Implementing a Digital Corpus to Improve the Writing Performance of *Batxillerat* Students in the English as a Foreign Language Classroom

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Abstract

Few studies have considered the use of language corpora in an English as a Foreign Language (EFL) pre-tertiary education context. With the normalisation of laptops, spell-checkers, and online dictionaries in classrooms across Spain, it is pertinent to consider why corpora have not been introduced in these contexts, given the positive results their use have in higher education. Scholars who advocate for the benefits of corpora for language learners contend that it improves higher order thinking skills and encourages autonomous learning.

This study aims to explore the implementation of the SkELL corpus, a corpus designed especially for English learners, as an additional digital tool in a group of 1st of *Batxillerat* students in School X (placeholder name). The learners in the experimental group (EG) followed a didactic sequence that aimed to introduce them to this tool, while also learning about the structure of an opinion essay. The effectiveness of the implementation was quantified with a pre-test and a post-test, as well as a final essay. The results of the EG were compared to those of a control group (CG), who had not used SkELL.

The results from the tests and the essays were assessed numerically and were analysed via statistical measures. Both the CG and the EG improved in the post-test. However, the CG achieved better results than the EG in both the tests and the opinion essays. While the results are not statistically significant, they suggest that the students' previous knowledge had a larger impact on the results than the implementation of the corpus tool.

Keywords: writing skills, corpora, learner-centred methods, post-secondary education

Resum

Pocs estudis han explorat l'ús de corpus de llengua a l'aula d'anglès com a llengua estrangera (EFL, en anglès) en contexts d'educació secundària i *Batxillerat*. Amb la normalització d'ordinadors portàtils, correctors automàtics i diccionaris en línia arreu d'Espanya, és pertinent preguntar-se per què els corpus de llengua no s'han introduït en contextos com aquests, donats els resultats positius que demostra l'ús de corpus en contextos universitaris. Investigadors que són partidaris dels beneficis de l'ús de corpus en aprenents de llengües afirmen que millora les habilitats de pensament d'ordre superior i fomenta l'aprenentatge autònom.

L'objectiu d'aquest estudi és analitzar la implementació del corpus SkELL, un corpus dissenyat especialment per a aprenents d'anglès, com una eina digital addicional en un grup de 1r de Batxillerat a School X (nom fictici). Els estudiants al grup experimental (EG, en anglès) han seguit una unitat didàctica mitjançant la qual han pres contacte amb aquesta eina, mentre també aprenien l'estructura d'un text d'opinió. Hem avaluat l'efectivitat d'aquesta implementació mitjançant un pre-test i un post-test, a més d'una redacció final. Els resultats de l'EG s'han comparat amb els del grup control (CG, en anglès), que no havien fet servir SkELL.

Els resultats dels tests i de les redaccions s'han avaluat numèricament amb mesures estadístiques. Tant el CG com l'EG han mostrat una millora al post-test, però el CG ha obtingut millors resultats que l'EG tant als tests com a les redaccions. Si bé els resultats no són estadísticament significatius, indiquen que els coneixements previs dels estudiants han tingut un impacte més alt en els resultats de l'estudi que la implementació de l'eina de corpus.

Paraules clau: habilitats de redacció, corpus, mètodes centrats en l'estudiant, educació post-secundària

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1 INTRODUCTION

There are countless studies on the use of technology in teaching and learning English as a Foreign Language (EFL) and, today, a computer, a projector, or an online bilingual dictionary are items that have become the norm in many educational environments. In the context that concerns this paper, Secondary Education in Catalonia, personal laptops started being delivered to schools in 2009 under the EduCAT1x1 programme ("L'Educat 1×1, Radiografia d'un Projecte," 2011); since then, a lot of effort has been put into integrating these digital devices into lessons for different purposes. A digital tool that has existed for decades but that has not found much use in the secondary-education context is language corpora, or databases of naturally-occurring language. This paper aims to explore the benefits and drawbacks of implementing language corpora in the secondary education EFL classroom.

1.1 Motivation

Only a few weeks before the time of writing, at the beginning of May 2023, a training session was offered by the Departament d'Ensenyament to EFL teachers entitled "Using corpora to teach English" (GEP Generació Plurilingüe, 2023). This event highlights the current interest in expanding the presence of language corpora in EFL contexts, and the need of providing the appropriate knowledge to teachers who wish to use corpora in class. In parallel, a literature review of the use of corpora in pre-tertiary contexts revealed that this is a widely unexplored topic. The latent interest of professional teachers and the lack of scholarly insight in this area are two reasons that led to the subject of this research project.

Furthermore, this study stems from a didactic unit that was implemented in a group of 1st of *Batxillerat* students in School X[1]. At this stage in students' education, a great deal of the curricula is devoted to preparing for university entry examinations (*Proves d'accés a la universitat* or *PAU*), which include a piece of written production in English. To this end, the *Batxillerat* English curriculum covers a set list of text types: informal and formal emails, a narrative text, for/against essays, and opinion essays, among others. The usual lesson plans regarding writing skills in the context of this study consist of following a textbook that combines prescriptive guidelines on how to approach the different text types and activities where they put the guidelines into practice. The final stage consists of

[1] To protect participants' anonymity, 'School X' will be used as a placeholder name henceforth.

writing the text type in question in class, on their personal laptop, with the support of the writing guide in the textbook. Lastly, the teacher marks their text according to a set of correction items (for vocabulary, grammar, etc.), and the students are free to improve their text outside of the classroom. For the scheduled time of the implementation, it was arranged that students would work on the opinion essay.

An observation period revealed that EFL sessions in the groups at hand are generally teacher-centred: the teacher provides explanations and guidelines on a given topic and students do exercises individually in their textbook. When given permission, students access the internet on their personal laptops or mobile phones to look up information or words in online dictionaries or machine translation sites. These circumstances raised two questions: a) might students benefit from more learner-centred methods? and b) are students familiar with other digital tools that can help them improve their English?

The particularities of the context where the project was to be implemented, added to the gap in the literature and an apparent interest from education professionals, are all reasons that motivate the choice to implement a corpus in a *Batxillerat* EFL class and explore the outcome.

1.2 Overview of the study

In order to assess the implementation of language corpora in secondary education, two groups of 1st of *Batxillerat* in School X were compared in their writing performance, specifically in composing an opinion essay. Students in the control group (CG) followed their usual lessons, while students in the experimental group (EG) underwent a didactic intervention and were taught to use the SkELL corpus (Baisa & Suchomel, 2014) as a support tool. The main hypothesis argues that using a language corpus helps students improve their lexical and grammatical constructions, as they become more independent in their language learning process and use inductive reasoning. To compare the effectiveness of implementing the corpus, students from the CG and EG answered a pre-test and a post-test and wrote an opinion essay, all of which was assessed numerically. The results provided the basis for a quantitative analysis in the framework of a quasiexperimental research design.

The paper at hand begins with a theoretical framework (Section 2) that lays a conceptual basis for the study and the state of the art of the use of corpora in EFL. The most recent literature on the topic provides insight into gaps that require further research; this, paired

with the observation of the *Batxillerat* groups in School X, leads to a research proposal (Section 3) that contains the research question, objectives, a hypothesis, and the research design. Section 4 presents the didactic intervention that was designed for the experimental group. The methods for the study (participants, variables, research tools and procedures, and the foreseen data analysis) are presented in Section 5. Lastly, the results provided by statistical measures are detailed in Section 6, followed by a closing section that provides a discussion of the results, conclusions about the research project, and insights for further research (Section 7).

2 THEORETICAL FRAMEWORK

2.1 Writing in EFL

It has been some decades since "skills" have become the central focus of EFL lessons. Leaving behind the grammar-translation and other traditional approaches, EFL turned to communicative skills, which encompass two receptive skills, listening and reading, and two productive skills, speaking and writing. The focus of this study is on writing, a skill that did not receive much attention until the 1970s. At this time, an interest arose in L2 students facing selection processes to access higher education in the USA, where they were required to produce lengthy written texts (Reid, 2010). The initial approach imitated composition theory aimed at native speakers, but teaching methods for L2 learners slowly emerged.

There are two main perspectives on the instruction of writing: writing as a process and writing as a product (Furneaux, 2022, p. 244). If writing is considered a process, the text is for the writer to read and to reflect on, and fluency is expected over accuracy. If writing is considered a product, the student follows academic conventions that "stifle creativity" (Reid, 2010, p. 29), and accuracy is valued over fluency. The first case helps learners acquire authentic writing skills, while the benefits of the second are that writing is easy to explain, to follow, and to assess (Furneaux, 2022, p. 244). In secondary and post-secondary education in Spain, the approach of writing as a product is favoured.

The assessment practices regarding L2 learners' written production is another topic of interest to scholars (Hattie & Timperley, 2007). Questions concerning who gives feedback, what items are assessed, how should feedback be provided, and why give feedback are all up to debate. Methods than have proven effective for practicing writing skills are collaborative writing, peer-assessment, and the creation of portfolios, among others.

2.2 Technology in EFL

Since the 1990s, computers and other digital devices have been an increasingly relevant part of the English as a Foreign Language (EFL) classroom, and have advanced individualised learning as much as they have enabled the creation of learner communities (Hanson-Smith, 2001, p. 107). Today, some argue that technology has become entrenched to such an extent into teaching and learning EFL settings that it has become *normalised,*

since it is considered non-remarkable and part of daily practice, as well as reaching "its fullest possible effectiveness in language education" (Bax, 2011, p. 1). The use of technology in learning processes is mostly known as Computer-Assisted Language Learning (CALL).

Such is the pervasiveness of technology in the EFL classroom, that Chun et al. even venture to assert that "to teach language without some form of technology would create a very limited and artificial learning environment—if it were even possible at all" (2016, p. 65). From apps that help teachers generate classroom activities, to complete online learning programmes, assessment tools, and online translators, it is hard to find an area of language and language learning that cannot be tackled with the help of technology. Technology for pedagogical purposes continuously adapts to changes in how society interacts with technology, and this gives rise to new fields such as Mobile-assisted Language Learning (MALL) in more recent years.

CALL approaches are well-aligned with the concept of Constructivism as introduced by Piaget in the 1950s and understood, in the words of Flowerdew, as the "acquisition of knowledge [as] a dynamic process, with learners in the driving seat" (2015, p. 18). This learning style places the student at the centre of the learning process, as opposed to a more traditional, teacher-centred style. In this sense, learners approach the subject of interest by relying on their existing background knowledge and by problem-solving, or through inductive learning by applying a higher order of cognitive processes, such as hypothesising and making inferences.

Another theoretical approach that is recurrently mentioned alongside CALL is Vygotsky's Sociocultural theory. According to this view, human thought is conceived "as mediated by symbolic tools, the most important of which is language" (Mishan, 2022, p. 20). This emphasises how the use of physical tools conditions our interaction with the world. In turn, Activity theory suggests that it is not the tool alone that mediates human thought, but the activities that require the use of certain tools. In the context of CALL, the technology or devices used fundamentally alter the types of activities that are offered, and thus the learning process itself (ibid.).

In fact, the advance of technology has not only provided new tools for language teaching and learning, but also new ways of communication, thus impacting the communicative paradigm itself. As new language conventions emerge in online environments, it is in the

learner's interest to adapt to these new situations: learners of EFL are now taught how to write emails and how to create posts on social media. In this sense, CALL contributes to the student's accomplishments in digital literacy, which is so very much needed nowadays, especially among younger learners.

The interaction between language learning and technology is at the forefront of research in EFL. Recent topics of interest include eye-tracking methods to assess how learners navigate multi-modal learning environments (see Fievez et al., 2023), or language learning and virtual reality systems (see Bacca-Acosta et al., 2023). Another topic that has received considerable attention is the use of language corpora in EFL; however, its use has not been explored much in the context that concerns this paper: secondary education. The following section describes these issues in further detail.

2.3 Corpora and Data-Driven Learning in EFL

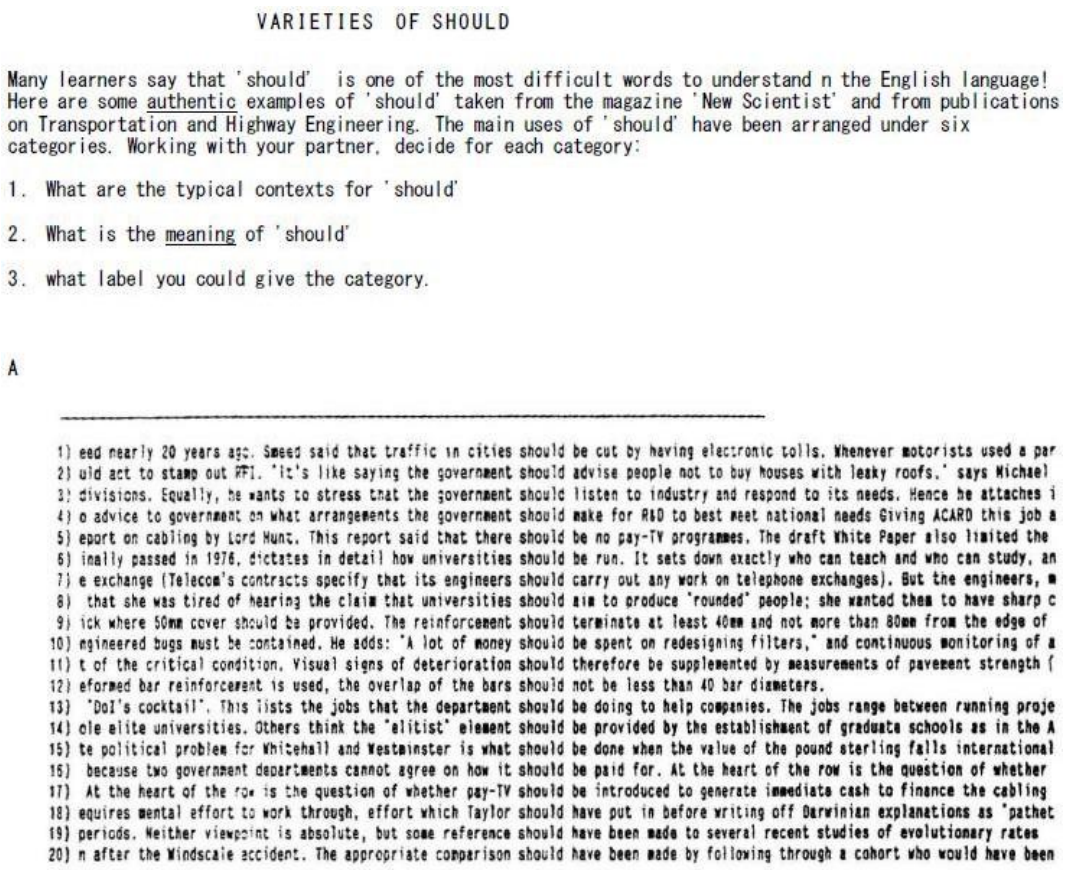
A corpus is a database of naturally-occurring language. A vast majority of existing corpora are designed for research purposes, as they hold a great deal of data regarding a particular language, language variety, or language type, which can be purely linguistic, although many also contain metadata. There are corpora based on native speaker language, on non-native speaker language, and on translated language. Corpora can be mono-lingual, bilingual, or multilingual; they can contain spoken or written data. The main attraction of databases such as these is that they are computer-readable, and can thus be automatically tagged for linguistic information (parts-of-speech, syntactic structures, semantic traits, etc.). In other words, through corpora, linguists are able to obtain descriptive information from large amounts of language data thanks to the advancement of computer-assisted tools, where manual collection and annotation falls short.

In the context of EFL, language corpora are a valuable resource for creators of didactic materials, as they provide instances of authentic language use, which are deemed more reliable than made-up constructions. These uses of corpora are considered "indirect applications" (Leech, 1997; Römer, 2011), since neither teachers nor learners are necessarily aware of the use of corpora behind their didactic materials. The "direct applications" (ibid.), on the other hand, involve teachers and learners engaging directly with corpora, be it in the form of handouts that contain corpus material—the "hands-off approach"—or by searching corpora directly on the computer— the "hands-on approach" (Boulton, 2010, as cited in Karlsen, 2021, p. 7). Both approaches are considered data-driven learning (DDL), a term coined by Johns, who maintains that language-learners can

also research language and "whose learning needs to be driven by access to linguistic data" (1991, p. 28). Figure 1 presents Johns' first suggestion for a DDL task, in which students are asked to discern the uses and meanings of *should* from a set of concordance lines obtained from a corpus:

Figure 1

Johns' example of a hands-off task based on the DDL approach (1991, p. 43)



VARIETIES OF SHOULD

Many learners say that 'should' is one of the most difficult words to understand n the English language! Here are some authentic examples of 'should' taken from the magazine 'New Scientist' and from publications on Transportation and Highway Engineering. The main uses of 'should' have been arranged under six categories. Working with your partner, decide for each category:

1. What are the typical contexts for 'should'
2. What is the meaning of 'should'
3. what label you could give the category.

A

1) eed nearly 20 years ago. Smeed said that traffic in cities should be cut by having electronic tolls. Whenever motorists used a par
2) uld act to stamp out VFI. 'It's like saying the government should advise people not to buy houses with leaky roofs,' says Michael
3) divisions. Equally, he wants to stress that the government should listen to industry and respond to its needs. Hence he attaches i
4) o advice to government on what arrangements the government should make for R&D to best meet national needs Giving ACARD this job a
5) eport on cabling by Lord Hunt. This report said that there should be no pay-TV programmes. The draft White Paper also limited the
6) inally passed in 1976, dictates in detail how universities should be run. It sets down exactly who can teach and who can study, an
7) e exchange (Telecom's contracts specify that its engineers should carry out any work on telephone exchanges). But the engineers, w
8) that she was tired of hearing the claim that universities should aim to produce 'rounded' people; she wanted them to have sharp c
9) ick where 50mm cover should be provided. The reinforcement should terminate at least 40mm and not more than 80mm from the edge of
10) ngineered bugs must be contained. He adds: 'A lot of money should be spent on redesigning filters,' and continuous monitoring of a
11) t of the critical condition. Visual signs of deterioration should therefore be supplemented by measurements of pavement strength (
12) eformed bar reinforcement is used, the overlap of the bars should not be less than 40 bar diameters.
13) 'DoI's cocktail'. This lists the jobs that the department should be doing to help companies. The jobs range between running proje
14) ole elite universities. Others think the 'elitist' element should be provided by the establishment of graduate schools as in the A
15) te political problem for Whitehall and Westminster is what should be done when the value of the pound sterling falls international
16) because two government departments cannot agree on how it should be paid for. At the heart of the row is the question of whether
17) At the heart of the ro« is the question of whether pay-TV should be introduced to generate immediate cash to finance the cabling
18) equires mental effort to work through, effort which Taylor should have put in before writing off Darwinian explanations as 'pathet
19) periods. Neither viewpoint is absolute, but some reference should have been made to several recent studies of evolutionary rates
20) n after the Windscale accident. The appropriate comparison should have been made by following through a cohort who would have been

Note: The original task contains more sets of concordance lines; the image above only displays the first set.

In his paper, Johns makes three main contributions regarding the use of DDL. First, he contends that tasks such as the one in Figure 1 encourage speculation and foster an ability to create generalisations based on patterns found in the instances provided by the corpus, following the inductive method. Secondly, Johns turns to the role of the teacher, who becomes "a director and coordinator of student-initiated research" (1991, p. 29), a notion that aligns well with the Constructivist approach explained above. Lastly, Johns questions the role of grammar in language teaching and learning: according to the

author, the prescriptive take on grammar so often used in EFL is not close enough to authentic grammatical patterns, whereas DDL is based exclusively on authentic language production. In DDL, it is the learner who discovers grammatical patterns.

As stimulating as the implementation of corpora in EFL may be, there is some reserve to be had depending on the context where the corpus is implemented. Interpreting results such as those in Johns' handout require a considerable level of reading comprehension. On top of that, in a hands-on approach, there is the added complication of navigating an online platform. For reasons such as these, the use of corpora in EFL has focused mainly on the context of higher education, where students are more proficient in their English and can overcome technological hurdles with relative ease. In secondary education, however, corpora are seldom used in EFL lessons, since it is only recently that some corpora have been specifically designed for language learning purposes, and not for researchers or language professionals.

Studies on corpora in secondary school EFL lessons are few, but there seems to be a growing tendency to observe the use of corpora in these contexts. A study that is worth mentioning is Karlsen's dissertation on the use of corpora in Norwegian high schools (2021), which observes teacher and student engagement with corpora via qualitative methods. Karlsen's findings report that teachers generally avoided corpus-based approaches and that, after using them, students criticised the absence of the teacher and found the corpus tools too complex and irrelevant to their learning. Still, the lessons gave rise to reflection about language, as well as peer and teacher scaffolding.

Indeed, few teachers are familiar with corpora and its uses (Pérez-Paredes et al., 2018), and more training in this regard is needed to effectively implement corpora into the EFL classroom. Leech contends that a corpus "enables the learner/student to explore, to investigate, to generalize, to test hypotheses; but it does not itself initiate or direct the path of learning" (1997, p. 5). It is the teacher who can guide the student in this exploration, provided they have the training to do so. In this line, Karlsen writes that "corpora are rich resources with many opportunities tied to them, but it is up to the teachers, students, and researchers to conceptualize, develop and implement them in pedagogically reasonable and creative ways" (2021, p. 6).

2.3.1 The SkELL Corpus

The corpus considered the most suitable to the needs of the participants in this study is the SkELL Corpus, a corpus specifically designed for learners of English (Baisa & Suchomel, 2014). It is hosted in the Sketch Engine platform, an online corpus manager and text analysis software. SkELL contains over 1 billion words, extracted from Wikipedia and the English Web 2013 corpus, among other sources. Its design is simple and visually appealing. Its main features are the examples tab (Figure 2), whereby the user obtains example contexts of a word in use; the word sketch tab (Figure 3), which provides a list of common collocations that co-occur with a given word; and a similar words feature (Figure 4) in the form of a word cloud.

Figure 2

The "Examples" tab in SkELL

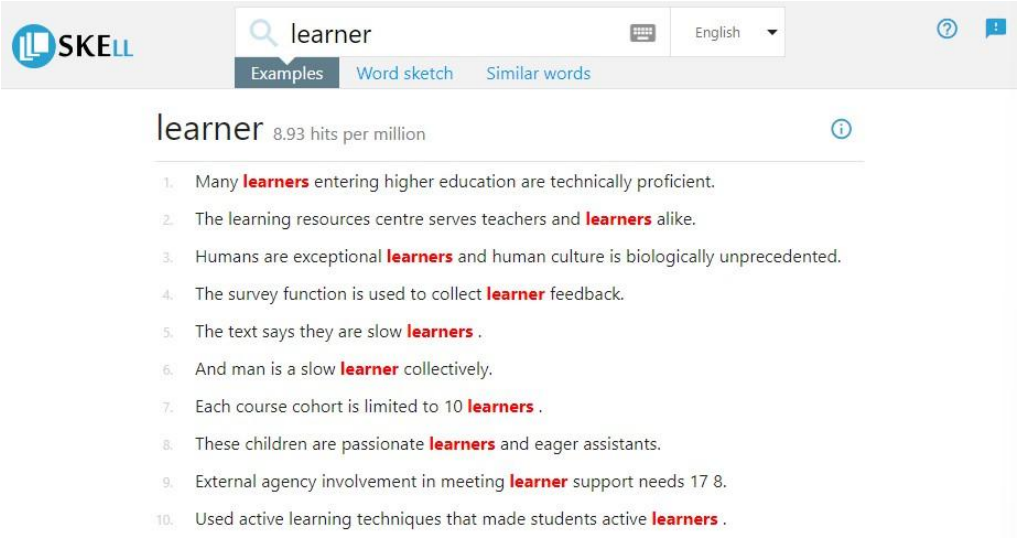


Figure 3

The "Word sketch" tab in SkELL

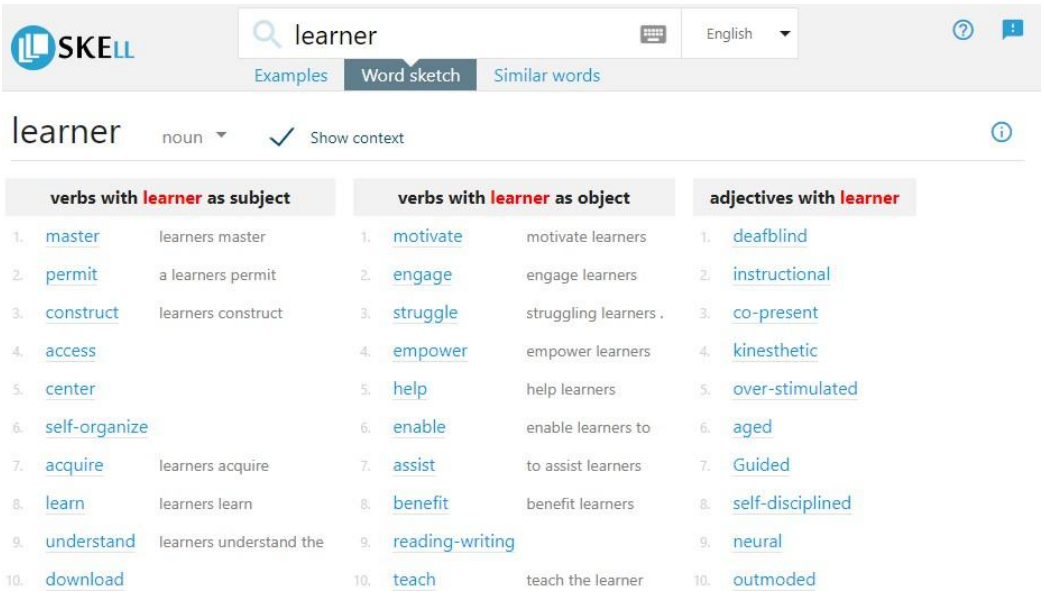
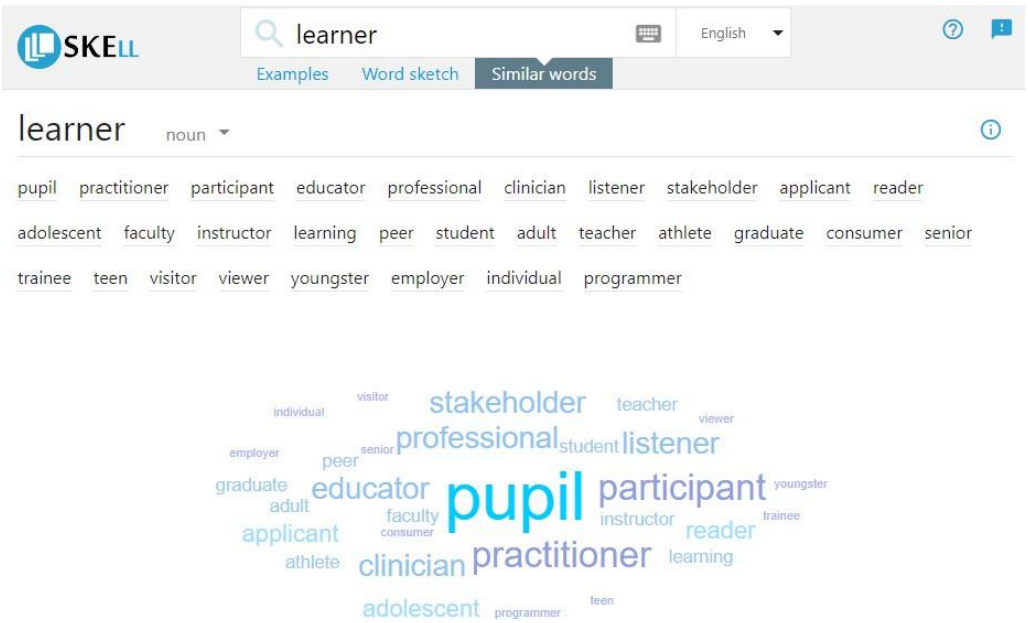


Figure 4

The "Similar words" tab in SkELL



3 RESEARCH PROPOSAL

This section presents the research proposal for this paper, once the theoretical basis has been established regarding the use of corpora in the EFL secondary-school classroom (see previous section). The research proposal at hand is structured in the following sub-sections: the main research question, hypotheses, objectives, and research design.

3.1 Research question

The main question that guides this research project stems from the educational needs that have been identified in the context of an EFL subject in two 1st of *Batxillerat* groups.

In this context, I put forward the following research question:

- Does incorporating a language corpus into the repertoire of tools of 1st of *Batxillerat* students in a Catalan secondary school help them improve their writing skills?

3.2 Objectives

General objective:

- To explore the benefits of introducing a language corpus as a digital support tool in the writing production of students of 1st of *Batxillerat*.

Specific objectives:

- To compare the numerical assessment of students' opinion essays in a group that uses a language corpus as a support tool and a group that does not.
- To foster learner-centred methods and deductive learning processes.
- To introduce students to a digital tool that they are unfamiliar with and that can help them become more independent language learners.

3.3 Hypotheses

- Students that use the suggested language corpus tool while elaborating their opinion essay will achieve better results than students who do not.

3.4 Research design

This research project follows a quasiexperimental design. It relies on quantitative results to compare two groups, an experimental and a control group, and to analyse a set of variables (explained further on). It is quasiexperimental as it is carried out within an educational setting that has not been designed especially for research purposes; as such, the groups are not randomly assigned and the teacher (in this case, the author) acts as the researcher through observational techniques (and others). Since the research is designed for a specific context, it is seldom generalisable nor replicable in other situations. Further details concerning the methods of this study are described in Section 5.

4 DIDACTIC INTERVENTION

The didactic intervention described in this paper took place at School X, a well- known secondary school in the province of Tarragona, and one of the largest educational institutions in Catalonia. According to the Department of Education's regulations, it is a Centre of Complexity category B. A state-run institution, it offers secondary school (*ESO*) and vocational training courses (*Formació Professional*), as well as *Batxillerat*, which is the stage where the intervention at hand was developed. Students in *Batxillerat* are categorised into the speciality courses they are enrolled in, which, in this case, are grouped into the Humanities and Social Sciences on one hand, and Science and Technology on the other.

The didactic sequence was designed for six sessions during the second term and was implemented over the course of three weeks in March 2023. During this time, changes were taking place in the legislation of the *Batxillerat* curriculum, to be implemented definitely by the end of 2025. The academic year 2022/2023 was a transition period, and the school still relied on the previous legislation, which is the system that is complied with in this didactic sequence.

The detailed description of the sessions can be seen in annex 9.1. Each session contains the learning objectives, a description of how the session caters for diversity, an account of the activities and the required materials and groupings, and a section on the type of assessment implemented for every session. The session starts with a warm-up activity that reviews what has previously been addressed or recalls their previous knowledge, and ends with a formative assessment activity. The main activities include individual and group work to practice using SkELL and to share their opinions on topics that will be discussed in their opinion essay.

The main objective is to introduce the SkELL corpus as another tool in the repertoire of digital tools the students already rely on to put together their writing assignments. The text type that is the focus of these sessions is the opinion essay, as it was already part of the students' curriculum. To practice using the SkELL tool and developing an opinion essay, we turn to the topic of the use of digital devices in the classroom and vocabulary related to technology, as it is a current topic that plays an important role in their daily school experience. The first two sessions focus on learning to navigate the SkELL corpus and how to apply it, the third and fourth sessions focus on learning the structure and

vocabulary of an opinion essay, in the fifth session they write the opinion essay, and in the sixth session they improve it based on the teacher's feedback. The tables below contain the mandatory items that the conceptualisation of the sessions is based on.

Area: Foreign languages	Subject: English	Level: 1st BAT
Using language tools to help you learn languages: Have your say! It has been a few years since the use of laptops was implemented in many secondary schools, and now teachers and students integrate this device into everyday lessons. In this didactic unit students learn about the structure and language of an opinion essay, where they discuss their stance on the use of online tools to help them learn English. The content of the didactic unit goes hand in hand with the teaching and learning methodology, which implements the use of the SkELL corpus into their writing process in order to foster autonomous learning strategies.		

Key contents	Curricular contents
▪ Adequacy, coherence and cohesion ▪ Strategies for interactive writing ▪ Strategies for revising, correcting, repairing, and presenting	▪ Writing an opinion essay ▪ Linking words

DIMENSION & CORE COMPETENCIES	**LEARNING OBJECTIVES**	**ASSESSMENT CRITERIA**
Dimension: Written expression **C8:** Applying textualization strategies to produce written texts of different types and formats (*Produir textos escrits de diferents tipologies i formats applicant estratègies de textualització*)	To acquire writing strategies to produce well-structured and cohesive opinion essays. To use linking words effectively. To acquire and put into practice new and relevant vocabulary.	Students can produce complex sentences and use linking expressions accordingly. Students can produce texts according to the features of each text type.
Dimension: Written expression **C9:** Revising a text to improve it according to the communicative aim with the help of support (*Revisar el text per millorar-lo segons el propòsit comunicatiu amb l'ajut de supports*)	To learn how to use the SkELL corpus: to filter results and extract information from the examples provided. To use the SkELL corpus to correct their lexical and grammatical mistakes.	Students can improve a text by incorporating the reviewed elements, both those that affect form and function. Students use appropriate tools to improve and correct the text.

5 METHODS

5.1 Participants

The participants of this study belong to two groups in the first year of *Batxillerat*. The control group (CG) is made up of 26 students in the branches of Science and Technology; the experimental group (EG) consists of 25 students in the branches of the Arts and Social Sciences. As is depicted in Table 1, the EG is drastically unbalanced in terms of sex, with a vast majority of females. They are all between the ages of 17 and 18. In terms of specific educational needs, there is one Individualised Plan (IP) in each group, due to dyslexia in both cases.

Table 1

Number of participants in the study, according to group and sex

	CG	**EG**
Male	16	2
Female	8	23
Total	26	25

As far as their general behaviour is concerned, their usual teacher reports an overall positive attitude to learning in both groups, as is expected from *Batxillerat* students, especially in contrast to ESO students from younger years where behavioural issues and disruptive students are more common. Their overall level of English, however, differs; the CG reportedly has a considerably higher level of English than the EG. It is worth clarifying that this affects the study to a considerable degree; however, choosing the groups depended on reasons that were external to the study, as is the case with a quasiexperimental design.

5.2 Variables

The variables in this study can be described as follows:

- Dependent variable: students' results in the pre-test and post-tests
- Dependent variable: students' numerical marks in the final opinion essay
- Independent variable: use of the SkELL corpus

There are also extraneous variables to consider (out of the control of the study). Namely, their previous instruction on writing assignments, whereby participants have already learned and practiced structuring an essay, which will influence their final essay production to a certain extent.

5.3 Research tools and procedures

5.3.1 Pre-test and post-test

The same test was delivered to both the CG and the EG to ascertain their level of knowledge on how to write an opinion essay before instruction and after instruction. The test was delivered through Socrative, an online tool for the creation of quizzes of all kinds; students were able to complete the test on their personal phones or on their school laptops. An added advantage of using this platform is that it corrects the test automatically. The test consisted of questions on aspects of writing an opinion essay: structure, purpose, linking constructions, register, etc.

5.3.2 Essay assessment

The second type of quantitative results is based on the results extracted from the students' final essays from both the CG and the EG. The didactic sequence designed for the implementation included a first submission that the students produced in class with the help of the SkELL corpus, in the case of the EG. In the next session, students were asked to improve their essays, based on their teacher's corrections, and, again, they relied on SkELL. The quantitative results are based on the final essay alone, and were obtained by assessing the essays manually, following an assessment grid (see Annex 9.2).

5.4 Data analysis

The numerical data obtained from the pre-test, post-test, and essays, is analysed through descriptive statistical measures—mean, median, standard deviation, minimum, maximum—and with Independent and Paired Samples T-Test. The results were measured with JASP, a free open-source statistics program (JASP Team, 2023).

6 RESULTS

6.1 Pre-tests and post-tests

Table 2 displays the numerical final results of the pre-test and the post-test that students took before and after the implementation of the didactic sequence. The results of the pre-test indicate that students already had a considerable knowledge of the topic, given that the mean and median values are high (with a median value of 80/100 in the CG and 70/100 in the EG); there is also considerable variation in both groups as presented by the standard deviation values. According to the pre-test results, the previous knowledge in the EG was poorer than in the CG. This came as no surprise and had been anticipated by the students' usual instructor.

As for the post-test, the figures in Table 2 describe that, again, the CG has achieved better results than the EG. In terms of the progress of each group individually, the results point to an increase in students' score in both groups, as well as a decrease in the variation, as indicated by the lower standard deviation values in both groups. This reflects that, while there was not much room for the students with high scores to score even higher in the post-test, the students with lower initial scores improved after the implementation of the didactic sequence, although they did so more in the CG than in the EG.

Table 2

Descriptive statistics figures that compare the differences between the pre-test and post-test results in the CG and EG

	Pre-test		**Post-test**	
	CG	**EG**	**CG**	**EG**
Median	80.000	70.000	90.000	80.000
Mean	77.778	68.214	85.926	78.571
Std. Deviation	17.614	18.064	12.484	15.327
Minimum	10.000	10.000	50.000	30.000
Maximum	100.000	100.000	100.000	100.000

The difference in results between the CG and the EG can be further analysed with a Sample T-Test, to ascertain whether the difference in values is statistically significant. The p values depicted in Table 3 suggest that there is not enough evidence to reject the null hypothesis, i.e., "there is no difference between the results of the CG and the EG" neither in the results of the pre-test (p=0.052) nor in the results of the post-test (p=0.057),

if we take the conventional cut-off point of p=0.05. This illustrates that the independent variable (the use of the SkELL corpus) did not yield any statistically significant differences in the performance of the EG as per the results of the post-test.

Table 3

Independent Samples T-Test that compares the differences between the pre-test and post-test results in the CG and EG

	t	df	p
Pre-test	1.987	53	0.052
Post-test	1.947	53	0.057

As well as the difference in performance between the CG and the EG, it is worth assessing the progress of each group individually—for this purpose, the Paired Samples T-Test is needed. In both cases, the p value is smaller than p=0.05, thus, the increase in the results from the post-test to the pre-test in the in both the CG (Table 4) and the EG (Table 5) is statistically significant. In other words, although the implementation of the corpus tool in the EG did not significantly improve the student's results in comparison to the CG, both groups benefitted from the implementations to some extent according to the results of the post-test.

Table 4

Paired Samples T-Test of the CG pre-test and post-test results

Measure 1	Measure 2	t	df	p
Pre-test	- Post-test	-3.594	26	0.001

Note. Student's t-test.

Table 5

Paired Samples T-Test of the EG pre-test and post-test results

Measure 1	Measure 2	t	df	p
Pre-test	- Post-test	-5.484	27	<.001

Note. Student's t-test.

6.2 Essay results

The final essay was assessed numerically according to the pre-designed assessment grid. As shown in Table 6 and in line with the Post-test results, the EG received a lower group

mean than the CG. The SD values show that there is a wider range of results in the CG than there is in the EG, as do the minimum and maximum values.

Table 6

Descriptive statistics figures that compare the differences between the opinion essay results in the CG and EG

	Essay	
	CG	**EG**
Mean	71.111	65.000
Std. Deviation	19.579	14.402
Minimum	40.000	35.000
Maximum	100.000	95.000

In a similar fashion to the analysis of the results of the pre-test and post-test, I turn to a statistical measure to further explore the essay results in both groups. This time, however, I apply Welch's t-test (see Table 7) instead of the Independent Samples T-test, since the latter suggested a violation of the equal variance assumption.

Table 7

Independent Samples T-Test of the opinion essay results in the CG and EG

	t	**df**	**p**
Essay	1.315	47.703	0.195

Note. Welch's t-test.

As depicted in Table 7, the p value, p=0.195, indicates that the variation between both groups is not statistically significant; therefore, although the descriptive statistics values do not bode well regarding the use of corpora as a support for writing, the data is not robust enough to reach a generalisable conclusion.

7 DISCUSSION AND CONCLUSIONS

The results of this research project are inconclusive. Both the CG and the EG achieved better results in the post-test than they did in the pre-test. This reflects that both didactic sequences were successful in instructing the students about the key elements of an opinion essay. In this aspect, the independent variable—i.e., the use of SkELL—made no difference as far as structural elements of an opinion essay are concerned. This is understandable, as acquiring these concepts did not depend on the use of SkELL in this regard. In fact, corpus tools are not the most suitable to practice the discursive elements of a foreign language, given that SkELL displays lexical constructions in context as far as the sentence, and does not provide further context.

Yet it was not only the use of SkELL that was introduced in the EG. Other classroom activities were included in the EG's didactic sequence that were not part of the lessons in the CG. The EG learned about the formal aspects of an opinion essay through deductive exercises (Session 3 in Annex 9.1), and worked on how to express their opinions through collaborative writing (Session 4 in Annex 9.1) and debate (Session 6 in Annex 9.1). Evidently, these learner-centred methods, though they were fruitful in engaging the students with the materials, were not suitable enough to make a difference in the results of the post-test in the EG comparison to those of the CG.

The second set of results consisted of the marks that the students received for their final opinion essays at the end of the didactic sequence. In this case, SkELL was expected to have a greater impact than in the results of the post-tests; however, the EG again achieved poorer results than the CG, who did not use SkELL as a support tool to write their essay. Based on my impressions during the implementation, students in the EG did not find it easy to navigate SkELL despite the previous practice sessions, and often asked for help or abandoned the search altogether. These attitudes, although not addressed directly in this study with the appropriate research tools, are in line with Karlsen's findings regarding learners' criticism towards the use of corpora in secondary education EFL environments (2021).

The implementation of SkELL did not make a significant difference to the writing performance of the 1st of *Batxillerat* students in School X. The statistical results, however, are inconclusive, and as such do not entail that these methods might not be of use in other similar contexts. A substantial determiner in the outcome of this study was

the previous overall English level of the two groups, since the CG displayed better English competence than the EG. This seems to have impacted the progress of the didactic sequence and the students' final results.

To conclude the discussion, let us revisit the initial research question:

- Does incorporating a language corpus into the repertoire of tools of 1st of *Batxillerat* students in a Catalan secondary school help them become more autonomous and improve their writing skills?

The results suggest that adding a corpus to the learners' inventory of digital tools does not improve their writing skills in the context of this study. As for the intention of them becoming more autonomous, and based on the observations during the implementation period, students with a higher level of English skills seemed more eager to use the tool, and perhaps more time would give them an opportunity to become more acquainted with it and start to use it more regularly.

Two precautions were established in Section 2.3 regarding the use of corpora in secondary-education contexts as opposed to higher education. The first addressed the fact that understanding the data obtained from the searches in a corpus requires a competent level of reading comprehension. This was confirmed in the present study, since the learners in the EG needed help filtering out the examples that were explanatory from those that were not. An added problem was that some examples contained sensitive topics for a young audience, and this was a source of distraction for the students. This is a considerable drawback of a digital tool that uses algorithms and no human intervention like SkELL. The second precaution addressed the ability of navigating an online platform; SkELL is optimally designed for learners of English, and there were no issues in this regard.

All in all, there is growing research on the use of corpora in secondary education, and although there are many advantages to its implementation that fosters constructive methods and deductive approaches, there are not enough tools that particularly address the needs of young learners. This study has served as a first approach to implementing this tool in this particular context, as the students had no previous experience with it, and neither did their usual English teacher. While the results of the study did not yield significant results as for the benefits of the use of SkELL, it does lead to questions that consider its possible future benefits in the EFL classroom.

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9 ANNEXES

9.1 Didactic sequence

Session 1 (50')	
Learning objectives: to learn about the SkELL corpus, to practice looking up words and filtering results	
Catering for diversity: Student with dyslexia is helped through scaffolding.	
Activities	**Materials and grouping**
Warm-up (10') Open-class discussion about the use of different tools that help them do their English homework.	Class
Introducing the SkELL corpus (15') The teacher introduces the SkELL corpus and explains how it works. Students practice using it by following a worksheet that asks them to look up specific words, select examples, and distinguish grammatical patterns. They compare their findings with their partner.	Handout, personal laptops In pairs
Practice: improve these sentences (20') Students are given sentences with lexical and grammatical structures that need improving. They are asked to use the SkELL corpus to help them correct the mistakes in the text.	Handouts, personal laptops In pairs
Quick survey (5') Students share their opinions about the use of SkELL: did they find it useful? do they think they will continue to use it?	Socrative survey / personal mobile phone Individual work
Assessment (summative): survey	

Session 2 (50')	
Learning objectives: to build vocabulary on use of technology in education, to practice using the SkELL corpus	
Catering for diversity: Student with dyslexia is given multiple choice options in the vocabulary handout.	
Activities	**Materials and grouping**
Warm-up (10') Collective brainstorm of words related to technology, and especially technology used in education.	Whiteboard Class
Vocabulary handout (25') Students use SkELL to complete a handout on vocabulary related to the use of technology in education: they have to make out the meaning of words, match word to definition, find examples, look up collocations, etc.	Handout, personal laptops In pairs
Feedback (10') Students and teacher correct the handout together.	Class
Who can come up with more vocabulary items? (5')	Class

The class is divided into four groups. Each group has to shout out a vocabulary item they have learned during the session, without checking their written work. The team with most items wins.	
Assessment (formative): open debate (last activity)	

Session 3 (50')	
Learning objectives: to determine the sections and aims of an opinion essay; to determine the use of linking words	
Catering for diversity: Student with dyslexia is paired up with classmates who are attentive to his needs and who can provide extra support.	
Activities	**Materials and grouping**
Warm-up: Introduction and pre-test (10')	Socrative quiz / personal mobile phone Individual work
The pre-test includes questions about the structure and objective of an opinion essay and about the use and meaning of several linking expressions.	
How to write an opinion essay (25')	Handouts In groups
The instructor hands out opinion essays. In groups of four, students have to read them and answer comprehension questions that guide the analysis of the text.	
Linking expressions in SkELL (10')	Handouts, personal laptop In pairs
Students look up linking expressions in SkELL. They determine their correct use in a sentence (grammar, punctuation) and place them in a sentence.	
Exit ticket (5')	Padlet / personal mobile phone Individual work
Students answer the questions "How difficult was today's lesson? Rate it from 0 (super easy) to 5 (super difficult)." and "Can you think of any other controversial topics to write about in an opinion essay? (Example: Winter is a lot better than Summer!)". Answers are anonymous and available for everyone to see.	
Assessment (formative): exit ticket	

Session 4 (50')	
Learning objectives: to practice writing an opinion essay, to practice using the SkELL corpus	
Catering for diversity: Student with dyslexia is paired up with classmates who are attentive to his needs and who provide extra support.	
Activities	**Materials and grouping**
Warm-up (5')	Slides, screen, and projector Class
To remember the main points of an opinion essay, students answer T/F statements.	
Collaborative writing (30')	Handouts, screen, projector, timer, personal laptop In groups
Students write an opinion essay together, based on the question "Should students be allowed to use Google Translate when doing their English	

homework?". First, they come up with reasons for and against its use. Then, they write an opinion essay together, so that the first student writes for five minutes, then the second student does the same, and so on. They are encouraged to use the SkELL corpus for help.	
Peer assessment (15') Students read out their essays, and the rest of the class gives them a mark out of 5.	Mentimeter survey / personal mobile phone Class
Assessment (formative): peer assessment	

Session 5 (50')	
Learning objectives: to write an opinion essay	
Catering for diversity: Student with dyslexia is provided with a prompt to write the essay and extra time to finish it.	
Activities	**Materials and grouping**
Instructions (10') Students receive instructions for the task that follows. The main elements of an opinion essay are reviewed.	Class
Write an opinion essay (40') Students write an opinion essay. They are encouraged to use the SkELL corpus for support.	Pen and paper, personal laptops Individual
Assessment (summative): teacher corrects essays according to the rubric	

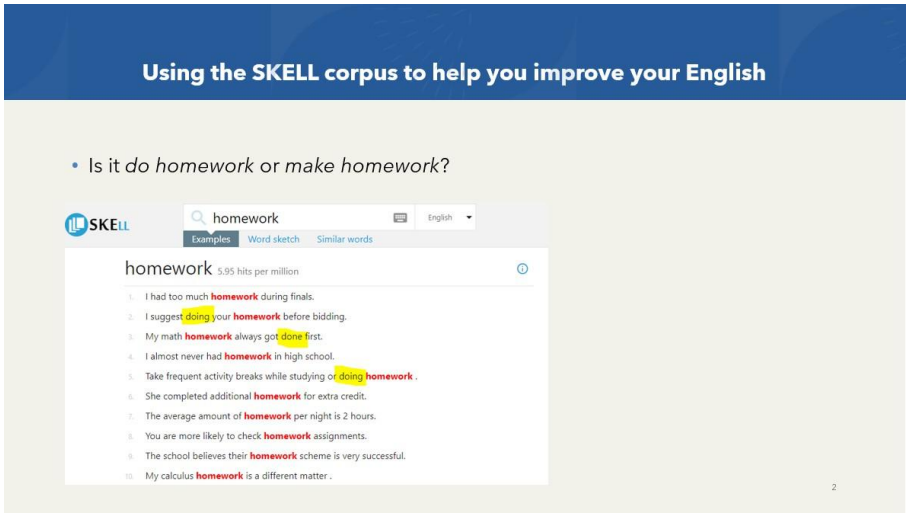
Session 6 (50')	
Learning objectives: to analyse writing mistakes; to self-correct with the help of SkELL	
Catering for diversity: Student with dyslexia is given more detailed instructions for improvement in his corrected essay.	
Activities	**Materials and grouping**
Self-correction (25') Students receive last week's essay with highlighted sections that need improving. They self-correct using SkELL with the teacher's help. They also help each other.	Corrected essay, individual laptops In pairs
Debate (15') Students are grouped together according to their opinion expressed in their essay. The teacher starts a debate between the two groups and encourages the use of structures that express opinion.	Class
Post-test (10') Students re-take the pre-test about how to write an opinion essay.	Socrative quiz / personal mobile phone Individual work
Assessment (summative): survey (post-test)	

9.2 Assessment grid

	Excellent (2.5p)	Very good (2p)	Good (1.5p)	Needs improvement (1p)	Poor (0.5p)
Text structure	The text follows the structure of an opinion essay; paragraphs are clearly organised; linking words are varied and used appropriately; no punctuation mistakes.	The text follows the structure of an opinion essay; paragraphs are clearly organised; linking words are used appropriately; few punctuation mistakes.	The text follows the structure of an opinion essay; paragraph structure is acceptable; linking words used acceptably; some punctuation mistakes.	The text does not follow the structure of an opinion essay; paragraphs are used; incorrect use of linking words; more than four punctuation mistakes	The text is unstructured and ideas are difficult to follow; incorrect use of linking words; more than four punctuation mistakes.
Grammar	The use of grammatical structures is varied and free of errors.	The use of grammatical structures is varied, but there are minor mistakes.	The use of grammatical structures is simple, but there are minor mistakes.	Structures are simple and there are more than five mistakes.	Poor grammar and many mistakes.
Vocabulary	Vocabulary is rich and varied; use of phrasal verbs; no spelling mistakes; no false friends.	Vocabulary is varied; no phrasal verbs; good spelling; no false friends	Vocabulary is simple; no phrasal verbs; few spelling mistakes; one or two false friends.	Vocabulary is poor; no phrasal verbs; more than three spelling mistakes; more than two false friends.	Vocabulary is poor; many spelling mistakes; text is hard to follow.
Maturity	Student shows a good knowledge of the topic; good reasoning; appropriate register; creative.	Student shows an acceptable knowledge of the topic; good reasoning; appropriate register.	Student shows poor knowledge of the topic; acceptable reasoning; register needs improving.	Student shows poor knowledge of the topic; poor reasoning; inappropriate register.	Student shows no knowledge of the topic; no reasoning; inappropriate register.

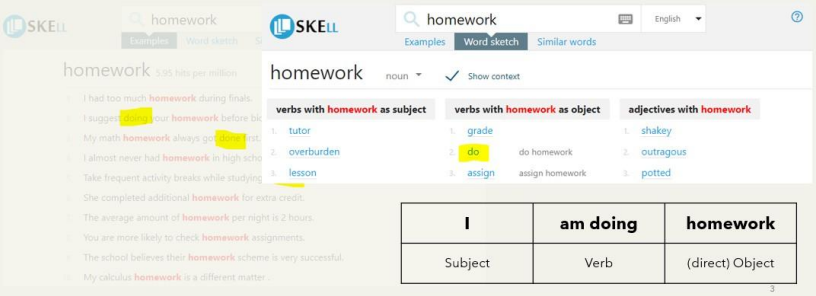
9.3 Sample of class materials

9.3.1 Introducing the SkELL corpus (Session 1)



Using the SKELL corpus to help you improve your English

- Is it *do homework* or *make homework*?

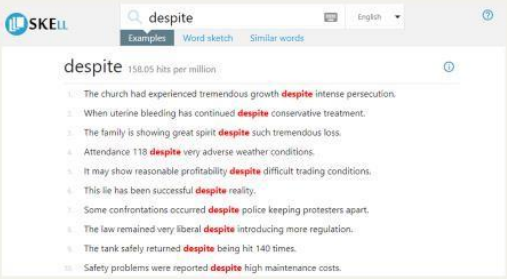


I	am doing	homework
Subject	Verb	(direct) Object

3

Using the SKELL corpus to help you improve your English

- What type of word goes after *despite*?



I've never been to McDonald's

despite...

a. I love hamburgers.

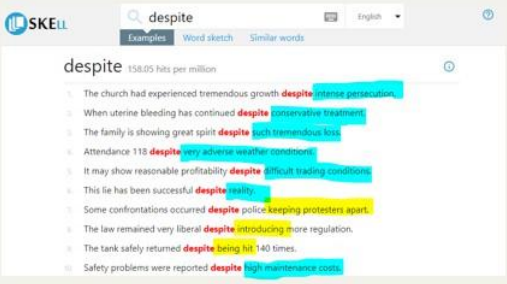
b. loving hamburgers.

c. my love for hamburgers.

4

Using the SKELL corpus to help you improve your English

- Is it what type of word goes after *despite*?



I've never been to McDonald's

despite...

a. ~~I love hamburgers.~~

b. loving hamburgers.

c. my love for hamburgers.

5


Visit gosocrative.com and enter room
name ADRIANA7137

9.3.2 Collaborative writing (Session 4)

Should students be allowed to use Google Translate when doing their English homework?

In groups of four, think of three reasons why you should be allowed and three reasons why you shouldn't and provide examples. Use the SKELL corpus to help you.

I think we *should* be allowed to use Google Translate!	I think we *shouldn't* be allowed to use Google Translate!
helps with understanding. English speakers may have difficulty understanding complex words or phrases	Because you don't learn to do it by yourself
Saves time, using google translate can save a lot of time.	You ~~don't think~~ don't improve yours writting.
Improves accuracy ~~accuracy~~ of the homework	Sometimes there are some ~~phrases~~ incorrect phrases.

Now, you will write an opinion essay together. The first person will write one sentence, then the next person will write another sentence, and so on. Remember to follow the structure of an opinion essay, and to use AT LEAST FOUR of the linking words provided. Use the SKELL corpus to help you.

INTRODUCTION

Nowadays, a lot of people have internet, and consequently they have acces to google translate.
But, is alwways a good tool?

FIRST REASON + EXAMPLES

First of all we think that google translate is a good way to ~~help~~ save our time when we are doing the English homework.

SECOND REASON + EXAMPLES

Furthermore,

CONCLUSION