the results provided after the self-correction analysis in each tool output. Furthermore, these two tools along with Language Tool, Spell Check Plus and Virtual Writing Tutor, which the respondents were unfamiliar with, were experienced to be the easiest to use in terms of the interface that each tool exhibited when compared to the other tools available in the blog-repository. This was especially the case for those users below 35 years old and above 51 years old. However, further research is needed to disentangle the age effect in the easiness selection criteria in this respect. In terms of usefulness, the participants considered the following five tools to be effective based on the quality of the proofread output provided by each tool, as evidenced by the functionalities embedded in each one, namely, Hemingway, PaperRater, ProWritingAid, Spell Check Plus and Virtual Writing Tutor.

We leave this study open for further research to investigate whether the tools suggested by our respondents (Write and Improve, DeepL translator and Linguee) exhibit, on the one hand, shared functionalities (or lack thereof) with respect to the open access and online self-correction tools hosted in the institutional blog-repository and, on the other hand, we see, to explore the criteria established by EFL learners on the selection of a broader spectrum of tools based on their learning needs for self-correcting their own English texts. A more fine-grained analysis would be required to disentangle the effectiveness of the 11 tools that share similar functionalities hosted in the institutional blog-repository. More specifically, a comparative analysis of the output displayed by the 11 open access and online tools is needed so as to elucidate the effectiveness of the common functionalities shared by the 11 tools using a common sample as the English written input for all the tools. Furthermore, in order to actually verify whether the tools are effective in the development of English writing skills, pre- and post-language tests will be designed and implemented with EFL learners so as to explore objective feedback on writing skill development in various linguistic areas after using the tools. This analysis will also help us explore the EFL learners' acquisition of linguistic aspects of written texts (for example, lexicon, grammar and spelling) via the error analysis of their written productions.

Acknowledgment

This study has been carried out in the framework of the teaching innovation project entitled "Blog of open access tools for online self-correction of written production in English", coordinated by Silvia Sánchez Calderón, within the Innovative Didactic Group for Open Linguistic Glossary Applications, directed by M.ª Ángeles Escobar.

CREDiT Authorship Contribution

Silvia Sánchez Calderón and Iria da Cunha equally contributed to the design and implementation of the research, to the analysis of the results and to the writing of the manuscript.

References

Al-Ahdal, Arif (2020). Using computer software as a tool of error analysis: Giving EFL teachers and learners a much-needed impetus. *International Journal of Innovation, Creativity and Change, 12*(2), 418–437. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3570619

Al-Ahdal, Arif Ahmed Mohammed Hassan, & Al-Ma'amari, Ahmed Ali Hassan (2015). Learning strategies of the Arab EFL learners: Finding correlation with outcomes. *Advances in Language and Literary Studies, 6*(5), 230–241. http://dx.doi.org/10.7575/aiac.alls.v.6n.5p.230

Alhaysony, Maha (2012). An analysis of article errors among Saudi female EFL students: A case study. *Asian Social Science,* 8. http://dx.doi.org/10.5539/ass.v8n12p55

Allen, Laura K., Jacovina, Matthew E., & McNamara, Danielle S. (2016). Computer-based writing instruction. In Charles A. MacArthur, Steve Graham, & Jill Fitzgerald (Eds.), *Handbook of Writing Research* (pp. 316–329). The Guilford Press.
Botley, Simon, & Dillah, Faizal Hakim Doreen (2007). Investigating Spelling Errors In A Malaysian Learner Corpus. *Malaysian Journal of ELT Research*, *3*(1), 74–93. https://www.melta.org.my/
Cotos, Elena (2011). Potential of automated writing evaluation feedback. *Calico Journal, 28*(2), 420–459. https://doi.org/10.11139/cj.28.2.420-459
Chapelle, Carol A., Cotos, Elena, & Lee, Jooyoung (2015). Validity arguments for diagnostic assessment using automated writing evaluation. *Language testing, 32*(3), 385–405. https://doi.org/10.1177/026553221456538
Council of Europe (CEFR) (2001). *Common European Framework of Reference for Languages: Learning, Teaching, Assessment*. New York Cambridge University Press.
Davies, Julia, & Merchant, Guy (2009). (2009). *Web 2.0 for Schools: Learning and Social Participation*. Peter Lang.
Deng, Liping, & Yuen, Allan H. (2012). Understanding student perceptions and motivation towards academic blogs: An exploratory study. *Australasian Journal of Educational Technology, 28*(1), 48–66. https://doi.org/10.14742/ajet.883
Díaz-Negrillo, Ana, & Fernández-Domínguez, Jesús (2006). Error tagging systems for learner corpora. *Revista española de lingüística aplicada, 19*, 83–102. http://www4.ujaen.es/~svalera/Research/informatizacion/RESLA%202006.pdf
Ducate, Lara C., & Lomicka, Lara L. (2008). Adventures in the blogosphere: From blog readers to blog writers. *Computer Assisted Language Learning, 21*(1), 9–28. https://doi.org/10.1080/09588220701865474
Ellis, Rod (2008). *The Study of Second Language Acquisition*. Oxford University Press.
Fageeh, Abdulaziz I. (2011). EFL learners' use of blogging for developing writing skills and enhancing attitudes towards English learning: An exploratory study. *Journal of Language and Literature, 2*, 31–48. https://www.castledown.com/journals/jalt-call/article/?reference=j106
Hameed, Paikar F. (2016). A Study of the Spelling Errors committed by Students of English in Saudi Arabia: Exploration and Remedial Measures. *Advances in Language and Literacy Studies, 7*(1), 203–207. http://www.journals.aiac.org.au/index.php/alls/article/view/2070
Mahlow, Cerstin, & Dale, Robert (2014). 12 Production media: Writing as using tools in media convergent environments. In Eva-Maria Jakobs and Daniel Perrin (Eds.), *Handbook of Writing and Text Production* (pp. 209–230). De Gruyter Mouton.
Mompean, Annick R. (2010). The development of meaningful interactions on a blog used for the learning of English as a foreign language. *ReCALL, 22*(03), 376-395. https://doi.org/10.1017/S0958344010000200
Mushtaq, Muhammad, Mahmood, Muhammad, Kamran, Ismail, Muhammad, Ahmad, & Adeel, Hafiz (2019). A Corpus-Based Analysis of EFL Learners' Errors in Written Composition at Intermediate Level. *Indian Journal of Natural Sciences, 9*(52), 16842–16852. http://www.tnsroindia.org.in/
Strobl, Carola, Ailhaud, Emilie, Benetos, Kallioopi, Devitt, Ann, Kruse, Otto, Proske, Antje, & Rapp, Christian (2019). Digital support for academic writing: A review of technologies and pedagogies. *Computers and Education, 131*, 33–48. https://doi.org/10.1016/j.compedu.2018.12.005
Zhang, Lawrence J. (2010). Commissioned review of Rod Ellis (2008). The Study of Second Language Acquisition (2nd ed.) (Oxford, UK: Oxford University Press, 2008). *System, 38*, 146–149.

Appendix

Appendix I. Research survey on the selection criteria for the use of 11 open access and online self-correction tools embedded in an online blog-repository[5]

Research survey on the use of the blog "open access and online tools for the self-correction of English written texts"
Thank you for completing this survey. It will help us know your educational needs. It will take you less than 10 minutes to complete it. The information obtained will be anonymized and will be only used for research purposes.

User's profile
Age:
Biological gender a) Male b) Female c) Other
Level of studies a) Bachelor's degree b) Master's c) PhD d) Other studies
I consider that my English level is: a) Basic (A1-A2) b) Intermediate (B1-B2) c) Advanced (C1-C2) d) Native

[5] The survey has been translated into English for the purposes of this paper.

I have the following official certificate that evidences my English level:
a) APTIS
b) Cambridge University
c) IELTS (Trinity College London)
d) Oxford English
e) Others

If your answer is "Others", indicate which one:

I am competent with the use of technological and online resources and tools:
a) Very little
b) Little
c) Quite a lot
d) A lot

Users' assessment of the blog-repository

1. The navigation through the resources available in the blog-repository has been easy.
a) Totally disagree
b) Disagree
c) Agree
d) Totally agree

2. I consider that video tutorials in the blog-repository can help me develop my English written skills.
a) Totally disagree
b) Disagree
c) Agree
d) Totally agree

3. I consider that the duration of the video tutorials in the blog-repository is adequate.
a) Totally disagree
b) Disagree
c) Agree
d) Totally agree

4. The reason why I selected "a" or "b" in question 3 is the following:
a) The video tutorials are too long
b) The video tutorials are too short
c) I have not selected options "a" or "b" in question 3

5. Out of the tools integrated in the blog-repository, which ones did you know previously? Please select one or several options according to "Yes, I knew it previously" or "No, I did not know it previously".
a) AutoCrit
b) Hemingway
c) Grammarly
d) LanguageTool
e) OutWrite
f) PaperRater
g) ProWritingAid
h) Reverso
i) Slick Write
j) Spell Check Plus
k) Virtual Writing Tutor

6. Has the interface of the tools included in the blog-repository been easy to navigate through? Please select according to the following answers: (a) very difficult, (b) difficult, (c) easy, (d) very easy, or (e) I have not used this tool.
a) AutoCrit
b) Hemingway
c) Grammarly
d) LanguageTool
e) OutWrite
f) PaperRater
g) ProWritingAid
h) Reverso
i) Slick Write
j) Spell Check Plus
k) Virtual Writing Tutor

7. Have these tools been effective regarding the output provided by each tool when self-correcting your own written English texts? Please select according to the following answers: (a) Not very useful, (b) Not useful, (c) useful, (d) very useful, or (e) I have not used this tool.

a) AutoCrit
b) Hemingway
c) Grammarly
d) LanguageTool
e) OutWrite
f) PaperRater
g) ProWritingAid
h) Reverso
i) Slick Write
j) Spell Check Plus
k) Virtual Writing Tutor

8. Other open access and online tools that can help us write English texts that I would like the blog-repository to include are: