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FAAPI

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Editorial introductions

Introducción to the Special Issue (Part II) Technologically -Enhanced Language Learning

Nowadays effective teaching communication and technology are interlinked somehow since effective teaching is based on communication and it is difficult to find a language class that does not use some form of technology particularly to improve the ability of students to communicate with their peers in real world situations. In recent years, technology has been a médium to both assist and enhance language learning. Teachers have made use of some technology tools that combined with an adequate methodology enhance the language learning experience. But the fact is that the effectiveness of any technological tool is determined by the ability and competence of the language teacher who supervises and facilitates the language learning process.

This special volume presents different articles that deal with different issues related with Technologically Enhanced Language Learning. The first, "A Bibliometric Approach to the Analysis of the Technologically Enhanced Language Learning (TELL) Literature", Drakidou, Pareja and Read provide an overview of research on three areas of TELL (Tecnologically-Enhanced Language Learning) namely Mobile Assisted Language Learning (MALL), Language Massive Online Open Courses (LMOOCs) and Social and Open Language Learning (SOLL). In their paper, the authors examine in greater depth the preliminary results obtained in a previous study carried out in 2018.

The second paper entitled "Vocabulary Selection for Didactic Purposes: Report on a Machine Learning Approach", by Goethals, Tezcan and Degraeuwe describes the empirical results of two experiments carried out on two machine-learning algorithms whose aim was to predict the difficulty level of lexical items that intermediate-advanced learners of Spanish as a foreignlanguage could have. The authors reached the conclusion that the most powerful feature for selecting and grading vocabulary at the mentioned learners seems to be the traditional feature of frequency in a general reference corpus (in this case youth literature).

The third paper entitled "New Technologies in the ESP Class for Mechanical Engineers", by González Vera is centered on the potential of digital devices, new technologies and audiovisual texts and translation to provide language and professional

skills for mechanical engineers by motivating and appealing tasks. Results showed that using these activities and tasks designed in the PBL Project had a positive impact on students' learning. It contributes to developing communicative skills while enhancing motivation.

The fourth paper authorized by Santamaría and García Laborda, "The Implementation of a Blog-Based Activity with Prospect Teachers: Constraints and Difficulties", addresses the difficulties that teachers trainees face when they create and operate with their own blogs. An in-depth qualitative analysis of a sample of blogs created by 15 students in the fourth year of a teacher training program for primary school teachers at the University of Alcalá (Spain) was carried out to analyze the constraints and benefits of the use of blogs in the classroom. The results of this study show that the inclusion of blog-like activities in the classroom is welcomed by students. It contributes to developing digital skills and creativity while enhancing motivation.

In the fifth article, "Paradoxical Paradigm Proposals: Learning Language in Mobile Societies", Traxler, Read, Kukulska-Hulme and Barcena make an introspection into the nature of paradigms and paradigm shifts in order to evaluate their relationship with innovations and their difussion, and analyse their failings to finally propose a new pedagogic paradigm based on the changed epistemological foundations of society and embedded with personal digital technologies.

In the final paper, "Mindfulness for Human Centred Digital Learning", Palalas provides an overview of research on mindfulness focusing on the effects of mindfulness practices in digital learning. The autor highlights the importance of regular mindfulness practice in order to help the learner train the mind and would consequently foster their awareness, self-regulation and resilience.

All in all, this interesting volume is a compilation of recent trends and perspectives in teaching languages through computers. We are sure that the international audience will find in this special issue some food for thought as well as interesting activities to implement both research and classroom practice. Of course, some ideas may be debatable but the real objective of teaching and researching is the application of others' ideas to our own way. In that sense, this monographic issue only intends to give suggestions that undoubtedly will be enjoyed and enhanced by our readership. In that sense, let us hope you, the reader, enjoy these papers as much as we did.

We would finally like to thank to the reviewers who made possible the three revisions that each author had to undertake. Thus, our recognition goes to: Jorge Arús Hita (UCM), Cristina Calle Martínez (UCM), Salvador Montaner-Villalba (UPV), Marián de la Morena (UCJC), Antonio Pareja Lora (UCM), Koen Plevoets (Universiteit Gent), Lourdes Pomposo Yanes (UPM), and Timothy Read (UNED).

Cristina Calle Martínez , Universidad Complutense de Madrid, Spain
Beatriz Sedano Cuevas, National Distance University UNED, Spain

Editorial: Introduction to our regular issue

In this issue we have included contributions from our regular call for articles. On this occasion we have included one article set in the context of modern foreign languages in the City of Buenos Aires authored by Varela and Verdelli. Secondly, we have incorporated an article by Ayfer and Dikilitaş, set in Turkey, about CLIL perceptions.

As in our previous issue, three book reviews authored by student-teachers from the cities of Esquel and Salta in Argentina come to illustrate that student-teachers can also become engaged in writing for publication.

We would like to take this opportunity to share with our readership some changes that AJAL will undergo. As from December 2019, María Susana Ibánez, who is now serving as co-editor, will become the main Editor. We will also welcome Flavia Bonadeo as Co-Editor of AJAL. With these changes, we wish to operationalise our interest in changing perspectives, energising practices, and opening up the gates of professional and academic development in language teaching in Argentina.

Darío Luis Banegas and María Susana Ibáñez

Cover photo from https://voxy.com/blog/2019/02/the-value-of-videos-in-language-learning/

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A bibliometric approach to the analysis of the Technologically-Enhanced Language Learning (TELL) literature

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ABSTRACT

This paper presents a state-of-the-art research into three areas of TELL (Technologically-Enhanced Language Learning), namely Mobile-Assisted Language Learning (MALL), Language Massive Online Open Courses (LMOOCs), and Social and Open Language Learning (SOLL).

In particular, the references from the Web of Science, Scopus and the UNED-Linceo+ meta-search engine discussed in Drakidou, Pareja-Lora & Read (2018), are analyzed here at a deeper level, in order to obtain some statistics on the languages taught, the countries with the most published papers, and the frequency of terms appearing in the keywords. Regarding the last one, the authors have aimed at identifying trends, tendencies and scarcities in all these three areas of TELL. Thus, this paper shows mainly the results of this bibliometric research, obtained in the second stage of the study.

Keywords: language learning; TELL; MALL; LMOOC; SOLL; bibliometrics.

RESUMEN

Este artículo presenta los resultados de una investigación del estado de la cuestión en tres áreas del aprendizaje de lenguas mejorado mediante la tecnología (TELL): el aprendizaje de lenguas asistido por dispositivos móviles (MALL), los cursos de lenguas masivos, abiertos y en línea (LMOOC) y el aprendizaje de lenguas social y abierto (SOLL).

En concreto, las referencias de la Web of Science, Scopus y el metabuscador UNED-Linceo+ examinadas en Drakidou, Pareja-Lora y Read (2018) se analizan aquí en mayor profundidad, con el objetivo de obtener datos estadísticos más avanzados, tales como los lenguajes aprendidos, los países con mayor producción de artículos en estas áreas, o la frecuencia de aparición de los términos usados como palabras clave en los mismos. En este último caso, los autores han buscado, sobre todo, identificar tendencias y valores atípicos o inesperados en dichas áreas de TELL. Por tanto, este artículo muestra, principalmente, los resultados de esta investigación bibliométrica, obtenidos en esta segunda etapa del estudio.

Palabras clave: aprendizaje de lenguas; TELL; MALL; LMOOC; SOLL, bibliometría.

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THIS PAPER PRESENTS some detailed results of research being undertaken to survey the state-of-the-art of advanced Technologically-enhanced Language Learning (TELL) approaches and initiatives. It also reviews the preliminary results included in Drakidou, Pareja-Lora & Read (2018) and discussed at the TISLID'18 international conference. So far, the research presented here has focused on the areas of Mobile-Assisted Language Learning (MALL), Language Massive Online Open Courses (LMOOCs), and Social and Open Language Learning (SOLL)[1].

In the end, this research aims at identifying, amongst other things, the theoretical factors and elements that seem to determine and guide the use of technology for the enhancement of language learning, such as their psychological and/or pedagogical approach. However, this paper shows only the results of a first step towards achieving this goal, that is firstly, a shallow analysis of their contents; and secondly, a deep statistical and/or bibliometric analysis of other elements of the papers. In particular, the elements of the papers that have been processed more deeply are their (a) titles, (b) abstracts, and (c) keywords (when present), as well as their authors' (d) affiliations and (e) countries. Attaining the more ambitious and global goal mentioned above will require having a much closer look at the contents of the papers and, therefore, it has been left for further work. Accordingly, the present paper seeks to present some interesting results and/or conclusions that have been drawn from these primary analyses so far.

The rest of the paper has been organized as follows: firstly, the following section describes the methodology applied to obtain the statistical and bibliographical results presented in the following sections. Secondly, three consecutive, dedicated sections show the results obtained when analyzing the references retrieved, respectively, in the areas of MALL, LMOOCs and SOLL. Fourthly, some final remarks and conclusions are stated; and finally, the paper includes some endnotes (with the acknowledgements associated to this research and the URL where the relevant papers analyzed can be found) and the particular references used when writing it.

Methodology

The methodology followed to carry out this research can be described as follows. Firstly, relevant indexed journal and proceedings papers, as well as book chapters, have been collected. Their selection criteria applied were:

1. these papers and chapters had to include in their title and/or their abstracts the terms (a) Mobile Assisted Language Learning, or Mobile "language learning"; (b) LMOOC, Language MOOC, or Language Massive Open Online Course; and/or (c) Social and Open Language Learning;
2. they had to be indexed either in the Web of Science (WOS) database (Clarivate Analytics, 2018), in Scopus (Elsevier, 2018) or in Linceo+ (UNED, 2018).

Secondly, these references were superficially analyzed[2] in order to find out some key but also basic information, such as the year and the countries in which they were written, the language and the level being taught or learnt in the research presented, and the language in which the paper was written. The goal of this phase of the study has been to carry out an empirical assessment of, for example, the number of languages and levels being taught/learnt by means of TELL approaches and initiatives, or the pioneering, most devoted countries to developing this modality of language learning.

Thirdly, the keywords of the papers were statistically processed in order to (1) calculate their respective occurrences across the different papers studied; (2) rank them according to the number of occurrences calculated; (3) get an idea of their relevance in the field being considered (that is, MALL, LMOOCs or SOLL) and (4) use them as an indicator of the main themes being tackled in these fields. This analysis was performed by means of a program written ad hoc in the R programming language, and whose pseudocode has been presented in Figure 1 (main program) and Figure 2 (a keyword normalization function written for the purpose). The input of this program are the three Excel files containing the information of the references being analyzed, each one corresponding to one of the areas of study already mentioned.

FORALL *file* **IN** {MALL_Excel_File, LMOOC_Excel_File, SOLL_Excel_File} **DO**

1. *myFile* = LoadWorkbook(*file*)
2. *mySheet* = ReadFirstSheet(*myFile*)
3. *myKeywordTable* = ReadColumns(*mySheet*, “Date”, “Keywords”)
4. *myKeywordTable* = PutOneKeywordPerRowWithItsYear(*myKeywordTable*)
5. *myKeywordTable* = Normalize(*myKeywordTable*)
6. *allYearsTabulatedKeywords* = ObtainAndTabulateFrequencies(*myKeywordTable*)
7. *myOutputFile* = CreateAndLoadExcelResultWorkbook(Name(*file*))
8. *mySheet* = CreateAndOpenSheet(*myOutputFile*, “Keywords (all years)”)
9. *mySheet* = WriteOnSheet(*mySheet*, *allYearsTabulatedKeywords*)
10. **FORALL** *year* **IN** *myKeywordTable.Years* **DO**
    a) *myYearlyKeywordTable* = *myKeywordTable*[*year* == *myKeywordTable$Years*,]
    b) *myYearlyKeywordTable* = ObtainAndTabulateFrequencies(*myYearlyKeywordTable*)
    c) *mySheet* = CreateAndOpenSheet(*myOutputFile*, as.character(*year*))
    d) *mySheet* = WriteOnSheet(*mySheet*, *myYearlyKeywordTable*)
11. CloseWorkbookAndSaveToHardDisk(*myOutputFile*)

Figure 1: Pseudocode of the program written to statistically process the paper keywords.

```
Normalize = function(keywordObject)
{
   1. Remove from keywordObject the main acronyms between parentheses (since they
      occur after their corresponding expanded keyword): {“MOOC”, “CALL”, “MALL”,
      “EFL”, “ESL”, “ESP”, “LSP”, “L2”, “OER”, “CLIL”}
   2. Remove from keywordObject the plural mark in main acronyms: {“MOOCs”,
      “OERs”}
   3. Remove or add dashes from keywordObject where required (remove noisy
      alternance): {       "-assisted", replacement =" Assisted",
                           "Mobile-", replacement ="Mobile "
                           "Computer-", replacement ="Computer ",
                           "Game based", replacement ="Game-based"}
   4. Expand in keywordObject acronyms without an expanded term accompanying them:
      {"LMOOC", replacement ="Language MOOC",
                           "xMOOC", replacement ="eXtended MOOC",
                           "cMOOC", replacement ="Connectivist MOOC",
                           "iMOOC", replacement ="Interactive and/or Inclusive MOOC",
                           "MOOC", replacement ="Massive Open Online Course",
                           "CALL", replacement ="Computer Assisted Language Learning",
                           "MALL", replacement ="Mobile Assisted Language Learning",
                           "EFL", replacement ="English as a Foreign Language",
                           "ESL", replacement ="English as a Second Language",
                           "ESP", replacement ="English for Specific Purposes"
                           "LSP", replacement ="Language for Specific Purposes",
                           "L2", replacement ="Second Language",
                           "OER", replacement ="Open Education Resource",
                           "CLIL", replacement ="Content and Language Integrated Learning",
                           "m-", replacement ="Mobile "}
   5. Capitalize all keywords in keywordObject
   6. Remove from keywordObject all main expanded keywords between parentheses
      (since they occurred after their corresponding acronym: reverse list of Step 4)
}
```

Figure 2: Pseudocode of the function that normalizes keywords in the R program written.

These three files (which can be found at: https://bit.ly/2uvFNYp) contain one column for each of the parameters analyzed (year and title of the paper, language in which it was written, language being taught, Common European Framework of Reference for Languages [CEFR] level, institution, country, keywords, etc.), and provide the corresponding

information for each paper in a dedicated row. In particular, the column "Keywords" contains in each of its rows the list of keywords included in each paper to classify and index it. It should be noted that both acronyms and the words/terms they stand for have been considered to be the same keyword. In effect, the purpose of the study was to identify and explore topics, instead of detailing and/or accounting for the forms of the keywords from a terminological point of view.

Thus, this program takes the keyword column in each of these three files and creates a new Excel file for each of them that contains several different sheets. The contents of these sheets are always the same, namely (1) a first column with a (possibly multiword) keyword; and (2) a column with the frequency of the associated keyword in the time period considered. The time period considered are (A) the whole range of years for which a paper in the field has been found, in the case of the first sheet; and (B) a given year within this range, in the case of the remaining sheets (one sheet each).

Hence, the output of the program are these three Excel files with a varying number of sheets, all of which (except for the first one) are named after the year of the keywords being tabulated in it. The three resulting Excel spreadsheets can be found also at https://bit.ly/2uvFNYp.

Mobile-assisted Language Learning (MALL)

The WoS database (Clarivate Analytics, 2018) was researched for the occurrence of the terms Mobile Assisted Language Learning (MALL) and Mobile Language Learning (MLL). In the second part of the research, the 2014 papers found from 2004 to 2018 (only the first two months of 2018 were considered due to time constraints) in the WoS database were further analyzed to gain some insights into the terms mentioned above. The papers retrieved were researched according to the number written per year, the target languages per year and the country where the paper was written. An attempt which was also made to identify specific research groups, included two other results, one from 2016 and another from 2009 (that is, the Human Language Technology Research Group (South Africa, 2016) and the Communications and Signal Processing Research Group (Mexico, 2009), revealing an absence in regulated research. Another area the research focused on was the keywords provided by the authors, which revealed trends and tendencies on MALL and MLL.

The terms were found to exist in 214 articles written from 2004 to 2018. The vast majority of them were written in English. However, one was written in Chinese, three in Spanish, and two of them were presented in two versions, namely English/Spanish and Spanish/Catalan, respectively.

In most of the articles the language taught was mentioned. As the bar chart in Figure 3 indicates, learning English as a second/foreign language was the desideratum in most of them (i.e., 127 articles), which does not come as a surprise since it is an international language, useful in studying, working and communicating on a global scale. Other popular

languages like Chinese, Spanish, German, French, Italian and Russian, as well as Japanese, Korean, Arabic, Malay, Indonesian and Serbian/Croatian were also studied in relation to MALL.

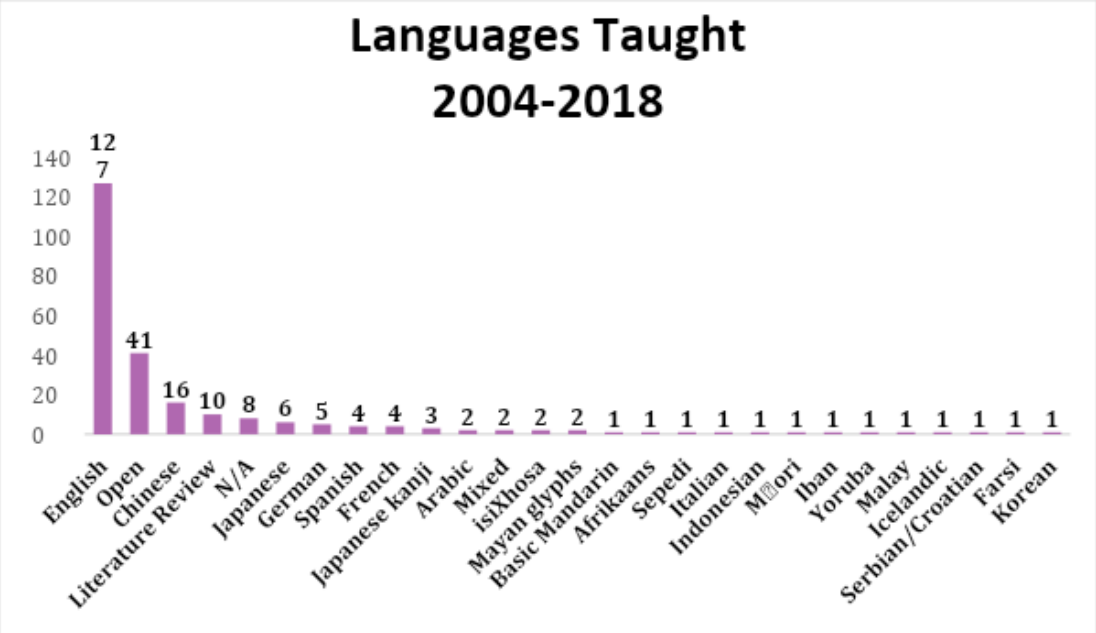

Figure 3: Languages taught using MALL from 2004 to 2018.

An interesting fact was that MALL or MLL were also deployed to teach less popular or disappearing languages such as isiXhosa, Afrikaans, Seredi, Māori, Iban, Yoruba, Farsi, Icelandic, and Mayan glyphs. Finally, another interesting fact is the large number of papers where there was no restriction made to the language being studied (marked as Open) and the ones where the language taught was not mentioned (marked as N/A).

Concerning the paper production, the year with the largest production was 2016, with a total of 51 papers, also boasting the greatest diversity in languages taught together with the ones written in 2009. The smallest production was in 2004, which was also the oldest paper on MALL/MLL retrieved from WOS. The graph in Figure 4 demonstrates a gradual increase from 2004 to 2016, interrupted by slight fluctuations, which cannot alter the upward trend in the production of the papers.

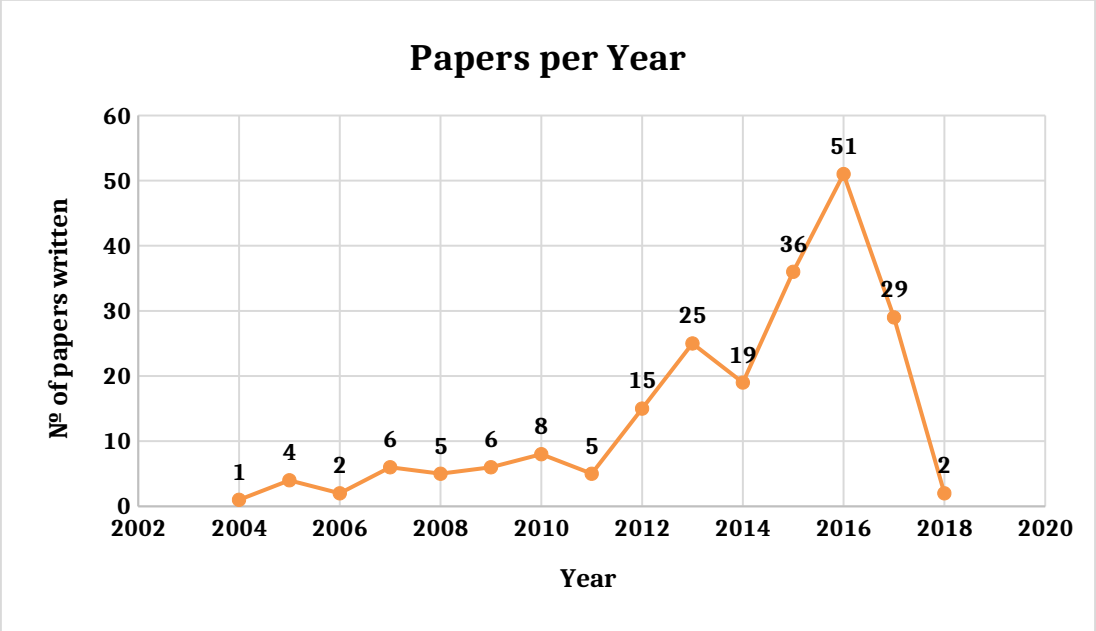

Figure 4: Papers produced in the area of MALL from 2004 to 2018.

Nevertheless, a remarkable and unanticipated observation is the rapid decrease from 51 papers in 2016 to 29 in 2017 and a mere 2 in 2018. Since only the first two months of 2018 were analyzed due to time constraints, the result can be extrapolated, so that if those 2 papers are multiplied by 6, there could be an upper bound of 20 papers in 2018, which shows a consistency with the downward movement. Paying attention to the respective keywords, it can be speculated that such slump is justified by a stagnation in innovative, implemented research and/or a wider variety of languages and skills taught.

Regarding the target languages, the statistics delineate a positive shift from 2009 onwards. With the exception of 2011, there is a tendency towards a wider spectrum of languages, which also encompasses less widely known languages or even disappearing ones.

Regarding the language levels tested, the studies touched on all levels and educational stages, from beginners to proficient learners and from preschoolers to tertiary education. However, the vast majority of them were conducted in tertiary education (also referred to as higher education here), and there was a limited number devoted to adult education outside formal education settings, i.e., informal learning.

Nevertheless, in some articles the language taught was not mentioned, and in others more than one was taught; besides, a few papers were literature-based research. Moreover, in several studies the language chosen was not significant as the focus of the study was on issues such as metacognition, cognitive load, LMOOCs, assessment, specific mobile applications, social context, or learner/teacher perceptions. The analysis, which was limited to the titles, also revealed the focus of each study regardless of the language taught and the environment which ranged from traditional classrooms to blended and distance education settings.

Thus, firstly, although MALL/MLL covers learning via all possible mobile devices, many studies only mentioned smartphones, while in several others only tablets were used. In addition, all parts of learning a language (that is, speaking, listening, writing, grammar, vocabulary and pronunciation) were explored; nevertheless, vocabulary was the most frequent.

Secondly, teaching a language in some of the articles was associated with using social media, augmented reality and QR codes, instant messaging, group blogging, podcasting, or even interactive television in the older ones.

Thirdly, language learning challenges and strategies were the main concerns of several studies, with some of them specializing on disorders such as dyslexia, or distinct groups of learners such as migrants.

Fourthly, terms and issues such as game-based/project-based learning, ESP/LSP/idioms, the integration of MALL into the curriculum, and the use of dictionaries, as well as motivation, modalities/multiple literacies, data-driven learning and security challenges, also occasionally appeared in the literature. Furthermore, a tendency towards differentiated, personalized, self-directed as well as autonomous and collaborative learning was among the findings of the research.

Fifthly and, finally, the aim of some studies towards enhancing informal, vocational and workplace-related learning, as well as the occurrence of the terms micro-learning and ubiquitous learning, indicated the current tendencies in mobile (assisted) language learning.

Regarding the paper production, and as shown by the bar chart in Figure 5, Taiwan as the most prominent market, leads the way, followed by papers produced as result of international collaborations among researchers from different universities. The latter demonstrates a tendency towards global partnerships so as to combine the knowledge and achieve more thorough results. China and the USA also have a great production of papers and so does Spain, which seems to pride itself on TELL research, although it is a smaller country. Thus, as shown by and , it seems like Taiwan and Spain had projects dealing with MALL and, once the projects ended, reference to MALL decreased. Finally, something anticipated but unsatisfactory is the moderate or poor production by the vast majority of the countries.

The keywords extracted from a total of 204 papers in WoS were processed using the program which was previously described (Methodology section: Figure 1 and Figure 2). It should be stated at this point that in eleven of the papers, keywords were provided by the database and not by the authors, which is something that may affect accurate filtered research, since they may be generalized or not reflect the authors' aim precisely. In addition to that, thirteen papers did not include any keywords, which may provide a challenge for a researcher.

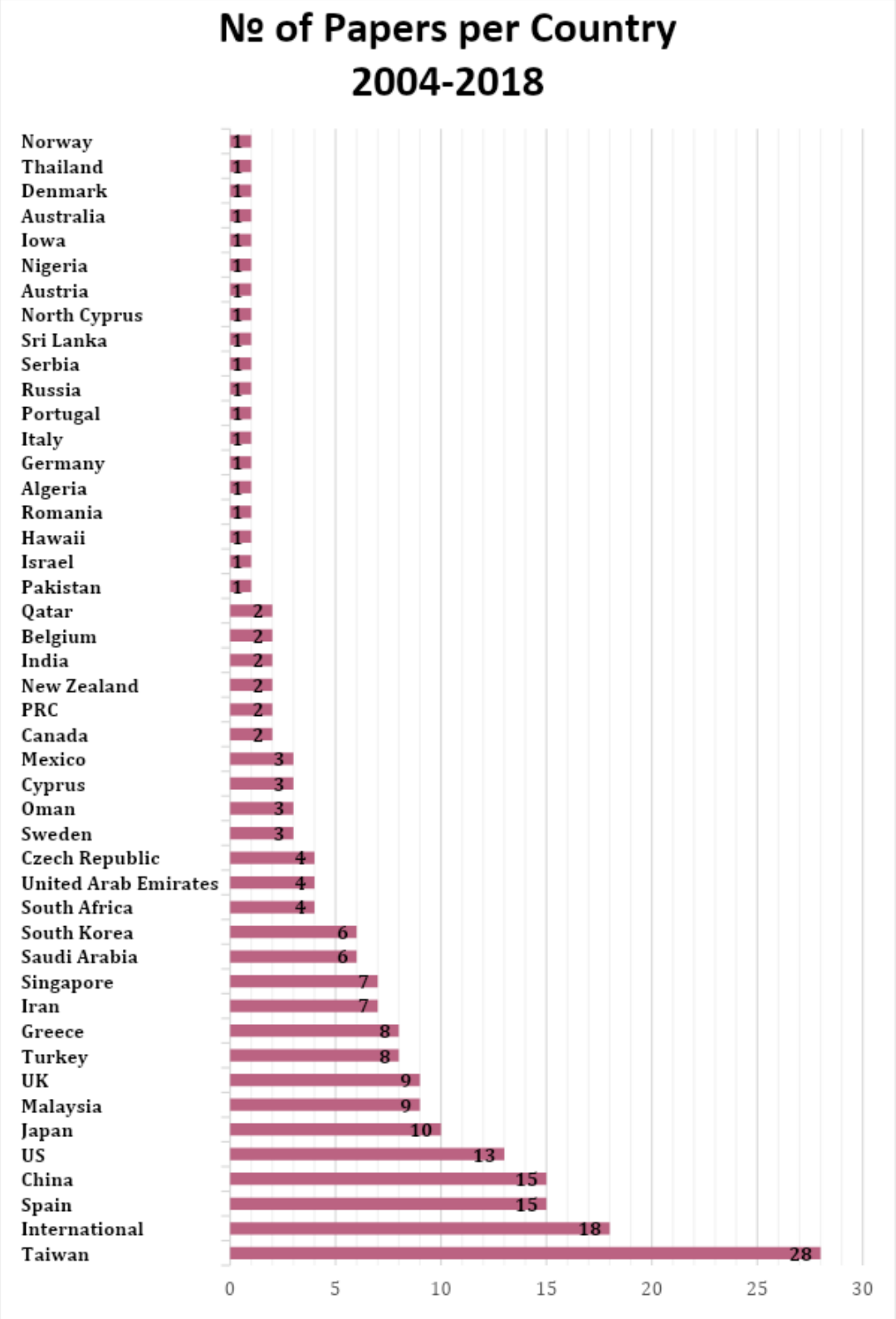

Figure 5: MALL papers produced per country from 2004 to 2018.

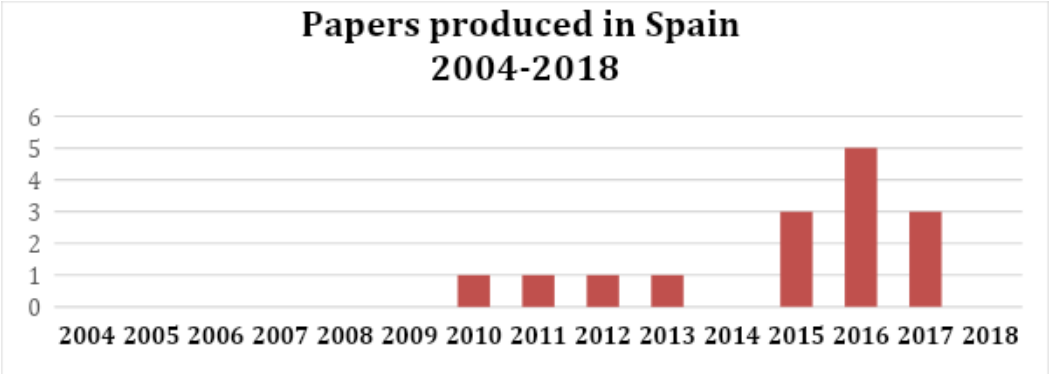

Figure 6: Papers produced in Spain from 2004 to 2018.

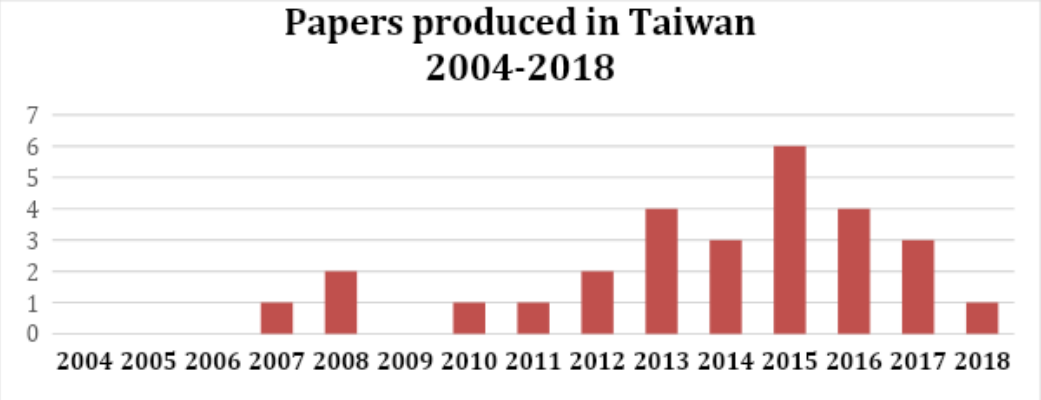

Figure 7: Papers produced in Taiwan from 2004 to 2018.

As shown in the two graphs below (Figure 8 and Figure 9), the most frequent keywords through the years 2004-2018 were "Mobile Assisted Language Learning" and "Mobile Learning". A finding to note is that the term "Mobile Learning" appeared from 2005 to 2009, whereas "Mobile Assisted Language Learning" (or its equivalent term, "MALL") was used from 2010 to 2018. Therefore, it can be inferred that in the earlier years, "language" or "language learning" were considered terms independent from mobile learning, while later they started being regarded as one area. The word "other" on the chart, which has the highest frequency through the years, represents the set of keywords that only appear once in the sample for the time frame associated to the Excel sheets generated, and thus, those keywords are considered irrelevant.

Figure 8: MALL keyword frequencies from 2004 to 2018 (a).

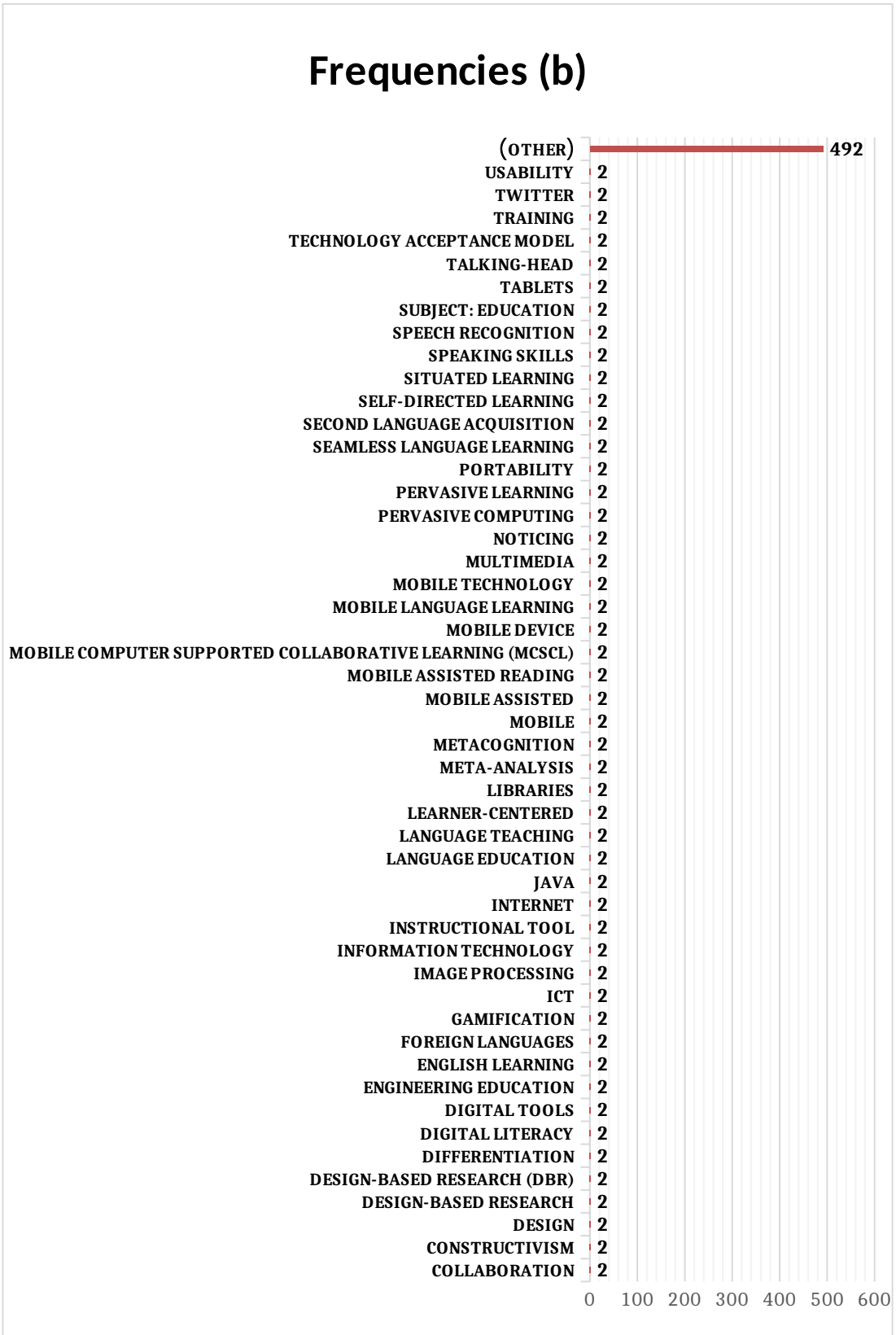

Figure 9: MALL keyword frequencies from 2004 to 2018 (b).

Furthermore, observing the changes of the keywords throughout the years, there seems to be a compliance with the technological advances and the ever-changing needs in MALL. In other words, except for the term "ubiquitous learning" which appears from 2005 onwards,

the keywords "informal learning", "nonformal learning", "gamification", "incidental learning", "smartphones", "blended (learning)", "autonomous learning", "lifelong learning", "augmented reality", "animation", "Twitter" and "Instagram" are utilized from 2013 to 2018.

Finally, two findings considered significant for MALL are the absence of keywords concerning learning theories other than (ecological) constructivism, and the very few instances of models measuring technology acceptance.

Language Massive Online Open Courses (LMOOCs)

Regarding the LMOOCs area, searches were undertaken on Linceo+ (UNED, 2018), the "Title" and "Topic" fields of WOS (Clarivate Analytics, 2018), and the "Title" and "Keyword" fields of Scopus (Elsevier, 2018), for the terms "LMOOC", "Language MOOC" and "Language Massive Online Open Courses". The number of papers retrieved in each case is shown, respectively, in Table 1, Table 2 and Table 3.

As shown in these three tables, firstly, the term "LMOOC" was found in no more than 7 articles in total across the three platforms queried. Secondly, the query "Language MOOC" retrieved more than 3,600 articles from Linceo+, up to 196 articles from WOS and 54 articles from Scopus. Lastly, the query "Language Massive Online Open Course" returned more than 55,000 articles in Linceo+, up to 149 articles in WOS and only 3 articles in Scopus.

SEARCHED TERM(S)	**Linceo+**	
	Nº of search results (papers)	**Nº of relevant results (papers)**
LMOOC	7	6
Language MOOC	3628 (ordered by relevance)	30 [only first 100 results analysed]
Language Massive Online Open Course	55540	[not analysed]

Table 1: Total and relevant results obtained in Linceo+ for the LMOOC term.

SEARCHED TERM(S)	**Web of Science (WOS)**		
	Fields searched	**Nº of search results (papers)**	**Nº of relevant results (papers)**
LMOOC	TITLE	0	0
	TOPIC	1	1
Language MOOC	TITLE	18	15

Language Massive Online Open Course	TOPIC	196	63
	TITLE	9	8
	TOPIC	149	A subset of the TITLE ("Language & MOOC") relevant papers (except for 3)

Table 2: Total and relevant results obtained in the Web of Science for the LMOOC term.

SEARCHED TERM(S)	**Scopus**		
	Fields searched	**Nº of search results (papers)**	**Nº of relevant results (papers)**
LMOOC	TITLE	1	1
	KEYWORD	1	1
Language MOOC	TITLE	24	18
	KEYWORD	54	A proper subset of WOS relevant papers (except for 3)
Language Massive Online Open Course	TITLE	0	0
	KEYWORD	3 [1 duplicated]	0

Table 3: Total and relevant results obtained in Scopus for the LMOOC terms.

However, not all the papers retrieved in these searches have been relevant for the present research, since the main aim in this area has been to focus on papers introducing (a) MOOCs created specifically for language teaching/learning; (b) the approaches, methodologies and best practices followed to develop them; and/or (c) the ways and strategies to evaluate the language skills and improvements acquired by means of LMOOCs.

Hence, while some papers have clearly fallen into the search scope or out of it (e.g., articles dealing with programming language MOOCs), it has taken some time to determine the degree of relevance of many of the papers retrieved. Thus, when it has not been obvious, the degree of relevance of a paper has been manually determined by checking the paper's abstract.

In this manual inspection, it has been found that most of the papers with a questionable relevance deal with:

- the application and/or repurposing of some previously created, non-language-related MOOCs for language teaching;
- the behavior of different kinds of users in non-language-oriented MOOCs, according to their relationship with the MOOC's language of instruction (native or second language speakers);

- the role that the mother tongue plays on succeeding to complete a given MOOC; in other words, the strong dependency of MOOC-participants' learning success (and, thus, also drop-out) on their mastering of the MOOC language of instruction and/or of their command of this language as a second language;
- language as a barrier to be overcome in the context of MOOCs in an international scenario.

Regarding the present study, both these papers and the ones clearly out of scope have been discarded. Accordingly, the highest number of relevant papers for this research was achieved by searching "Language MOOC" within the "Topic" field of WOS (that is, 63 relevant papers – see Table 2). This is due to the fact that, unfortunately, the simple terms "Language" and "MOOC" (or alternatively, "Massive Online Open Course") co-occurred by chance in most cases. This is why no more than 100 articles from the Linceo+ results (see Table 1) required further inspection; in addition, more than 2/3 of the papers inspected have been found to be clearly irrelevant. As for the searches in Scopus, as shown in Table 3, it has been found that the set of relevant papers retrieved are basically subsets of the set of 63 relevant papers retrieved from WOS.

Therefore, the 63 relevant articles retrieved from WOS were used to make a preliminary statistical study in the area of LMOOCs. Thus, firstly, it has to be noted that all of these papers have been published between 2014 and 2018. The distribution of these papers through the years (see Figure 6) is as follows: 4 articles in 2014; 10 articles in 2015; 20 articles in 2016; 24 articles in 2017; and 5 articles in 2018 (though the count for 2018 is only partial, since it is restricted to the first months of the year). Therefore, thus far, the number of articles has been increasing every year.

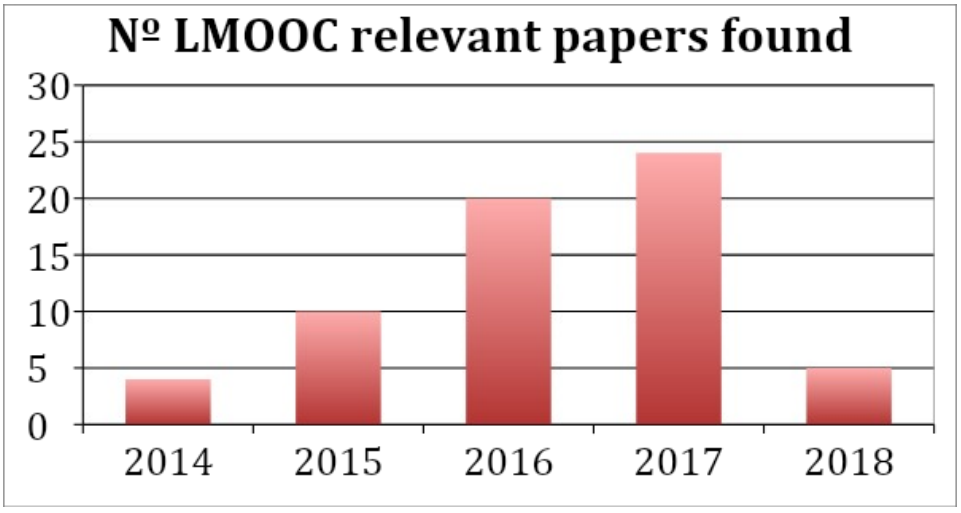

Figure 10: LMOOC relevant papers per year.

Secondly, upon closer inspection of these articles, it can be observed that their main key topics are the following:

1. Providing some recommendations in order to develop and use LMOOCs (e.g., accessibility, effectivity, motivation and/or the role of the instructor, or ethics and aesthetics);
2. Discussing the (potential) usefulness and better approaches and scenarios for using LMOOCs;
3. Reporting the development of a new LMOOC.

Unfortunately (and most surprisingly), only a few relevant papers show results of the application of a given LMOOC.

Thirdly, the languages taught in the analyzed LMOOC papers include English (more than 10 papers), Korean (6 papers), Spanish (4 papers), Portuguese (1), French (1), Italian (1), Russian (1) and Japanese (1). However, there are a lot of theoretical papers, which do not refer to any particular language. Furthermore, these theoretical papers do not provide actual results on the design and/or use of LMOOCs for a given language, level and/or type of users.

Fourthly, the papers describing these experiences in detail were mainly written in English (see Figure 7).

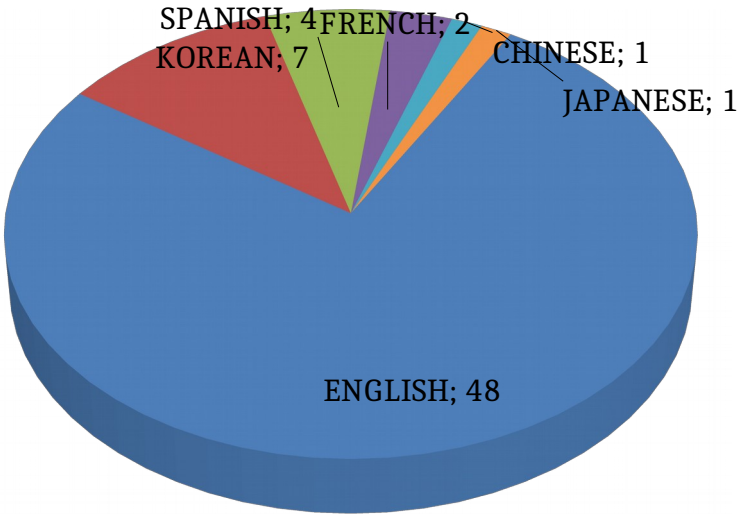

Figure 11: Language in which relevant LMOOC papers were written.

Fifthly, the countries from which these papers come from are primarily People's Republic of China and Spain (followed by England and/or the United Kingdom and the USA). The whole set of countries are shown in Figure 8.

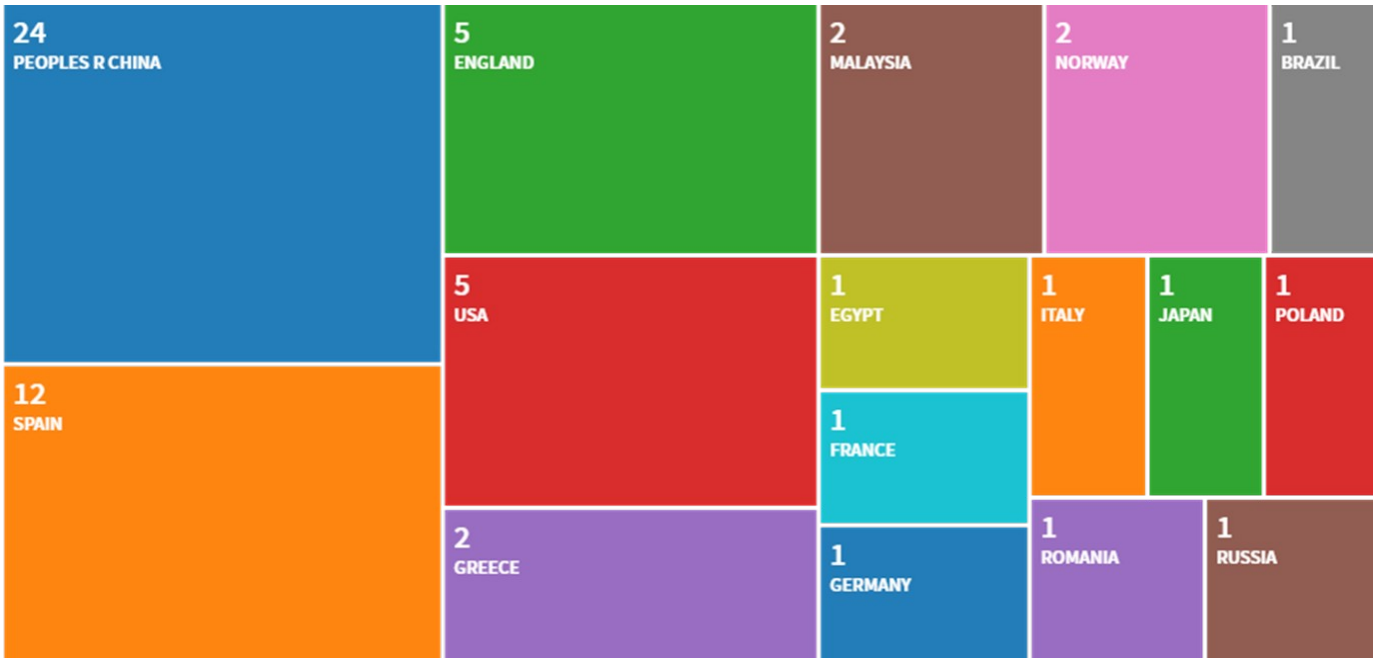

Figure 12: Countries from which LMOOC relevant papers come from.

Finally, tertiary (or higher) education is the level being taught most commonly for the languages involved. Nevertheless, remarkably, the level of education is unrestricted in most papers.

In addition, the keywords of the set of relevant papers found in more than one of the three platforms (WoS, Scopus and Linceo+; 52 papers in total) were also processed using the program presented in the Methodology section (see Figure 1 and Figure 2). The most frequent keywords across the years are shown in Figure 13 (see next page).

Regarding the yearly statistics presented in the Excel results file, it can be observed that, surprisingly, the term "Language Massive Open Online Course" (or its acronym, "LMOOC") is not assumed to fully represent the field yet, since it has never been the most frequent term. In effect, in most years, its hypernym "Massive Open Online Course" is used instead, in combination with other keywords including the word "Language", such as "Language learning".

Social and Open Language Learning (SOLL)

Searches were undertaken in the Web of Science (Clarivate Analytics, 2018) and using Scopus (Elsevier, 2018) for the terms "Social and Open Language Learning", "Social Language Learning", "Social and Open Learning", "Social Learning" and "Open Learning". These terms were found in a total of 85 articles from 2010 to 2018. The majority of them were written in English, although one had been written in Portuguese.

Regarding the paper production, which is presented in the bar chart in Figure 14, the lowest number is attributed to 2018 (the first months) and 2012. There is a slight fluctuation from 2010 to 2015, followed by a sharp rise from 2015 to 2016, which was the year when the highest number of papers was generated. A significant remark is the substantial decline

from 2016 to 2017, which, although it seems gentle, it may demonstrate an inconsistency with the current trends, given that SOLL is a fairly new area in TELL.

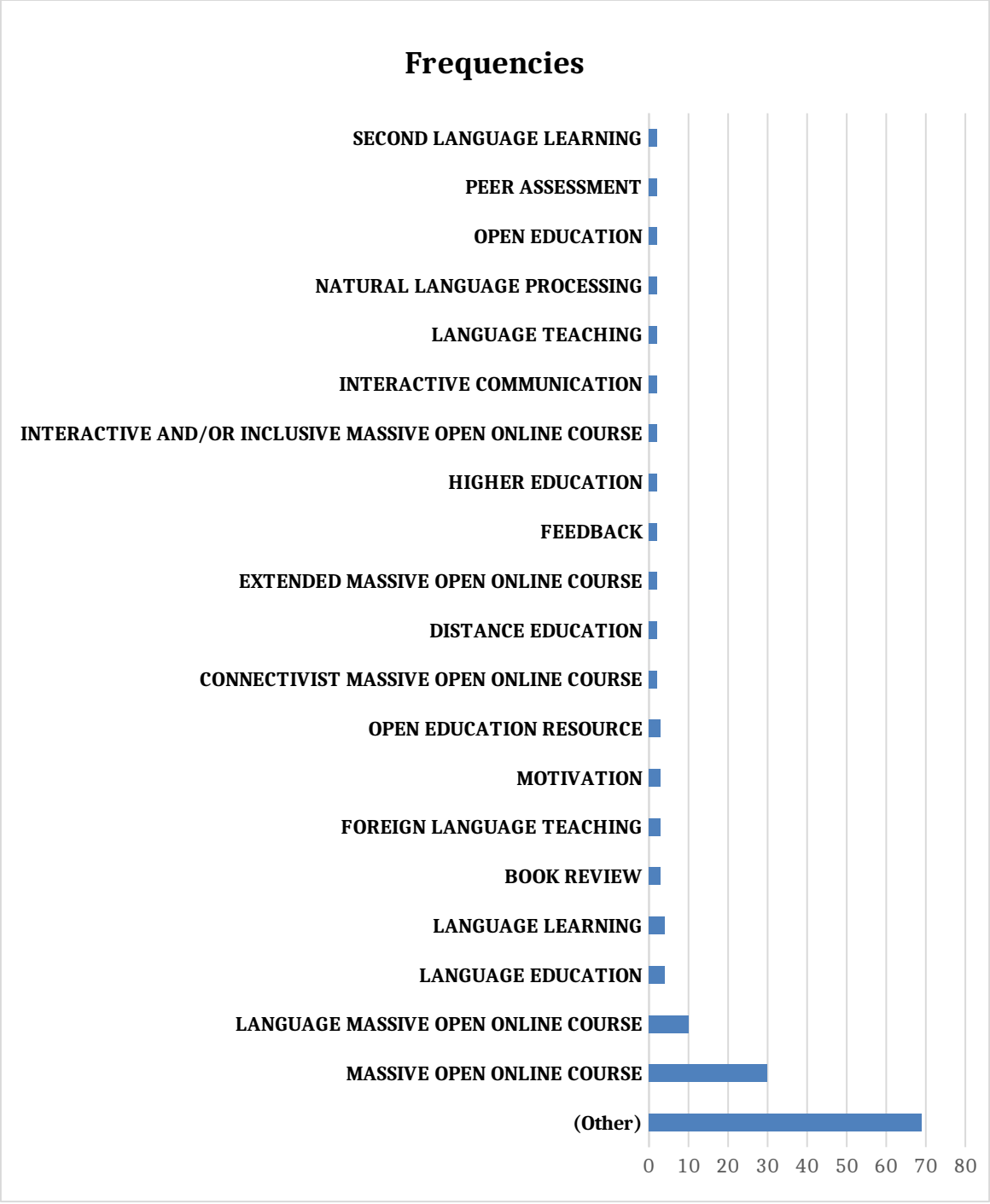

Figure 13: Main keyword frequencies among the most relevant LMOOC papers in the study.

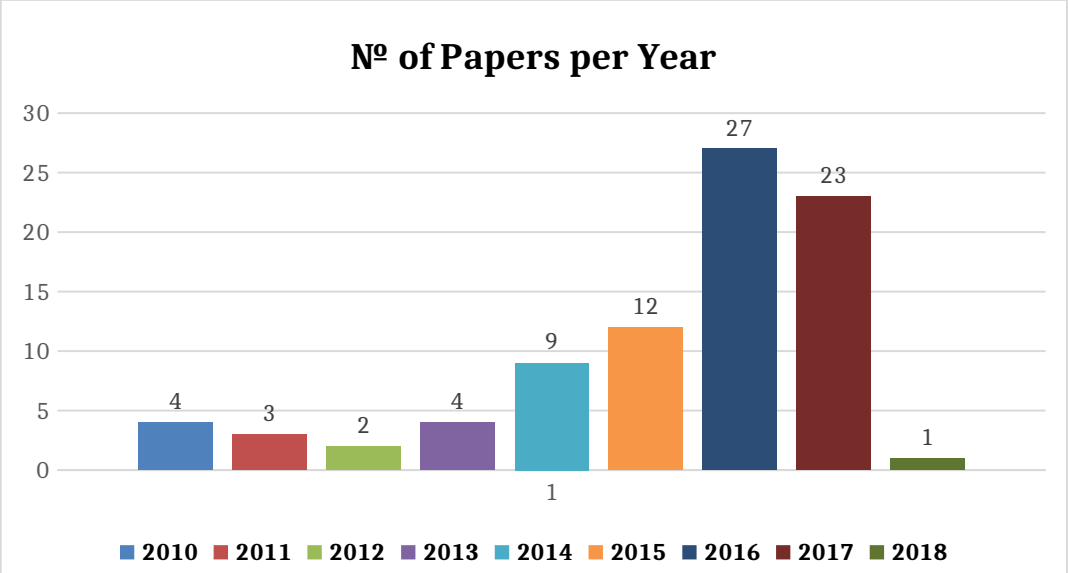

Figure 14: SOLL papers produced per year.

Given that "language learning" was not included in all the search terms, then it should be noted that 31 papers did not focus on languages at all (see Figure 15). Of the remaining 54, 18 considered the teaching/learning of English, 2 focused on Spanish and other individual papers focused on the teaching/learning or English/Arabic, Chinese, French, Japanese, Romanian and Spanish/French.

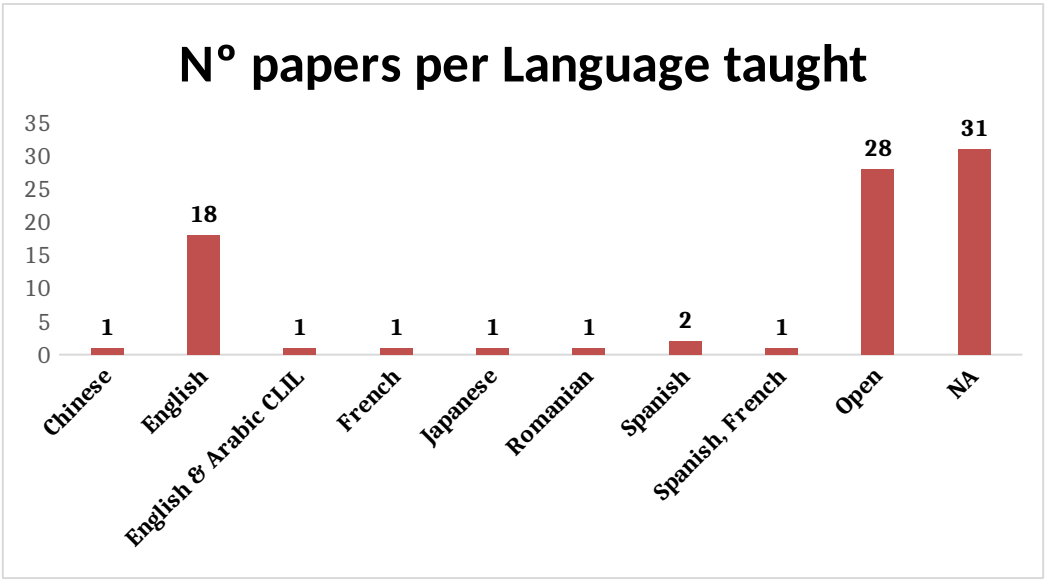

Figure 15: Languages taught by SOLL from 2010 to 2018

A further 28 were open (in the sense of not being restricted to one language) and covered general issues regarding language learning in an open social learning context. Except for the highest number, the largest variety of languages is also ascribed to 2016, with 2017 following, and 2010, 2011, 2013 and 2018 only dealing with one language; at the same time

having papers where the language is open or not available as information. Therefore, the statistics illustrate a considerable trend towards an absence of language-specified papers in an open and/or social learning context.

For the papers on different aspects of language learning, 12 focused on language learning in higher education, 3 in secondary education and 1 in primary education. A further 38 papers were not restricted to a particular educational level. It is possible that higher education was the most popular educational category for a couple of reasons. Firstly, that students at that level are adults and, therefore, more readily engaged in online open social activities, younger students would need special guidance or at the very least have their identities hidden. Secondly, given that the researchers publishing the papers are themselves university lecturers, it is easier for them to use their own students or those of colleagues at the same institution.

As is not surprising by the nature of the searches undertaken, while language learning was, for the majority of the papers, the domain in which the research was undertaken, the emphasis was on how open and social learning could improve the development of language competences. While it is beyond the scope of this paper to delve into the details of these articles, it can be concluded that social interaction in and around the target language does help students improve their related knowledge and skills. A lot of papers focus on different pedagogical aspects of social learning, whether for language or education in general, and no single learning theory is dominant over the rest.

There are also a range of topics related to open and social learning that are recurrent in the papers. Firstly, how courses and learning scenarios can be designed to include this type of learning, in terms of the structure of the courses and the support given to promote its use. Such support can come from the teachers or be provided by peers in the course. Secondly, the students' perceptions on the taking part in these learning activities are also discussed together with the way in which they can affect their motivation. Any activities within a course that are perceived as being valuable by students, with an increase in their motivation to undertake them, will arguably increase their engagement in the course and, therefore, improve the student learning and competence development. Thirdly, as part of the pedagogic focus on open and social learning, consideration is given to how this can promote collaboration between the students. This is important in general terms, since it can help students consolidate what they have learnt individually. Specifically, in the case of language learning, if the collaboration is undertaken in the target language, then it will reinforce learning because the language will be both the object of the learning and also the communication vehicle used. Finally, some consideration is given to the way in which open social learning can be used to extend the learning out of the context of the classroom, thereby encouraging the students to engage in the learning activities for a longer period.

Regarding the paper production, and as presented by the chart below, the USA, Spain, and the UK are the countries with the highest production of papers from 2010 to 2018.

Although that may be expected, what is considered surprising is the low production in all other countries, and especially the ones that normally display interest in TELL research, such as Taiwan and China.

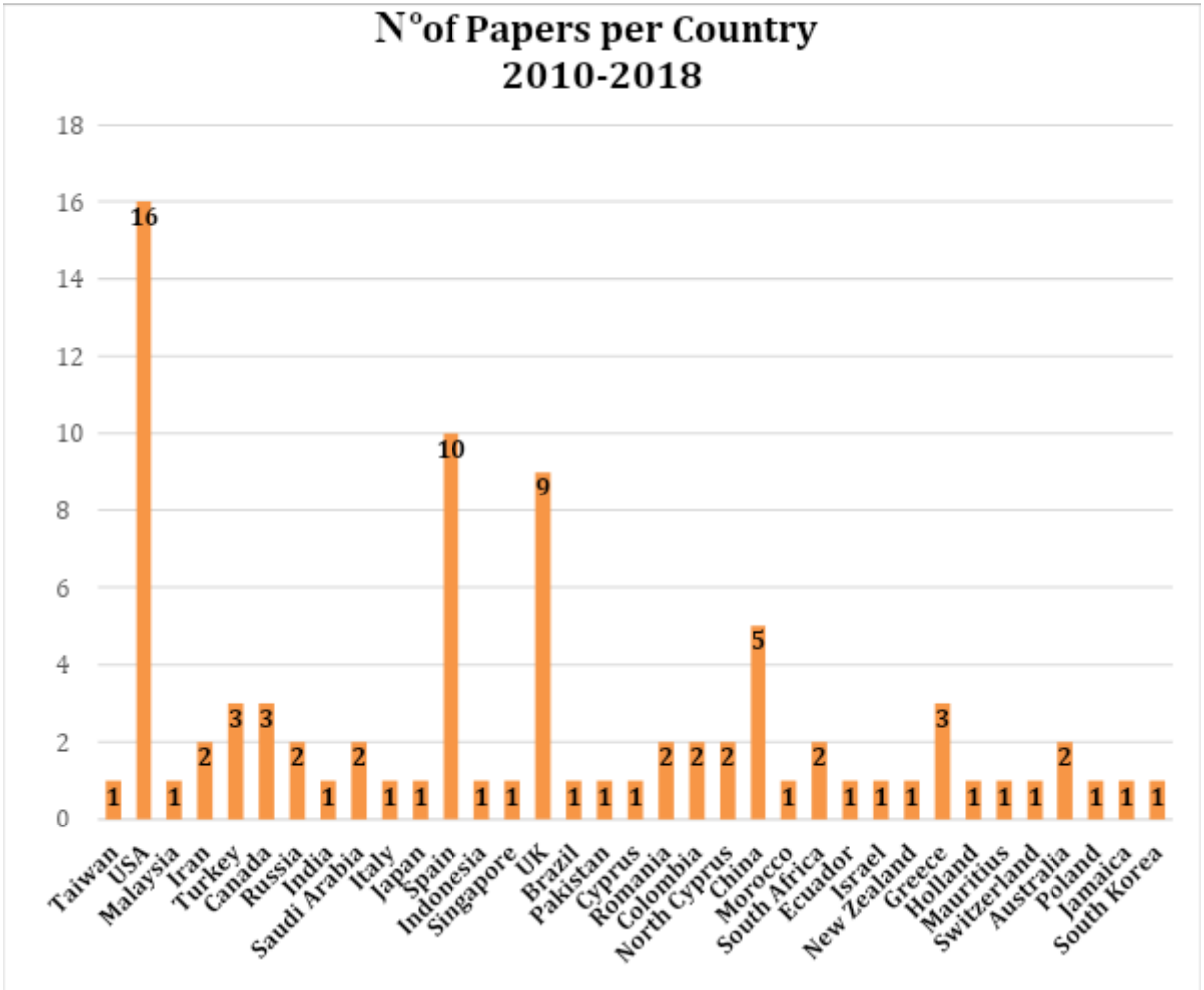

Figure 16: SOLL papers produced per country from 2010 to 2018

The processing of the keywords, which were extracted from WoS and Scopus, using the program described in the methodology section (Figure 1 and Figure 2) revealed some trends and tendencies across the years (see Figure 13 and Figure 14). Firstly, the highest frequency shown in the graphs below is attributed to papers where the keywords were not available (NA), and to others where the keywords appear once in the sample for the time frame associated with the excel sheets generated, and therefore, they are regarded as irrelevant and marked as "(other)" on the bar chart.

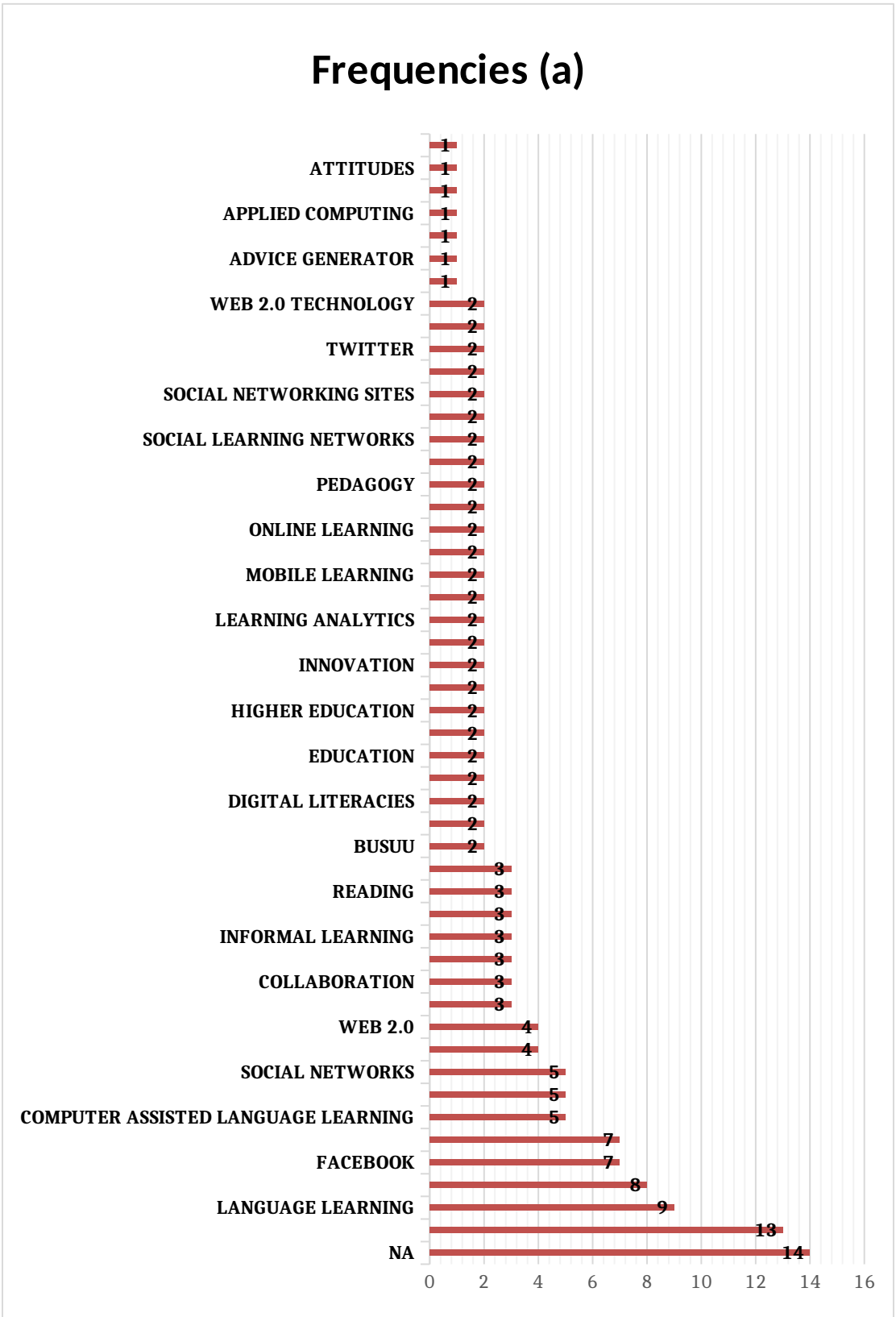

Figure17: SOLL keyword frequencies from 2010 to 2018 (a)

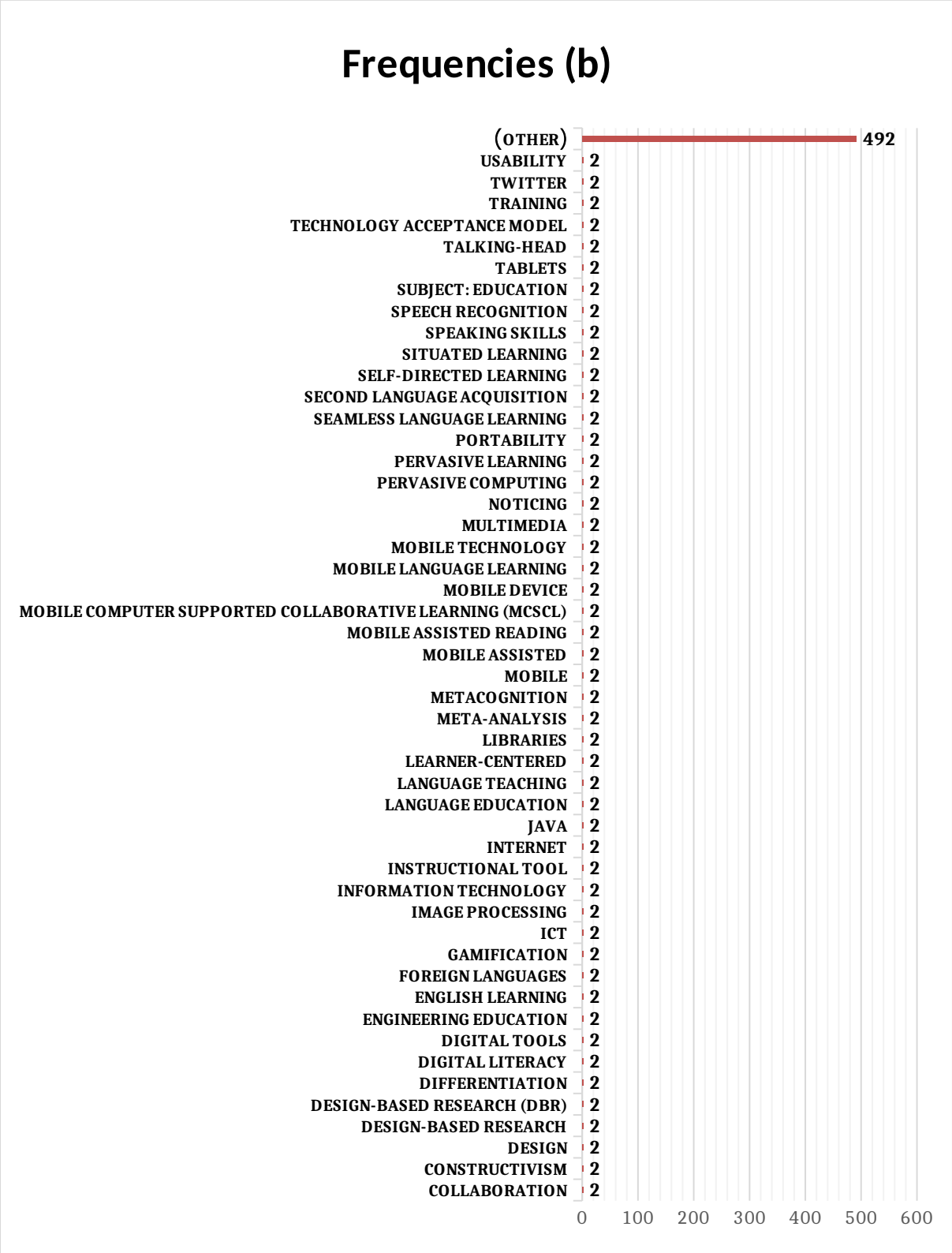

Figure 18: SOLL keyword frequencies from 2010 to 2018 (b)

As for the available keywords, the most prominent is “social media”, followed by “language learning”. Observing the evolution of keywords across the years, the term “web 2.0” is found from 2010 to 2017, while some of its tools, such as “wikis” and “blogs”, are mainly used from 2010 to 2013. Another significant observation is that from 2010 to 2014, the

keywords mainly concern tools and they are rather vague. However, from 2015 to 2018 they become more specific and there is also an interest in the more pedagogical aspects of SOLL with the use of the keywords "theories of learning", "theories of language" and "pedagogy".

Finally, whereas the keywords which indicate social features are used from 2010, the ones that concern open learning appear from 2013 to 2018, with a clearly ascending tendency to even more specialized aspects of open learning.

Final Remarks and Conclusions

This paper has presented the results obtained from an initial analysis of nearly 500 articles on TELL (MALL, LMOOCs, and SOLL). These articles were retrieved mainly from the Web of Science (Clarivate Analytics, 2018), Scopus (Elsevier, 2018), and some of them were also retrieved from Linceo+ (UNED, 2018).

All of them have been published from 2004 to 2018. According to these references, MALL is the oldest area of these three, whereas LMOOC is the youngest. In any of these three areas (MALL, LMOOCs, and SOLL), most commonly, English is the language being taught/learnt, the language of instruction and the language of publication/dissemination. However, Asian languages (Korean, Japanese and Chinese), together with Spanish, are also being learnt/taught more frequently and used for dissemination in the three TELL areas.

As for countries, Spain is the most productive in all the three areas, since it is placed among the first 3 most productive countries, whereas USA and China are among the first 4, and UK is among the first 5 (in all the rankings for the three areas analyzed).

Regarding the educational level, the most frequent one in the selected references for these TELL applications is the tertiary (that is, higher education). As pointed out above, a reasonable cause for this is that the researchers publishing the papers are mainly university lecturers, and they can easily use the courses and students in their universities for their research. Nevertheless, in most papers of the areas analyzed, the language level taught and/or learnt is not relevant or not sufficiently highlighted. This is argued to be a possible defect in the work being carried out in TELL.

It should also be noted that there is a large number of articles that do not clearly state the language being taught and/or the languages to which the research applies. Since language teaching and/or learning is not completely language-independent, it follows that research in TELL should take this variable into account from the very beginning. Therefore, it is most likely that language-independent research needs to be supplemented with some further work to determine its actual application scope.

As far as the keywords used to categorize and/or classify the contents of the papers, the main conclusion drawn from the analyses carried out on them are the following:

- In the area of MALL, the most frequent keywords across through the years 2004-2018 were "Mobile Assisted Language Learning" and "Mobile Learning". However, whereas the term "Mobile Learning" appeared from 2005 to 2009, "Mobile Assisted

Language Learning" (or its equivalent term, "MALL") has been more used from 2010 up to 2018 and, thus, it is already a consolidated term thus in the area of TELL. The high number of cooccurring keywords marking different modalities of learning (such "ubiquitous learning" or "informal learning") show the richness in the lines of research in this sub-area of TELL and its most promising future.

- In the area of LMOOCs, quite on the contrary, the term "Language Massive Open Online Course" (or its acronym, "LMOOC") is not as frequent as expected. This is a bit surprising, but this might simply suggest that is still an emerging field within TELL, which requires further and intense attention and/or research.
- In the area of SOLL, a large amount of the keywords (when present) are used to label no more than one of the papers selected for this research. Those occurring more than once show a late ascending tendency of authors (starting between 2013 and 2015) to focus on the more pedagogical aspects of SOLL and more specialized aspects of open learning.

Finally, the authors' initial assumptions in this research, of publication bias, were not found to hold (at least not towards positive studies). The opposite can be said in that more positive studies are missing in the three areas analyzed.

Thus, to conclude, it could be stated that:

- Even though MALL is being applied to a few endangered and low-resourced languages, in general, TELL applications are still restricted (in general) to mainstream languages. Apart from lack of funds, this might be due to the low amount of OERs and/or digital resources that can be reused for this purpose.
- TELL is still lacking some experimental, positive studies to support the area and the claims/ideas in previous, more theoretical and/or visionary studies. Furthermore, it seems that there is much scope for the application of TELL in lower educational levels (that is, below tertiary level).
- Finally, it is quite surprising that Spanish, Chinese and/or French are so poorly represented in the references analyzed (as language taught/learnt). Some thorough research should be carried out in order to determine why this is happening and what the consequences might be for those languages for which no appropriate, suitable TELL resources are generated in the near future.

Endnotes

[1] **Acknowledgements:** This research has been partially funded by (1) the **SWITCHED-ON project** ("The empowerment of massive open social language learning through mobile technology: harnessing interactions, transcending boundaries",), and (2) the **MOONLITE project** ("Massive open online courses enhancing linguistic and transversal skills for social inclusion and employability"), financed, respectively, by the Spanish Ministry of Economy

and Competitivity, ref no. FFI2016-80613-P. and by the Erasmus+ Programme (Key Action 203 – Strategic Partnerships for Higher Education), ref. no.: 2016-1-ES01-KA203-025731.

[2] The relevant references eventually used and superficially analyzed in this research have been included in the following Google Drive folder: https://bit.ly/2uvFNYp.

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Vocabulary selection for didactic purposes: report on a machine learning approach

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ABSTRACT

This paper aims to make an innovating contribution to the field of technology-enhanced vocabulary learning. We report on a machine learning experiment that supports vocabulary item selection for didactic purposes. We tested two machine-learning algorithms to predict the difficulty level of lexical items as reported by intermediate-advanced learners of Spanish as a foreign language and analyzed the predictive power of various features on this task. This methodology can be especially useful in data-driven autonomous learning contexts.
This paper aims to make an innovating contribution to the field of technology-enhanced vocabulary learning. We report on a machine learning experiment that supports vocabulary item selection for didactic purposes. We tested two machine-learning algorithms to predict the difficulty level of lexical items as reported by intermediate-advanced learners of Spanish as a foreign language and analyzed the predictive power of various features on this task. This methodology can be especially useful in data-driven autonomous learning contexts. It makes it possible to create adaptive environments that select the most appropriate target items for different types of vocabulary learning activities. We will describe the empirical results of the experiments, and will also show how the methodology is integrated in an on-line learning environment.
Keywords: vocabulary learning; vocabulary selection; Spanish; machine learning

RESUMEN

Este trabajo pretende hacer una contribución innovadora a la enseñanza del vocabulario asistida por la tecnología. Describimos los resultados de un experimento de aprendizaje automático que ayuda a seleccionar elementos de vocabulario con fines didácticos. Se analizan dos algoritmos para predecir el nivel de dificultad de los elementos léxicos, definido por estudiantes de español como lengua extranjera de nivel intermedio-avanzado y se ha analizado el poder predictivo de diferentes variables. La metodología puede ser especialmente útil en contextos de aprendizaje autónomo basado en datos. Permite crear entornos interactivos que seleccionan los elementos más apropiados

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para diferentes actividades de aprendizaje de vocabulario. Describiremos los resultados empíricos de los experimentos, así como la manera en que se integra la metodología en un entorno de aprendizaje en línea.
Palabras clave: aprendizaje de vocabulario; selección de vocabulario; español; aprendizaje automático

WITH THIS PAPER we will contribute to one of the main discussions in the field of vocabulary learning (Groot, 2000; Nation, 2016), namely the debate on identifying the most appropriate empirical principles that can guide the selection and difficulty grading of vocabulary items. In particular, we aim to show that a machine learning approach can improve and facilitate this selection and grading process, especially in order to calibrate the different parameters that could have an impact on the difficulty level of a lexical item. Moreover, we will show that the automatization of this selection process opens new perspectives for autonomous and customized learning. Although we work with one target language (Spanish) and one target group of (Dutch-speaking) learners, the results are useful for the broader field of technology-enhanced vocabulary learning and teaching.

Importantly, the research that will be presented is embedded in a didactic environment, by which we mean that the results are directly implemented in a learning tool. In the sections that follow, we will describe this environment (1), present a brief overview of current insights on vocabulary selection and difficulty grading (2), describe the empirical methodology that was used in the experiments (3), present the results of the machine learning experiments (4) and, finally, evaluate the didactic implications of the research (5).

The SCAP project

As mentioned before, this paper is part of a broader Research & Development project (Goethals, 2018). The aim of SCAP is to develop annotated corpora and algorithms that support data-driven and corpus-based vocabulary learning processes (Boulton, 2017; Little, 2007) by combining techniques and insights from Natural Language Processing, Corpus Analysis and Second Language Learning. These algorithms, the corpora and the didactic outcomes are integrated in a web-based learning interface (https://scap.ugent.be).

It should be noted that the SCAP vocabulary learning application is not aimed at beginner students but, on the contrary, is designed to fulfill the pedagogical needs of high-intermediate and advanced learners of Spanish (B2+) who wish to develop their vocabulary knowledge in specific domains. It may be challenging to satisfy these needs in a classroom setting because the interests of advanced learners may vary considerably, and it is crucial to motivate the students by selecting semantic domains that belong to their interest domain (Salazar García, 2004). Therefore, the application is designed to parse a corpus representing a semantic domain chosen by the student, and to generate on this basis learning materials such as vocabulary lists, glossaries, cloze exercises or reading text selection (see also

Section 5 for some examples). An appropriate selection of the vocabulary items is crucial, both to guarantee that the vocabulary items are indeed specific or at least relevant for the semantic domain, and that they are maximally adapted to the proficiency level of the learners. In this paper we will mainly focus on the proficiency level, and less on the semantic domain specificity. As will become clear from the literature review below, one of the specific characteristics of SCAP is that we develop a vocabulary selection method for advanced levels, whereas most proposals have focused on defining the "first" ranges of vocabulary items, varying between 5000 and 9000 lexical items. The focus on advanced vocabulary learning is challenging, because there is no clear "zero point", and because after the first threshold of, for example, 5000 words, we enter into a very diffuse field before reaching the 20.000-30.000 words used by higher-educated native speakers, let alone the 100.000 words of a general dictionary (Santos Palmou, 2016). Given the almost infinite number of possible lexical items that may occur in specialized fields, it is too time-consuming to manually check these vocabulary selections, at least if the aim is to cover a broad range of semantic domains. Therefore, it is an important challenge to automatize this process.

Vocabulary selection

As can be inferred from previous literature reviews, vocabulary selection and grading are considered crucial but complex steps in the design of didactic materials (Bartol Hernández, 2010; Nation, 2016; Vincze and Alonso Ramos, 2015). It has become common practice to complement or substitute introspective methods by empirical and mainly corpus-based methodologies. Within a corpus-based methodology, the most obvious parameter is of course frequency, the assumption being that the most frequent words in a corpus are also the most interesting or useful ones (see Davies, 2005 and 2006 for Spanish). Yet, many authors have argued that raw corpus frequencies should be handled carefully, and corrected, for example, by:

- improving the representativeness of the corpus, e.g. by building a corpus that includes a sufficiently wide variety of text types (Davies, 2006), or by validating the representativeness of different corpora (Duchon et al., 2013;
- complementing the overall frequencies with data on the distribution or dispersion of words throughout the corpus (Davies, 2006; Gries, 2008; Nation, 2016);
- taking into account cognate effects between words in the target language and the mother tongue of the students (Izquierdo Gil, 2005);
- critically evaluating the outcome of the empirical selection procedures by taking into account the intuition of experienced teachers or didactic authors (Instituto Cervantes).

We take these insights as a starting point to explore the question that inevitably follows the identification of possibly relevant factors, namely how these factors can be calibrated and

combined into one single selection procedure. As will be explained in the next section, we propose an experimental machine learning approach, in which we will (a) create a gold standard consisting of students' evaluations of the difficulty level of a collection of lexical items (dependent variable), (b) gather data representing frequency in different corpora, dispersion between corpora, cognateness and independently assigned difficulty levels (independent variables), and, finally, (c) evaluate the prediction performance of different machine learning systems that are trained on these data and analyze the predictive power of different types of features (independent variables) using a feature selection method.

Data

Corpus and target item selection

For this case study we work with a 273K words corpus on a specific business communication domain, namely CEO and CFO presentations at stakeholder meetings of Spanish companies. The target audience for the didactic application could be, for example, interpreters preparing themselves to interpret these presentations, multilingual employees of financial institutions attending these meetings, trainees in a course of Spanish for specific purposes, or teachers preparing didactic materials for these trainees.

The corpus was part-of-speech tagged and lemmatized with the SCAP pipeline (Goethals et al., 2017), and lemmalists were generated for the noun, verb and adjective part-of-speech categories. From these lists (4900 lemmas in total) we extracted a list of possibly relevant target items for advanced learners (B2+) by applying the following criteria:

- we removed all lemmas included in the thematic word list *Thematischer Grund- und Aufbauwortschatz Spanisch* (Navarro and Navarro, 1996/2010, also adapted for Dutch-speaking ELE students), comprising +/- 5000 lemmas. The reason for choosing this particular word list is that it is used in the program followed by the participants in the experiment: it could reasonably be expected that these words would be overwhelmingly judged as "known" by the participants, which makes them uninteresting candidates for the selection and ordering experiment. Moreover, as was already said, we are not interested in delimiting the "first" ranges of vocabulary to be learned, but rather in organizing everything that comes behind the basic-intermediate threshold;
- we only kept those items that were significantly more frequent in this corpus than in an ad hoc created reference corpus representing non-business discourse (concretely, tourism leaflets; for more details on Keyness calculus in SCAP, see Goethals, 2018);
- English loan words such as *online* or *web* were removed;
- when the lists contained two closely related lemmas belonging to the same word family (e.g. *concentrar – concentración*) we only kept the base form (in this case the infinitive).

The result was a total number of 531 items (230 nouns, 119 verbs, 182 adjectives; See Table 2 in Section 3.2) that serve as the target items of the experiment.

Dependent variable: students' difficulty judgments

In order to define the dependent variable of "difficulty level", a group of students[1] with estimated vocabulary proficiency levels ranging from B2 to C1 was asked to choose the most appropriate statement below for each target item.

A	I understand this word, and I would use it spontaneously
B	I understand this word, but I would not use it spontaneously
C	I do not understand this word

Although this still represents a simplification of what it means to "know" a word (Nation, 2016), the wording of the initial question invites the students to distinguish between comprehension- and production-oriented knowledge of a word. On the basis of these judgments we defined four categories, with two poles consisting of words that are "known" and "new", and two intermediate categories:

label	**criterion**	**functional description**
A	more than 2/3 of the students chose A	these items appear to be sufficiently known by most B2+ students and it does not seem necessary to include them in explicit vocabulary learning activities
A-B	less than 2/3 of the students chose A and the sum of A+B is higher than the sum of B+C	these items are sufficiently understood and can be used directly in production-oriented activities (e.g. cloze sentences, or sentence writing)
B-C	less than 2/3 of the students chose C and the sum of B+C is higher than the sum of A+B	these items seem rather challenging and will be used first in comprehension-oriented activities (e.g. reading contexts, glossaries, recognition tasks) and then in production-oriented activities
C	more than 2/3 of the students chose C	these items seem very challenging for most students, and it may be advisable to use them only in comprehension-oriented tasks

Table 1: Operationalization of the difficulty level assignment

The results of the student survey are summarized in Table 2, with a total number of 219 items at level A, 157 at level A-B, 118 at level B-C and 37 at level C.

	Difficulty level				
	A	**A-B**	**B-C**	**C**	**Total**
NC	97	60	51	22	230
V	57	31	22	9	119
ADJ	65	66	45	6	182
Total	219	157	118	37	

Table 2: Number of target items per POS-category and assigned difficulty judgments

To be complete, it is important to note that in the statistical analysis the A, A-B, B-C and C values are treated as numerical variables ranging from 1 up to 4.

Independent variables

In the experiment, we want to explore the possibility of developing a system that is able to predict this difficulty judgment on the basis of parameters that are more easily accessible than the time-consuming questionnaire methodology that defined the dependent variable. The following variables were generated:

Frequency data

Frequency data were gathered from two non-business related corpora (a 7.5M corpus of youth literature and a 120K corpus of tourism leaflets), that were tagged and lemmatized following the same parameters as the target corpus.

Importantly, the frequency data are not only represented as absolute frequencies but also as ranked frequency groups. It is worth considering this in detail, because, as we will see in the Results Section, this had a major impact on the predictive power of frequency information on the task of predicting difficulty judgments. We used a total of 7 frequency groups: the lowest ranked group contains the items that occur in the target corpus but not in the reference corpus. The second lowest includes all "hapax" items, occurring only once in the reference corpus: we decided to separate these items because, depending on the size and type of corpus, they represent up to 30-40% of the words, which makes the percentile scores of the other items less meaningful. Finally, nouns, adjectives and verbs occurring more than once were subdivided into 5 percentile groups, representing the 0-20%, 20-40%, 40-60%, 60-80% and 80-100% most frequent non-hapax lemmas of the same part-of-speech category. In other words, frequency groups are defined within the same part-of-speech category.

Dispersion between corpora (Keyness)

A Keyness score compares the frequency of the item in the target corpus with its frequency in the reference corpora (%Diff calculus, Gabrielatos and Marchi, 2011, see also Goethals, 2018). One of the most difficult decisions concerning this measure relates to handling the cases where the item does not occur in the reference corpus, since this inevitably implies a division by zero (see Gries, 2008 for a critical review). We decided to assign a score

immediately higher than the highest scores obtained by the other elements. Similar to the frequency data variable, for the Keyness score we also used both absolute numbers (namely the outcome of %Diff) and percentile groups.

Cognate score

A dictionary of Spanish-Dutch translations of the items was created by scraping various Internet sources, including free translation dictionaries and machine translation tools. Then, a "MatchSequence" score was calculated[2], representing the degree of orthographic similarity between the target word and one of its possible translations in the mother tongue of the students (see Table 3 for some examples). The "cognate" feature was defined as 0 or 1, depending on whether the algorithm identified a possible translation with a Matchsequence score higher than 0,66.

ES	**NL**	**MatchSequence**
dividendo	dividend	0,94
diversificación	diversificatie	0,83
integración	integratie	0,76

Table 3. "Cognate" feature. Examples of Matchsequence scores

Graded vocabulary lists

Finally, we included information from the thematic word list *Portavoces* (Buyse et al., 2004[3]). This method is based on corpus data, but enriched by didactically motivated judgments of experienced teachers and didactic authors (see Section 2). It contains a total number of approximately 9000 lemmas. The items were assigned one of the two proficiency levels used in this publication, or a third value if they did not occur in it. We chose to use this reference point because the students who participated in the experiment did not use this method. Another possible reference point would have been the MECR lists published by the Instituto Cervantes, but, since the students had worked with a manual that closely follows the MECR levels, this would possibly have biased the data.

Summarizing this section, the features are listed with their corresponding codes:

freq_abs_ref_1:	frequency, in absolute numbers, in corpus 'youth literature'
freq_group_ref_1:	frequency groups in corpus 'youth literature'
freq_abs_ref_2:	frequency, in absolute numbers, in corpus 'tourism leaflets'
freq_group_ref_2:	frequency groups in corpus 'tourism leaflets
keyness_ref_1:	keyness compared with corpus 'youth literature'
keyness_ref_2:	keyness compared with corpus 'tourism leaflets'
cognate:	cognate score ES-NL
voc_method:	level definition in vocabulary method Portavoces

Analysis

A first exploration: applying ordinal logistic regression

As a first step in the exploration of the data, we applied an ordinal logistic regression in SPSS for every independent variable.

	Model Fitting	Goodness-of-Fit	Pseudo R^2 (Nagelkerke)
freq_abs_ref_1	x	-	9,8%
freq_group_ref_1	x	x	18%
freq_abs_ref_2	x	-	11,5%
freq_group_ref_2	x	x	19%
keyness_ref_1	x	x	7,1%
keyness_ref_2	x	x	7,4%
cognate	x	x	18,7%
voc_method	x	x	21%

Table 4: Main results of the one-factor Ordinal Logistic Regression Analysis. "x" confirms the Model Fitting ($p < 0.05$), and Goodness-of-Fit ($p > 0.05$). Pseudo R^2 score shows the variance in the dependent variable that is explained by this factor.

From these results, some preliminary conclusions can be drawn. First, as could be expected from the literature, both frequency data (especially the two criteria with frequency groups 'freq_group_ref_1' and 'freq_group_ref_2'), cognateness ('cognate') and existing vocabulary gradations ('voc_method') allow to predict a considerable (and perhaps surprisingly comparable) degree of variance in the dependent variable (18-21%). This predictive value is statistically significant ("model fitting"), and the model fits the data sufficiently well ("goodness-of-fit").

Secondly, we see that the predictive power of the frequency data is considerably higher when they are grouped in (manipulated) frequency groups ('freq_group_ref_1' and 'freq_group_ref_2') than when they are treated as absolute frequencies ('freq_abs_ref_1' and 'freq_abs_ref_2'). The latter data have significantly lower Pseudo R^2 scores (9,8% - 11,5% versus 18% - 19%) and they score negatively for the Goodness-of-Fit test. Given these results, we plan to conduct more elaborated statistical analyses in the future, in order to evaluate different models of building frequency rankings, especially for handling items with zero or low frequencies.

Finally, the Keyness data ('keyness_ref_1' and 'keyness_ref_2'), reflecting the specificity of the items for this particular corpus compared with one of the two reference corpora did not perform well. This might be not very surprising since we applied an initial selection of the vocabulary items, removing those items that were clearly not specific or typical. In this sense, it is better to conclude that the Keyness data do not seem to have a clear effect on the further grading of the items once an initial selection has been realized.

Machine Learning experiments

The goal of the machine learning experiments is to train a model that uses the independent variables (features) to predict the dependent variable (difficulty judgments) on unseen data. Prior to training machine learning models, we divided the data into a training set (90%) and a test set (10%), showing a similar distribution with respect to POS-categories and difficulty judgments (see Figure 1 above). We used the same set of features as in the SPSS ordinal regression, with the only difference that we also added the features of the POS-categories. We carried out the experiments with the Python sklearn module, and concretely used two types of machine learning algorithms, namely a linear regression model, which is good at capturing linear relationships between the dependent and independent variables, and a decision tree model, which can capture non-linear relationships. As we don't know the type of relationship between these variables prior to building machine learning systems, the best option is to compare the results of both methods before making conclusions. The models can be evaluated according to different criteria, of which we will use two: Mean Absolute Error (MAE) (as primary evaluation criterion), which is calculated as the average of the absolute differences between the predicted and the "correct" values of the dependent variable (the lower the better), and Pearson correlation coefficient, which measures the correlation between the predicted and real values (the higher the better, in a span of -1 up to +1). As a baseline, we train models that utilize all features that are outlined in the previous section and the POS-features that are described in this section. Table 5 shows the estimation performance of these baseline systems with respect to both evaluation criteria.

	MAE △	Pearson ♿
Linear Regression	0,836	0,246
Decision Tree	0,836	0,209

Table 5. The estimation performance of the models trained using linear regression and decision tree on the test set with respect to MAE and Pearson correlation score.

Even though we define a number of features for predicting difficulty judgments, which we consider relevant for this task, it is not clear if all of these features will be considered useful by the machine learning models we build. For this reason, besides training models that utilize all features, we also apply a feature selection method, namely SFFS (Sequential Forward Floating Selection) (Pudil et al., 1994) to let the machine learning algorithms seek a minimal subset of features that maximise prediction performance. The basic idea behind the SFFS method is that it starts with an empty set of features and successively adds features, provided that this improves the estimation performance. In addition to providing a feature subset, forward feature selection methods allow for analysing the impact of adding individual features on estimation performance at each feature addition step. Moreover, SFFS also performs a feature removal step after each addition step, provided that removing a feature improves the estimation performance. SFFS therefore samples a large number of

feature combinations as feature subsets and has been shown to perform well among the sequential search algorithms (Ferri et al., 1994; Kudo & Sklansky, 2000).

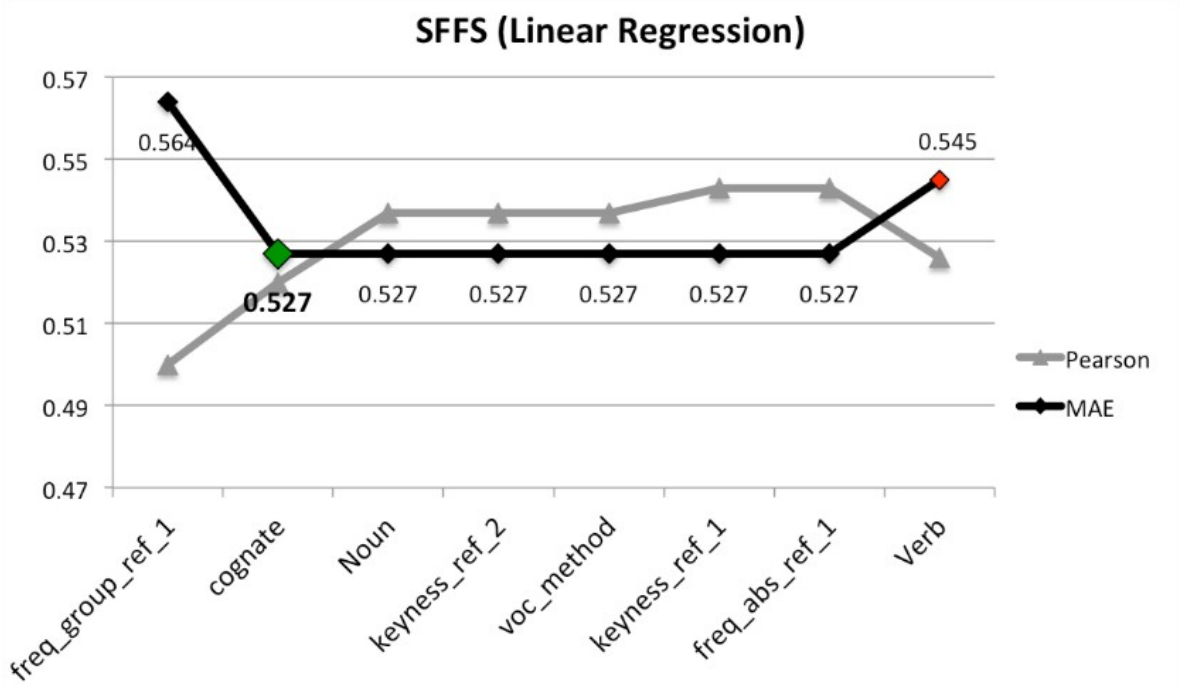


Figure 1. The estimation performance at each SFFS step for linear regression, with respect to MAE and Pearson score. At each SFFS step the given feature is added to the feature subset that contains the features to the left of it[4].

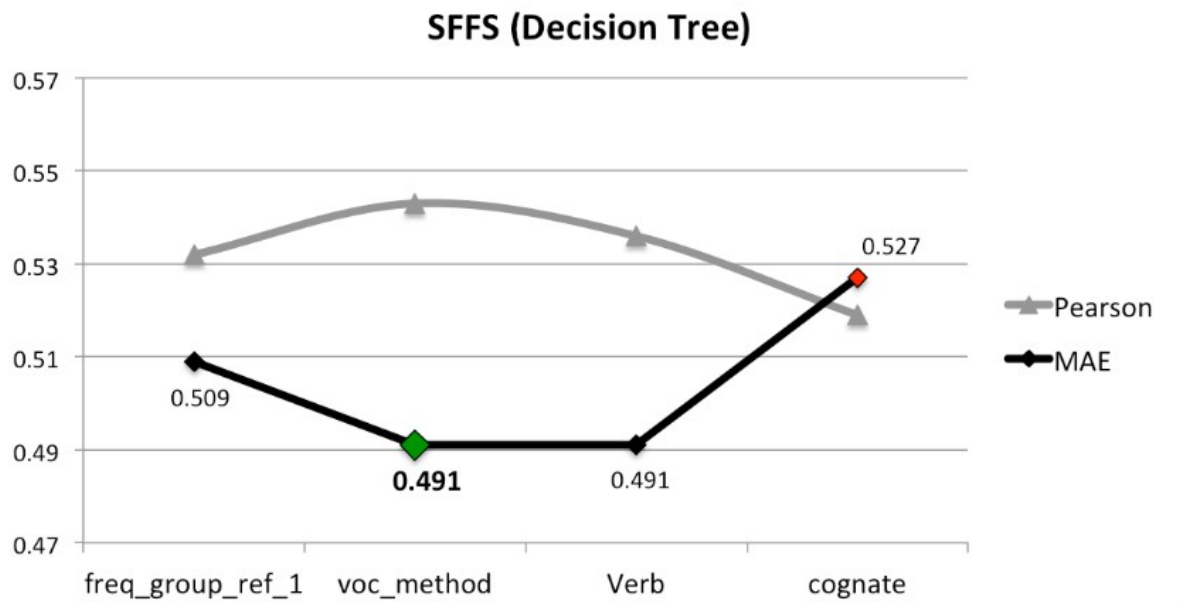


Figure 2. The estimation performance at each SFFS step for decision tree, with respect to MAE and Pearson score. At each SFFS step the given feature is added to the feature subset that contains the features to the left of it.

The first observation we can make from Figures 1 and 2 is that by only using two features, we can build models that outperform the models that use all features and the best performing feature subsets reduce the MAE scores by +/- 40% (0,836 to 0,527 for linear regression and 0,836 to 0,491 for decision tree). In other words, not all features are necessary for predicting

difficulty judgments in this task as combining all features together leads to larger error margins.

The best MAE score for the linear regression model was achieved by the minimal feature subset consisting of 'freq_group_ref_1' (frequency groups in the largest reference corpus of youth literature) and 'cognate' (the existence of a cognate element in the mother tongue of the student) (MAE = 0,527). After these two features, adding other features still points to slight improvements with respect to the Pearson Correlation Coefficient, but not for MAE.

The best MAE and Pearson scores for the decision tree model were obtained by the feature set consisting of 'freq_group_ref_1' (as in linear regression) and 'voc_method' (the assigned level in an independent vocabulary method) (MAE = 0,491). By using only these two features, the decision tree model also outperformed the best linear regression model. This observation can be attributed to non-linear relationships that can be captured by decision tree (and not by linear regression), suggesting that the relationship between the dependent and the independent variables can be explained better by a non-linear relationship in this task. Adding more features did not improve the decision tree model further neither for MAE nor Pearson score.

One interesting observation for the two machine learning algorithms is that they both find 'freq_group_ref_1' very useful. In fact, both algorithms find this feature to be the most useful feature given that it is selected in the first step of the SFFS process for both algorithms. It seems that the two algorithms do not agree on the additional features they find useful. While linear regression uses 'cognate' as a second feature to improve the prediction performance further, decision tree achieves improvements with the feature 'voc_method' instead. Considering the superior prediction performance achieved by decision tree, we consider 'freq_group_ref_1' and 'voc_method' as the best performing feature subset for this task. The errors made by the best system are further analysed in Figure 3.

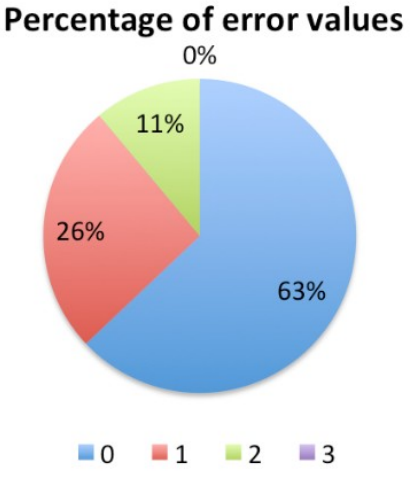


Figure 3. Percentage of the error values between 0 (no error) and 3 (max. error) for the predictions obtained on the test set.

Figure 3 shows us that 63% of all the predictions obtained by the best decision tree model were actually correct. Moreover, the predictions never achieved the highest possible error value of 3, i.e. never predicted difficulty judgment of 1 when the reference value was 4 or the other way around. The model predicted 26% of all the reference values with an error margin of 1 and 11% of all values with an error margin of 2. As a result, this analysis serves as an alternative evaluation method besides MAE and Pearson correlation scores and helps us understand the error profile of the best performing machine learning model we built for this task.

Discussion

This is, by our knowledge, one of the first attempts to use machine learning in the prediction of vocabulary difficulty, especially with respect to difficulty levels beyond the initial or low-intermediate thresholds. Although the dataset is relatively small, the first results look very promising. The best models that were generated have a reasonably limited mean average error, especially if we take into account that the categories are not as clear-cut or mutually exclusive as could be the case in other classification tasks. Moreover, the Pearson Correlation Score shows that there is a clear correlation between the score given by the students and the score given by the algorithm, and this is confirmed by the accuracy score (63%).

Although the aim of this paper was not to discuss on a conceptual level which criteria should guide vocabulary selection, but rather to search for practical solutions for calibrating possible features, we can conclude that the most powerful feature for selecting and grading vocabulary at high-intermediate and advanced levels seems to be the traditional feature of frequency in a general reference corpus (in this case youth literature). This is undoubtedly an important finding, since this feature can be used for all target students, independently of their mother tongue or learning method. On a methodological level, it is important to note, however, that the predictive power of the frequency feature increases considerably when we do not use absolute frequencies but frequency groups. Further research is required to search for the optimal group constructions, but the creation a specific class for hapax items and the fact that we calculate percentile groups within the same POS-category already seem to be powerful hypotheses. However, we would like to add that the power of the frequency feature at high-intermediate and advanced levels does not necessarily imply that it should also be the leading feature at initial or low-intermediate levels. It is very well possible that at these levels it is important to take into account other phenomena such as “lexical availability” (“disponibilidad léxica”, Bartol Hernández 2010) or “imageability” (Duchon et al. 2016).

Apart from the frequency feature, two other features come into the picture: cognateness, which is calculated on an objective basis, and existing vocabulary gradings, which is a mixed feature that also includes a subjective dimension. Both features allow

improving the results based on frequency alone, with the latter outperforming the former. Both features have be adapted to the specific target group of learners: cognateness is calculated according to the mother tongue of the learner, and the feature of existing graded vocabulary lists must take into account which didactic materials were already used by the students.

In addition to the theoretical interest of predicting vocabulary difficulty, we want to emphasize the catalyst effect that the automatization of this process can have for didactic purposes. As was said above, the SCAP project aims to develop not only the theoretical algorithms but also the didactic tools and platforms to bring them into everyday didactic practice. Some of these possibilities have already been integrated in the current version of the platform, and others will be developed in the near future. We will briefly illustrate this with a concrete example. Amongst other functionalities, SCAP allows the user to select a corpus that represents a semantic domain (in this case the corpus of shareholder meetings, ES "juntas de accionistas") and then generates a set of didactic materials, in this case a translation glossary (Figure 4, "glosario breve"). The user can input the lexical items by manually copy-pasting items from the lemma lists that are generated by the tool (Figure 5), but there is also another option, shown in Figure 4, namely that the tool itself makes a selection of the items to be included in the glossary. Currently, there is one predefined option, provisionally called "AFE", which means "avanzado/advanced", "frecuente/frequent" and "específico/specific". This means that the selection is restricted to lemmas that occur relatively frequently in this corpus, are also more frequent in this corpus than in other corpora, and that they are interesting items for "advanced learners". In the current version of SCAP, the "advanced" character of the items is still defined in a very pragmatic way, namely as the list of items that do not occur in the vocabulary method that the students in our institution use, but it is clear that the algorithm that is developed in this paper will allow refining the selection procedure. Figure 6 shows a partial result of this action.

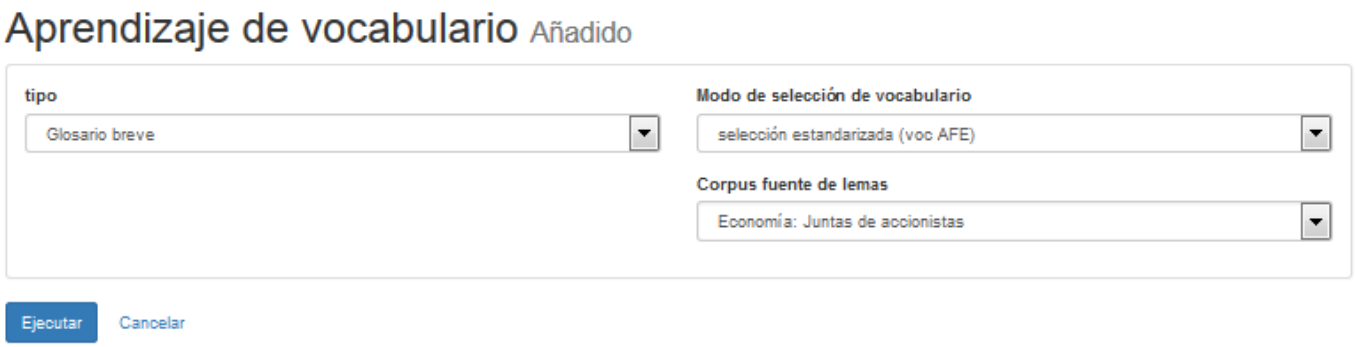


Figure 4: Generating a glossary for the shareholder meeting corpus with automatized vocabulary selection

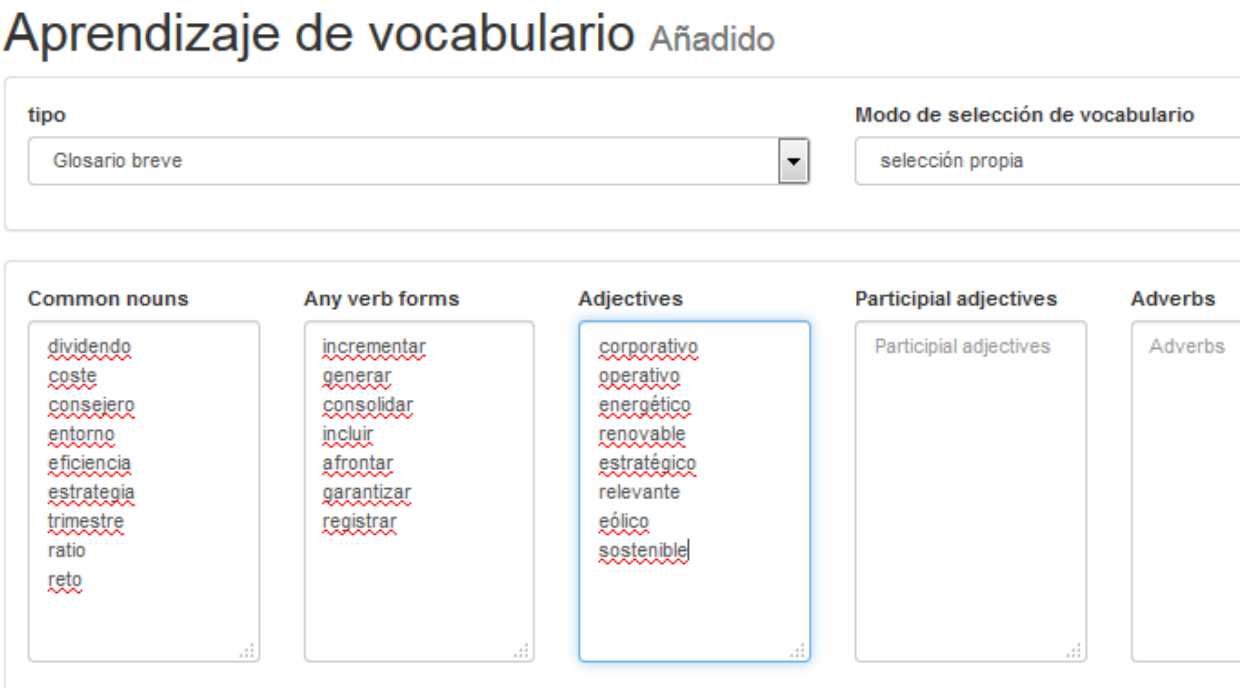


Figure 5: Generating a glossary with manual introduction of vocabulary items

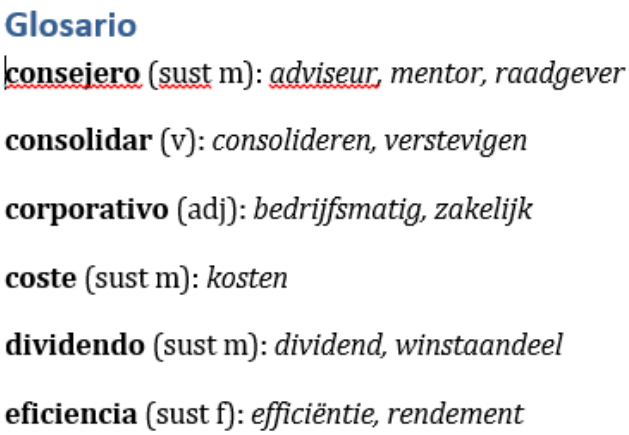
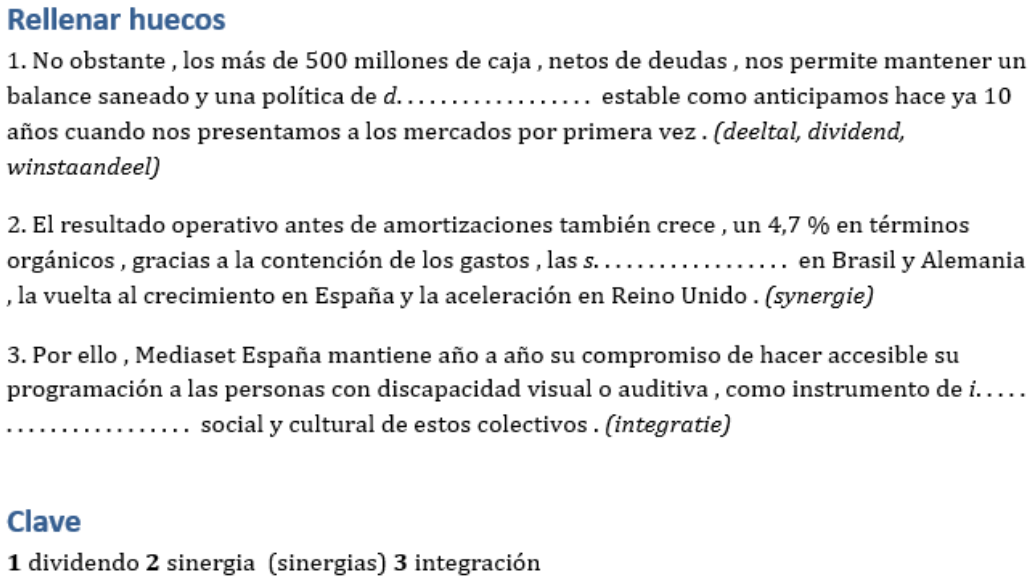


Figure 6: Automatically generated Translation Glossary (Spanish-Dutch).

A similar procedure can be applied for cloze sentences ("rellenar huecos"): in this case the user would find automatically generated fill-in exercises based on the corpus, with some hints such as possible translations from the glossary or the first letter, and the solutions at the end of the document (Figure 7).



Rellenar huecos

1. No obstante , los más de 500 millones de caja , netos de deudas , nos permite mantener un balance saneado y una política de *d.*..... estable como anticipamos hace ya 10 años cuando nos presentamos a los mercados por primera vez . *(deeltal, dividend, winstaandeel)*

2. El resultado operativo antes de amortizaciones también crece , un 4,7 % en términos orgánicos , gracias a la contención de los gastos , las *s.*..... en Brasil y Alemania , la vuelta al crecimiento en España y la aceleración en Reino Unido . *(synergie)*

3. Por ello , Mediaset España mantiene año a año su compromiso de hacer accesible su programación a las personas con discapacidad visual o auditiva , como instrumento de *i.*..... social y cultural de estos colectivos . *(integratie)*

Clave

1 dividendo **2** sinergia (sinergias) **3** integración

Figure 7: Automatically generated cloze exercise.

Obviously, if the user chooses an automatically generated vocabulary selection, this selection should be as accurate as possible, taking into account different parameters such as keyness and proficiency level. The further development and customization of the selection algorithms, taking into account several proficiency levels or linguistic backgrounds of the students, will boost the didactic possibilities of the tool.

Conclusion

In this paper we presented one of the first attempts to use machine learning in vocabulary selection. Although the dataset is still relatively limited, we have shown that it is a feasible task to predict students' difficulty judgments on the basis of independent variables, such as frequency in reference corpora, cognateness and prior gradation in vocabulary learning methods. The development of algorithms that define as accurately as possible the best vocabulary selection for a user of a given proficiency level is a crucial step in customizing autonomous data-driven learning initiatives, or in helping teachers to develop customized learning materials. It is our hope that these algorithms can guide both teachers and autonomous learners in their fascinating journey through the infinite world of lexis, avoiding that they feel as "amateur fishermen in the middle of the ocean" (Santos Palmou 2016: 166, our translation).

Endnotes

[1] A total number of 42 students participated in the experiment. The items were subdivided into three separate lists, so that we could dispose of 14 judgments for every item.

[2] Python difflib library.

[3] We wish to thank the authors for allowing us to digitize the index of the book publication.

[4] The feature selection method (SFFS) never obtained better results by removing any feature from the given feature subset at any given step for both machine learning algorithms.

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Appendix

A selection of the 500+lemmas with their corresponding features and students' difficulty judgment.

POS	LEMMA	freq_abs_ref_1	freq_group_ref_1	freq_abs_ref_2	freq_group_ref_2	cognate	voc_method	keyness_ref_1	keyness_ref_2	keyness_group_ref_1	keyness_group_ref_2	Level
NC	accesibilidad	0	-1	28	4	0	3	130000	850	100	70	A
NC	accionariado	1	0	2	1	0	3	30808	16540	90	90	B-C
NC	acierto	39	4	189	5	0	1	296	-11	40	-1	B-C
NC	acorde	112	5	139	5	1	1	175	139	30	30	A-B
NC	adhesión	2	1	6	2	1	1	10717	3782	80	90	A-B
NC	adjudicatario	0	-1	4	2	0	3	130000	7388	100	90	C
NC	adversidad	18	3	5	2	0	1	930	3893	50	90	A-B
NC	ambición	112	5	77	5	1	1	286	505	30	60	A
NC	amplitud	12	3	151	5	1	1	1187	10	60	10	A-B
NC	analista	4	2	10	3	1	3	13036	5557	80	90	A
NC	ánimo	520	5	152	5	0	2	-70	9	-1	10	A
NC	anunciante	0	-1	0	-1	0	3	130000	130000	100	100	B-C
NC	aparición	297	5	170	5	0	1	-27	37	-1	10	A
NC	apoyo	320	5	175	5	0	2	885	1839	50	80	A
NC	aseguradora	3	1	5	2	1	3	6081	3893	80	90	A-B
NC	asistencia	21	3	53	4	1	2	2843	1155	70	70	A
NC	audiencia	101	5	49	4	1	1	1827	4178	70	90	A
NC	auditor	0	-1	2	1	0	3	130000	18204	100	90	A
NC	ausencia	411	5	171	5	1	2	-54	16	-1	10	A
NC	austeridad	2	1	95	5	0	1	7627	75	80	20	A
…												

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New technologies in the ESP class for mechanical engineers[1]

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ABSTRACT

A substantial reform of Spanish universities and consequent adaptation of the teaching methods has been brought about by the European Higher Education Area. The central role of students, the importance of competences and skills as well as the erruption of technology in education finds a useful ally in Project Based Learning (PBL).

This paper concentrates on the teaching of English for Specific Purposes (ESP) and aims to show the potential of digital devices, new technologies and audiovisual texts and translation to provide the practical instruction on technical English by creative and motivational activities that engage students in practical learning. The study focuses on mechanical engineering students and presents the activities that revolve around the main task: to design and sell a hybrid car.

Keywords: ESP; mechanical engineering; new technologies; PBL; audiovisual texts.

RESUMEN

El Espacio Europeo de Educación Superior ha traído una reforma sustancial de las universidades españolas y la adaptación de los métodos educativos. El papel central del estudiante, la importancia de las destrezas y competencias y la irrupción de la tecnología en la educación encuentra en el Aprendizaje Basado en Proyectos un valioso aliado.

Este artículo se centra en la enseñanza del Inglés para Fines Específicos (IFE) entre estudiantes de ingeniería mecánica y tiene como objetivo mostrar el potencial de los dispositivos digitales, las nuevas tecnologías, los textos audiovisuales y su traducción, a través de actividades creativas y motivadoras. El estudio presenta actividades que giran en torno a la tarea principal: diseñar y vender un coche híbrido.

Palabras clave: IFE; ingeniería mecánica; nuevas tecnologías; aprendizaje basado en proyectos; textos audiovisuales.

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THE CLEAR PREFERENCE that teenagers and young adults show for digital entertainment and devices observed in recent years is worth mentioning. This fondness leads us to reconsider the ways of teaching as well as the materials and tools used in teaching, especially in the case of languages. As a consequence, this paper attempts to present the potential of digital devices and new technologies when teaching English for Specific Purposes (henceforth, ESP), in particular ESP for mechanical engineers.

This research presents a model based on the teaching method of Project Based Learning (henceforth, PBL) and on the use of a wide variety of different digital resources that are combined with a common aim. The current study, firstly, explores the possibilities and benefits of new technologies in PBL. Within the context of PBL, the study moves on to a specific proposal of a project to be developed in the ESP classroom for the development of different skills. Then it analyses the project proposal that relies on free educational technology tools which range from websites to mobile apps and which allow both lecturers and students to be active participants throughout the entire teaching and learning process. It offers a sample of activities to utilise in which students become creators in the process taking a centred-position under the lecturer's supervision and guidance. These activities revolve around the topic of hybrid cars and are designed around authentic audiovisual texts that work as core instructional materials in the ESP classroom. And, finally, the project is accompanied by evaluation tools that may help lecturers and students in the assessment stage.

Literature Review

PBL is defined by Thomas (2000) as a group of tasks which engage students in "design, problem-solving, decision making, or investigative activities" (Thomas, 2000, p. 1) with the aim of responding to a challenge and solving a problem. According to him, a project is considered an instance of PBL whenever it meets these five criteria: 1) being central to the curriculum; 2) being focused on driving questions; 3) engaging students in a constructive investigation; 4) being student-driven to some significant degree; and 5) being realistic. Ravitz (2008, p. 2) complements this list of criteria with the following characteristics: being an extended student investigation; conducting an in-depth inquiry into a topic; involving some degree of student self-direction or choice; and making students deliver a presentation of their findings, results or conclusions.

In the case of engineers, the need for extremely effective communication skills, as well as specialist technical knowledge, can be observed as part of the demanding requirements for gaining access to the labour market. In order to succeed, there are various core skills that will help our students. An example of this is the capacity for critical thinking as well as the ability to show they are able to think critically. The way to do this is to develop structured arguments and to have an extensive bank of expressions to express agreement and disagreement. In addition, students have to learn to communicate clearly and

appropriately according to the audience they are talking to or writing for. Not only do they have to be proficient in the use of language in a formal register, but also they have to demonstrate a high degree of technical expertise. In the pursuit of developing techniques to reinforce these skills, PBL can be considered a tremendous asset.

The aforementioned characteristics make PBL a practical and positive approach to engineering education. Recent studies such as the ones conducted by Lehmann, Christensen, Du, and Thrane (2008), Zhou, Kolmos and Nielsen (2012), Edström and Kolmos (2014) and De los Ríos-Carmenado, Rodríguez and Pérez (2015) have proven the effectiveness of the application of PBL to this discipline. The shift from chalk and talk to PBL in engineering courses is justified by the industry's requirements. At present there is a growing demand for professionals with both technical and personal abilities and PBL allows engineers to develop communication skills as well as providing teamwork and practical experience relating theory to practice.

From an engineering perspective, the term project is regarded as a unit of work with different levels of complexity. For example, large projects tend to be multidisciplinary, involving several areas of specialisation, not only of engineering but also of other disciplines, and its success will be based on self-direction and collaboration, which implies the implementation of cooperative learning strategies. Other important issues are the effective management of time and resources by students and the incorporation of reflection, critical thinking and adult skills. As a whole, the beneficial effect of using PBL is that it offers the chance for students to face authentic situations and this authenticity is observed in both content and assessment.

Furthermore, as far as English language is concerned, the key role of communication in PBL makes students aware of the importance of becoming proficient in its use. As Jaleniauskiene (2016) states PBL is an approach that allows the achievement of the goals of present university foreign language courses which are not limited to the learning of languages but also include "the development of the most important skills of the 21st century –higher-order thinking, problem-solving, self-directed learning, communication and collaboration with the ability to demonstrate these skills using a foreign language" (Jaleniauskiene, 2016, p. 265).

Likewise, PBL is aligned with the postulations of communicative approaches that stress the importance of using authentic materials when learning. In PBL, students get the necessary information from authentic English resources, they have to share it and negotiate with the other members of the team in English, and finally, they have to deliver the presentation of the project in the foreign language as would happen in a real-life scenario. All this implies a combination of oral and written proficiency in English with a good command of engineering contents. The value of communicative skills is underlined by Mills and Treagust (2003) in their research into the application of PBL for engineering education. They conclude that although the understanding of engineering fundamentals may be less

rigorous, in PBL the students "are generally motivated by it and demonstrate better teamwork and communication skills. They have a better understanding of the application of their knowledge in practice and the complexities of other issues involved in professional practice" (Mills and Treagust, 2003, p. 12).

Finally, the PBL approach has incorporated the use of technology due to the benefits it offers for EFL learning. In virtual learning environments, the advantages of implementing PBL has been pointed out by numerous researchers. For instance, Foulger and Jimenez-Silva (2007) conclude in their study that the integration of technology in PBL contributes to the enhancement of the skill of writing. The potential of PBL in virtual educative contexts is also observed by Russell (2019) who attributes it to

1. An increasing need to correlate theoretical models and practical realities into varied educational settings,
2. Increasing information accessibility and the resulting knowledge age,
3. The increased use of multidisciplinary approaches to problem simulations,
4. Emphasis on multi-dimensional modelling and virtual reality, and
5. New developments in cognitive science (Russell, 2019, p. 431).

Russell (2019) shows how to develop advanced skills in multiple educational settings and thanks to her research it is proven that the implementation of a PBL design model in virtual learning environments improves both the motivation and the results of learners.

Methodology

Within the context of PBL, this study moves on to a concrete proposal of a project to be developed in the ESP classroom for the development of communicative skills in technical English. The study is carried out in a university class of technical English where 50 students from the degrees of engineering and architecture are gathered together. A total of 20 participants are selected for this research. All of whom belong to the speciality of mechanical engineering and are in their final years.

The ultimate goal of this study is to provide mechanical engineering students with practical instruction on technical English by means of creative and motivational activities that engage them in practical learning. In order to succeed, the lecturer has to present explicit goals and perform the role of facilitator rather than of guide. In PBL, the project is the dominant activity and students access content when required, but the lecturer prepares much of it. The input materials offered to the students are either authentic or created by the author (the lecturer), which has a twofold function: 1) reflect real-life communication and 2) motivate students by focusing on their interests. The lecturer forms 5 groups of 4 students and in each group the participants have to work in pairs. By doing so, negotiation starts from scratch.

As far as the use of technology in the project is concerned, the lecturer relies on Google applications (apps), mobile apps, audiovisual materials and subtitling software. Regarding Google apps, we relied on Google docs, forms and spreadsheets which were stored in Google drive. Among the advantages of using Google drive, one can highlight the fact that it allows self-access working and the storage of all types of files without a storage space limit. In addition, the project is presented through a HyperDoc, which can be defined as a document that integrates interactive features and linked content for engaging and promoting inquiry-based learning. Its conception as a digital worksheet where critical thinking and problem solving skills are developed through linked tasks makes it perfect for our purposes achieving a deeper engagement and cooperative learning. HyperDocs offer the opportunity to include all kinds of multimedia and to insert different types of files such as those created with Google forms. In order to build our HyperDoc, we follow four basic steps. Firstly, the identification of the area of learning which, in our case, is ESP for mechanical engineers and in particular, the topic of hybrid cars. Secondly, the choice of a structure; in this case three stages preceded by an introductory stage. Thirdly, the incorporation of different materials, the choice of Youtube clips, power point presentations, quizzes, and so on. And, finally, the hyperdoc is published, sharing the access link with the students.

With regard to mobile apps, the project makes use of Kahoot (https://kahoot.com/) and Trello (https://trello.com/). Kahoot is a game-based learning and trivia platform that allows one to design quizzes or use others previously created and classified according to topic, level and target users. The quizzes can be organised as a group or individual competition and, apart from answering correctly, the time factor also counts; whereas, Trello is a virtual noticeboard where the lecturer can upload tasks, images, links, etc. It allows for the distribution of tasks for teamwork, the collection of ideas or pictures for a poster and the organisation of class materials.

The project also relies on audiovisual materials, which become a valuable resource in learning languages as has been proven in numerous studies (Caimi, 2006; Sokoli, 2006; Incalcaterra and Lertola, 2011; Talaván, 2017). In order to make the most of their potential, the introduction of free software like Aegisub (www.aegisub.org/) is essential. The lecturer shows students how to use it, how to edit subtitles and introduces the basic conventions for subtitling. By means of this tool, the lecturer attempts to improve students' listening and writing skills as well as to incorporate the learning of digital skills.

Project proposal

The central topic of this project is hybrid cars and the title of the project is "A new hybrid car comes on the market". The driving question is "What's the best hybrid car on the market?". In order to answer it, students are asked to undertake three main tasks: 1) design a hybrid car, 2) describe its main features in an attractive way and present them for its launch

and, 3) deal with potential clients for its sale, explaining key features and what makes their cars different from other products on the market, which use traditional technology and combustion engines, negotiating prices and methods of payment and the delivery to the dealerships.

Project tasks and procedure

First of all, before undertaking the activities that make up these three stages, a section called "engage and explore" (Figure 1) with two questions prepares the students. Students are asked to explain what they understand by hybrid cars. Their response, which must be no longer than 32 words, has to be given in on an answer sheet which is created with Google forms by using the option "short answer". Once they submit their answers, they have to undertake a second activity that involves watching a video, whose route access is contained within the hyperdoc. The clip entitled "Five things you should know about hybrid vehicles" (Voelcker , 2010) lasts four minutes, a length which, according to Talaván (2013), matches the information density that students are able to process so that a loss of concentration is avoided. This listening activity contributes to students' learning in four ways: cognition, efficiency, utility, and affectiveness (Gary, 1975; Vandergrift, 1999; Oxford, 2013). Cognitively, listening becomes a more natural way to learn a language and therefore, it should be placed before speaking. This is the reason why this activity is chosen for the pre-task stage. Likewise, language learning can be more efficient if learners are not immediately required to produce all the language material to which they are exposed. This clip can help the students in their later task of preparing their oral presentation, as they are exposed to good and realistic language models that could be imitated. Because of all this, students can realise the usefulness of this receptive skill (utility advantage). The clip about the five things one should know about hybrids is divided by five introductory subtitles. This division is used to design a listening comprehension test with Google forms. The test consists of five questions whose answers can be found in each of the sections introduced by the subtitles so that the students find therein an aid that leads their comprehension process. In both activities the use of Google forms allows the lecturer to have all the answers collected and presented in graphs, which may help to reveal tendencies.

What's the best hybrid car on the market?
Engage and Explore *What do you understand by hybrid cars?* 1. *Type a response in this Answer sheet. Make sure your response is no longer than 32 words.* 2. *Watch this Video and answer the following questions in this Test.*
Task ***What's the best hybrid car on the market?*** *You have to design your ideal hybrid car to be launched on the market and be placed on the*

market. In order to do that, each group has to undertake three main tasks. Design, Launch and Sale.

Figure 1. Introduction to the three main tasks.

Design

The first stage of the project is comprised of a group of tasks that revolve around the design of a hybrid car (Figure 2).

1. ***Design***
   a) *Look at the following word cloud.*
   b) Take into consideration the different types of hybrids and their characteristics described in this presentation.

   c) *To access the PPT presentation go to https://tinyurl.com/ycoys96j or scan the following QR code with your phone.*
   d) *Discuss their advantages and disadvantages. Take a look at this video where you will find useful expressions. You can play it with English subtitles.*
   e) *After watching the video of useful expressions, please take the following test to check your understanding.*
   f) *Look at the different car parts and the materials they are made of.*
   g) Now, it is your turn to choose the best type and materials to build your hybrid car and justify your choices to the group.
   h) ***Assessment**: Kahoot tests:*
      - *Properties of materials.*
      - *Car parts.*
      - *Expressions in business negotiations.*

Figure 2. Hyperdoc: Design stage.

Students are asked to negotiate and decide on the design of their new hybrid car. Each pair in the group is required to prepare the design of the different parts of which the car is constructed. In order to do this, the lecturer creates a word cloud that will be distributed among the groups. The word cloud can be generated by using Internet tools such as https://worditout.com/word-cloud/create or https://www.wordclouds.com/, as in this case:

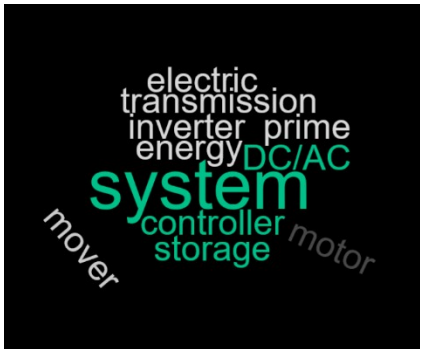

Figure 3. Word cloud: components of hybrids.

This word cloud (Figure 3) comprises key words that will guide the students' research. They refer to different components of a hybrid car such as prime mover, electric motor with DC/DC converter, DC/AC inverter, and controller, energy storage system, and transmission system. Apart from this word cloud, the lecturer encourages students to take into consideration the different types of hybrids and their characteristics as described in the slide-share ppt "Hybrid car options for you" (Jeff's Mercedes Auto Service, 2015). In order to access the ppt, the students have two options; they can either go to a shortened url or they can scan a QR code generated by the lecturer.

After watching the video, the group has to make another choice: choosing the type of hybrid they want to build. In order to make this decision, the members of the group have to extract the advantages and disadvantages of the different types from the clip, which must then be discussed with the other members of the group. To do this, the lecturer offers original input of vocabulary to express advantages and disadvantages which is found in the video "Vocabulary: how to talk about advantages and disadvantages" (Emma, 2015). In this video that lasts six minutes and gives the option of subtitles in English, a native speaker presents the expressions in a visual way, organising the expressions into two columns and explaining the differences between their uses by means of examples. Once the students view the clip, they can take a multiple-choice test on the same website which provides them with the feedback that allows them to assess their understanding of the clip. In order to take the test, they have to click on the hyperlink found in the hyperdoc.

This first stage finishes with the selection of the materials used for constructing the car. The vocabulary related to the various car parts is given in a cheat sheet where students can find pictures of cars where their parts and anatomy are shown. In addition to this, another cheat sheet includes information relating to the materials with which these parts are fabricated. Thus, students have to refer to the car parts alluding to the materials used for their production and justify their use by making reference to the properties of these materials.

The evaluation of this stage is commented on in section *Evaluation*.

Launch

The second group of activities that cover the launch stage (Figure 4) begins with the viewing of the clip "2016 Chevy Volt: Almost Everything You Ever Wanted to Know" (Hall, 2015). It presents the launch of the 2016 Chevy Volt at the 2015 Detroit Auto Show and includes automatically generated subtitles. Although there are some mistakes, they are not serious and students can find some help to extract specific vocabulary related to hybrid cars and to reproduce some language patterns.

2. ***Launch***
   a) *You are going to attend the launch of 2016 Chevy Volt @ the Detroit Auto Show. Watch the following video choosing the option of automatically generated subtitles.*
   b) Download the clip and save it as .mpg or .avi
   c) *Re-edit the subtitles following the basic subtitle guidelines here included.* ***Watch out!*** *Remember that the subtitles provided are automatically generated and contain errors.*

   For subtitling the clip use the software Aegisub.
   Save the subtitles as .srt and exchange your file with the other groups for peer-review.
   - To download Aegisub go to: www.aegisub.org/
   - For peer-assessment use the following rubric
   d) *Take the clip used as a model and re-voice it as if you were the host of the programme and the executive chief engineer.*
   Exchange your clips with the other groups for peer-review.
   - For peer-assessment use the following rubric.

Figure 4. Hyperdoc: Launch stage.

The first task they have to undertake is to download the clip and re-edit the automatic subtitles with the aid of Aegisub. This activity requires them to listen to the original version, find the mistakes in it and rephrase the original oral message according to the basic subtitle guidelines. Once the new version of the clip is completed, the students have to exchange their subtitle files in order for them to be peer-reviewed. In this assessment they will have to pay attention to accuracy, the number of characters in the subtitles created, the segmentation of the lines and the reading speed (Figure 5). By doing this, students work on their listening and writing skills.

	Excellent 25 pts	***Good 15 pts***	***Sufficient 5 pts***	***Insufficient 0 pts***
***Accuracy**: The subtitles are grammatically correct (spelling, punctuation, grammar, syntax)*	*1-2 errors*	*3-6 errors*	*7-10 errors*	*More than 10 errors*
***Condensation**: The number of words in subtitles does not exceed the limit of 42 characters per line (default in AEGISUB)*	*95%-100% of subtitles do not exceed limit*	*80%-95% of subtitles do not exceed limit*	*70%-80% of subtitles do not exceed limit*	*More than 25% of subtitles exceed limit*
***Segmentation**: The text in the subtitle is appropriately segmented (no break between a determiner and the noun it accompanies in two subtitles nor in two lines)*	*95%-100% of lines are appropriately segmented*	*80%-95% of lines are appropriately segmented*	*70%-80% of lines are appropriately segmented*	*More than 30% of lines are inappropriate*
***Synchrony**: There is synchrony between the duration of each subtitle and the duration of the actor's corresponding utterances*	*95%-100% of subtitles are correctly synchronised*	*80%-95% of subtitles are correctly synchronised*	*70%-80% of subtitles are correctly synchronised*	*More than 25% of subtitles are incorrectly synchronised*
Total (out of 100)				

Figure 5. Rubric for the assessment of the subtitling task (Proyecto SONAR - Subtitulación sOcial para proporcioNar Accesibilidad audiovisual en la universidad. 2017).

The same clip is used to develop both writing and speaking skills. Taking the clip as a model, students are encouraged to re-voice it as if they were the host of the programme and the executive chief engineer who introduces the new model in the show. In order to do so, they have to write their own script as if they were at the launch of this new model. Once they have finished, students have to re-voice the clip. Re-voicing allows them to copy and reproduce pronunciation and intonation patterns by imitation. It also gives the students the opportunity to use expressions previously seen in the clip and combine them with their own invented discourse and technical words that refer to the distinguishing features of the car. The assessment of this task is performed following the rubric in Figure 6.

	Poor (5%)	*Average (10%)*	*Good (15%)*	*Excellent (20%)*
Synchrony				
Pronunciation				
Intonation				
Creativity				
Vocabulary used				
Total (out of 100%)				

Figure 6. Rubric for the assessment of the re-voicing task.

Sale

In the third stage, the sale of hybrid cars, the students have to play the roles of either the sales department staff or potential clients (Figure 7).

3. ***Sale***
   a) *Watch the following business conversation. The context of the conversation is provided as well as the English subtitles.*
   b) *Here you can find 10 useful business expressions.*
   c) *At this stage you have to deal with a potential client in order to sell your new hybrid model. Use these cards to play your roles in this commercial transaction.*

Figure 7. Hyperdoc: Sale stage.

Negotiation techniques and business expressions are presented in two videos in order to prepare the deal making process. The first one, "Business English conversation / Sales meeting" (Crown Academy of English, 2017), presents a six-minute business conversation between two native English speakers, both the context of the conversation and subtitles are provided. After that, the video includes six more minutes of explanations about useful vocabulary. The second video clip, "10 Business English expressions you need to know / Vocabulary" (Emma, 2018), focuses on ten business orientated expressions, which have to be integrated into the students' conversation.

Once basic vocabulary and expressions are introduced, the lecturer distributes different role-play cards created for this purpose which will lead the conversation between the two parties in each group. However, these cards (Figure 8) only provide a template for the conversation and again, it is the students who have to take on the responsibility of completing the information required by searching the Web. Initially, the role play takes place within the group itself but subsequently there is an exchange of cards and roles between the groups, which allows students to have a wider scope for the development of negotiation

techniques. As a whole, this activity attempts to achieve realistic communication and it involves the type of business negotiation that will be of use to them in their professional life.

***Role A**. You work for the sales department of a company that makes hybrid cars. You have to introduce your make and your hybrid models to prospective customers. Then, you have to make your offers and try to reach a deal.*

Name of the make: *Your position in the company:* *Hybrid car model(s) you have:* *Car features:* *Advantages of your model(s):* *Drawbacks of your model(s):* *Prices and special offers:* *Warranty:*	

***Role B**. You have car-dealerships around the world and you are interested in introducing hybrid cars in your business. You get in contact with a new make of hybrid cars in order to know more about its cars and offers.*

Name of your company (dealership): *Your position in the company:* *Ask for hybrid car model(s) they have:* *Ask for their car model's features:* *Ask for the advantages of their model(s):* *Ask for the drawbacks of their model(s):* *Ask for their prices and special offers:* *Ask for their warranty:*	

Figure 8. Role cards exercise.

Evaluation

As has been shown throughout the different stages of this project, the students make use of different assessment tools for their activities ranging from rubrics to tests on their mobiles. The project combines self-assessment and peer-review with assessment carried out by the lecturer.

Apart from the aforementioned rubrics, students carry out their self-assessment thanks to the activities found in the mobile app Kahoot. The lecturer designs two quizzes for the first two stages (design and launch), and for the third one (sale) the lecturer relies on previously created quizzes relating to business communication from the app. All the quizzes

are presented as a challenge for the students who have to sign in and enter the pin provided by the lecturer so that the results of all the students are collected (Figure 9). Besides, these quizzes are performed against the clock so that students do not have time to look for the answers.

In the first quiz (Figure 10), students are asked about different properties of materials. They are given definitions and examples and they have to choose between the different options they are offered. The second quiz (Figure 7) concentrates on the parts of a car, following the same pattern as the first quiz. And finally, the third group of quizzes focuses on expressions used in business negotiations (Figure 8). In this last case, the app has a wide variety of previously designed questionnaires. Thus, the lecturer may take advantage of these and select those considered more useful for their aims.

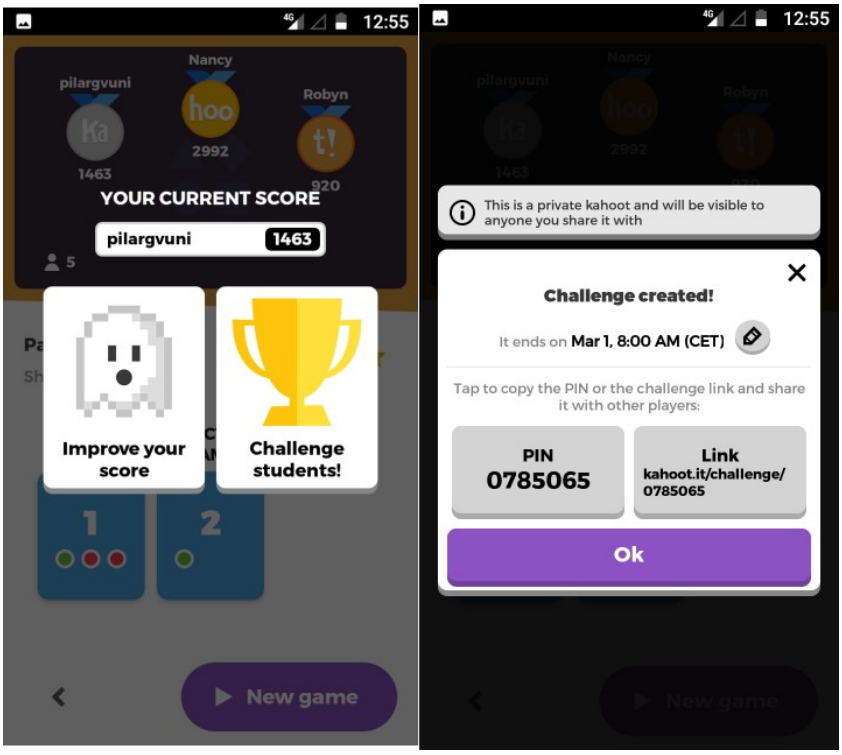

Figure 9. Kahoot app.

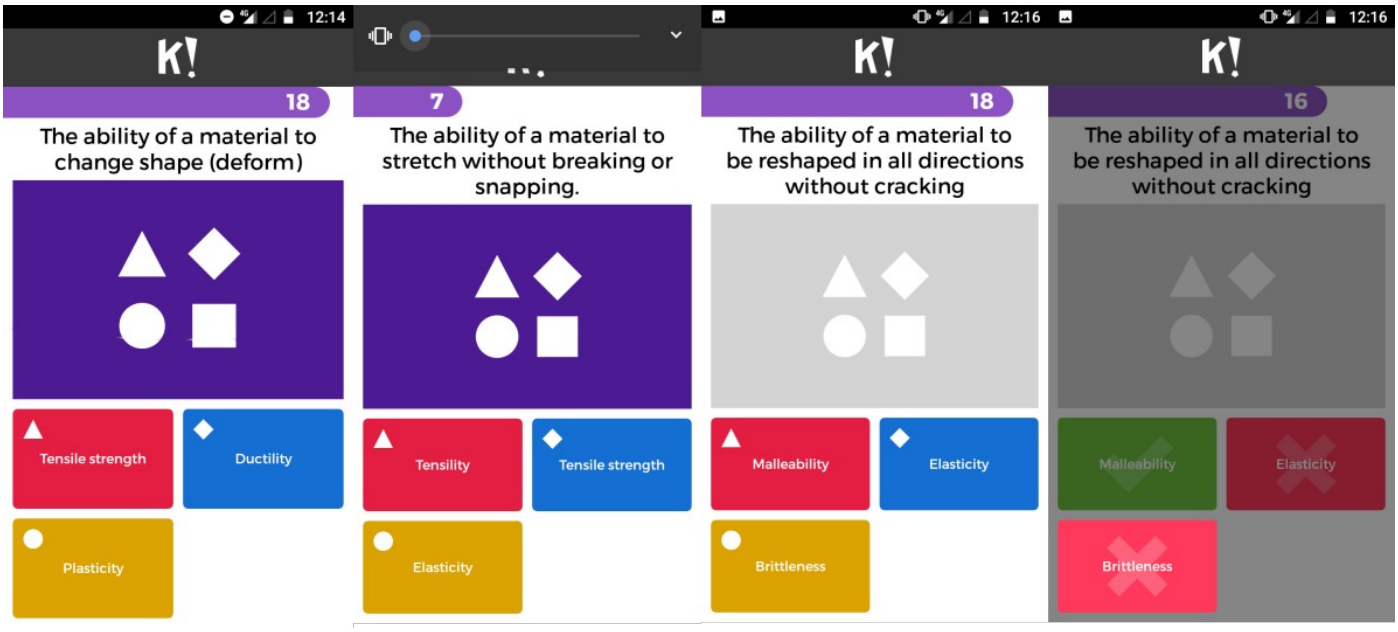

Figure 10. Kahoot quiz: "Properties of materials".

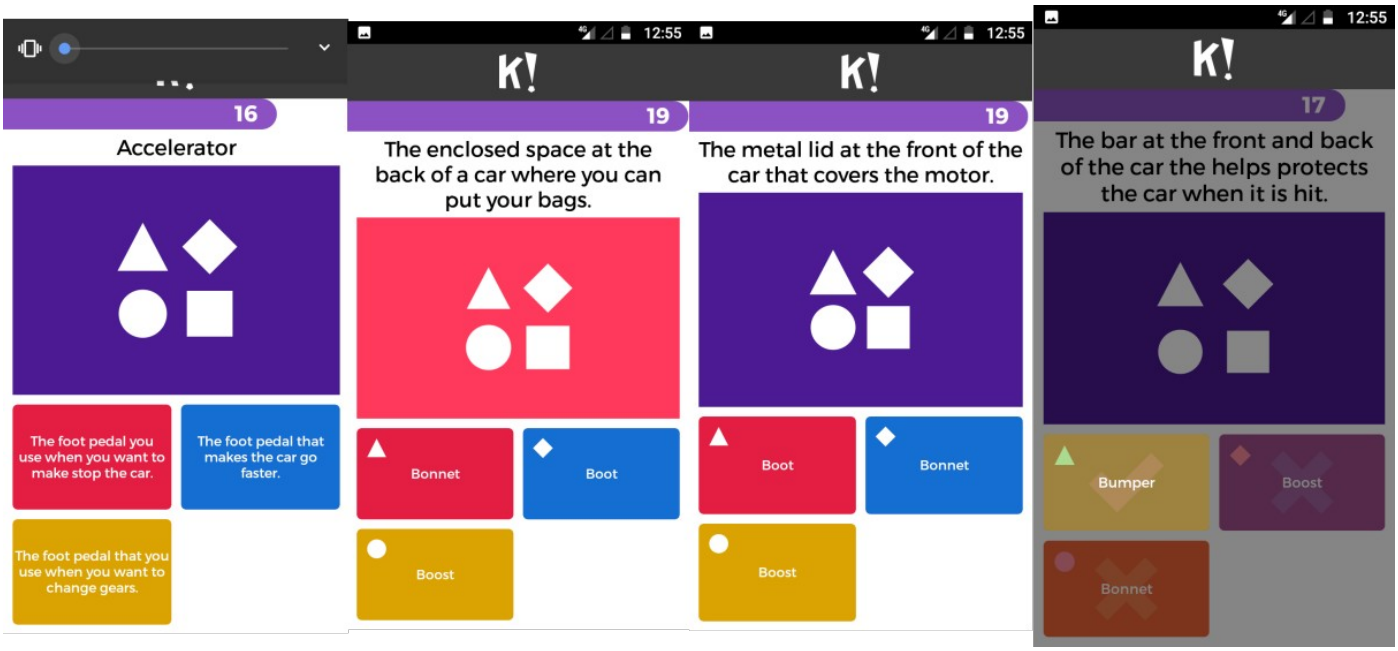

Figure 11. Kahoot quiz: "Parts of a car".

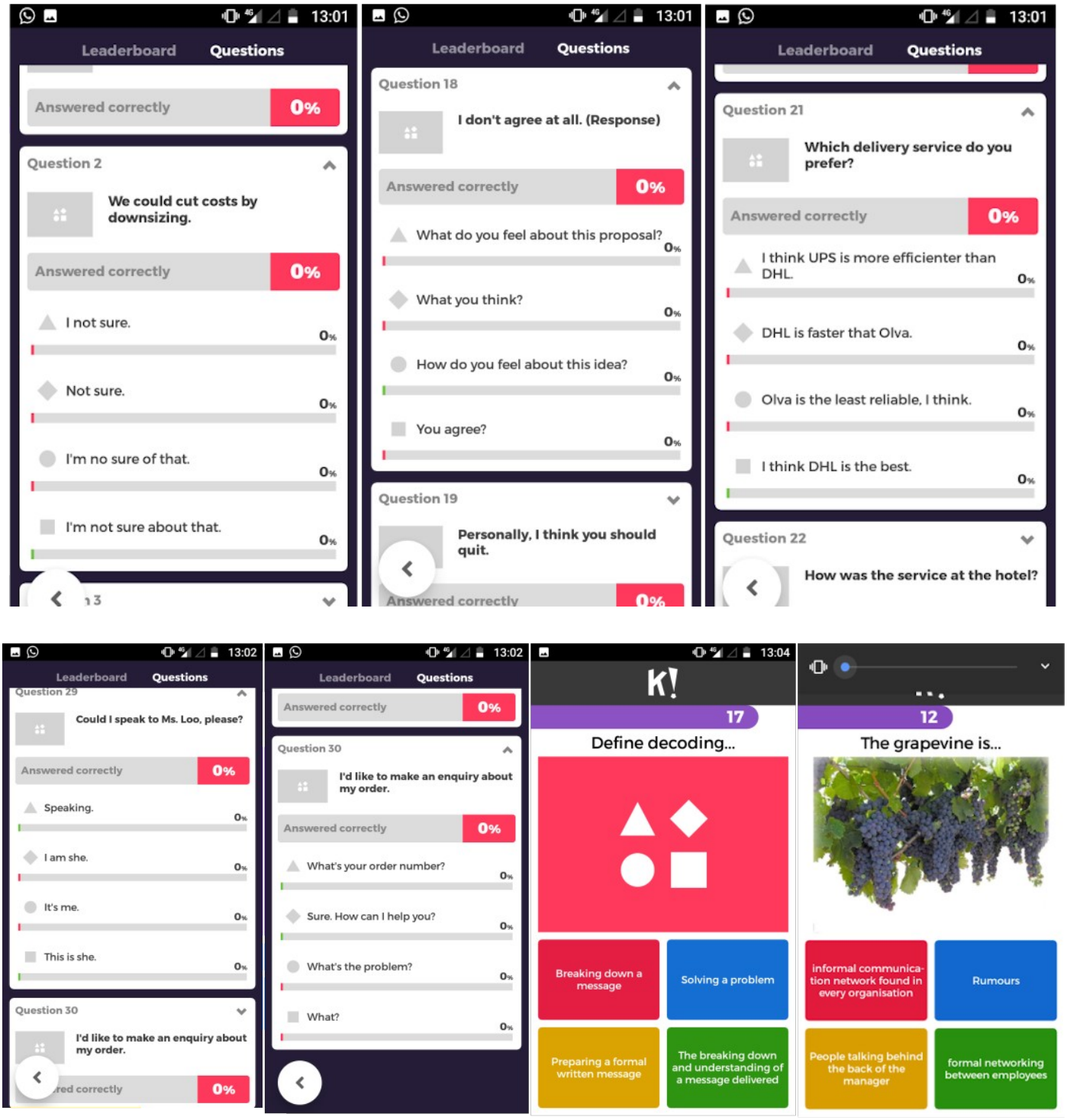

Figure 12. Kahoot quiz: "Expression in business".

At the end of the project, the members of each of the teams are assessed (Figure 13) with the following rubric adapted by the lecturer in the free Internet tool Rubistar (rubistar.4teachers.org) (Figure 14). A double review takes place, both the lecturer and the student's teammates being involved.

Team assessment
Assess the work of each of the members of the team filling in this form.

Figure 13. Hyperdoc: Team assessment.

Contributions *30%*	***Routinely*** *provides useful ideas when participating in the group and in classroom discussion. A* ***definite leader*** *who contributes a lot of effort.*	***Usually*** *provides useful ideas when participating in the group and in classroom discussion. A* ***strong*** *group member who tries hard!*	***Sometimes*** *provides useful ideas when participating in the group and in classroom discussion. A* ***satisfactory*** *group member who does what is required.*	***Rarely*** *provides useful ideas when participating in the group and in classroom discussion.* ***May refuse*** *to participate.*
Quality of work *30%*	*Provides work of the* ***highest quality****.*	*Provides* ***high quality*** *work.*	*Provides work that* ***occasionally needs to be checked****/redone by other group members to ensure quality.*	*Provides work that* ***usually needs to be checked****/redone by others to ensure quality.*
Time-management *10%*	***Routinely*** *uses time well throughout the project to ensure things get done on time. Group does not have to adjust deadlines or work responsibilities because of this person's procrastination.*	***Usually*** *uses time well throughout the project, but may have procrastinated on one thing. Group does not have to adjust deadlines or work responsibilities because of this person's procrastination.*	***Tends*** *to procrastinate, but always gets things done by the deadlines. Group does not have to adjust deadlines or work responsibilities because of this person's procrastination.*	***Rarely*** *gets things done by the deadlines and group has to adjust deadlines or work responsibilities because of this person's inadequate time management.*
Problem-solving *30%*	***Actively looks*** *for and* ***suggests*** *solutions to problems.*	***Improves*** *solutions suggested by others*	***Does not suggest*** *or refine solutions, but is willing to try out solutions*	***Does not try to solve*** *problems or help others solve problems. Let's others do the work.*

Figure 14. Rubric for the assessment of the student's work in the project.

The evaluation of the project is supplemented by a final test designed according to the traditional format. It includes a reading and listening comprehension section, another of use of English and a writing exercise. The idea behind making an assessment based on traditional models is to check and verify the results achieved in the project.

Results

All of the students passed the different tests they had to take throughout the project. Although there was a variety of marks, the average mark of our students was high ranging from 80 to 90 out of 100; and the percentage of students who got 50 to 60% was low at 20%. In addition, we observed that the marks obtained in the traditional format were nearly identical to those obtained by the other EFL students from other engineering degrees. Differences range between 0.5 and 1 point and in no case was there a difference in the number of failures.

However, it is noteworthy to mention that there was a big difference in terms of motivation. Students expressed in a final questionnaire about the way of approaching the subject their preference for the PBL format in 90% of the cases. Most of them declared that they were satisfied (60%) and 30% were very satisfied. Only 10% of students still estimated that this was not enough, missing the traditional vocabulary lists. Conversely, all of the students confirmed an enhancement of their communicative skills and they associate their improvement in communication to the type of activities and tasks put forward in the PBL project.

Conclusion

This example of PBL reveals that not only can this type of methodology be applied to the teaching of ESP for mechanical engineers but it also makes it more attractive for university students. The variety of tasks prevents the students' loss of motivation since they are constantly challenged by new and different types of exercises that contribute to their skills' training. Things like the introduction of QR codes make this project more appealing for the students who are familiar with the act of scanning these codes as part of their daily activities. In all cases, the students deal with realistic situations where problem-solving is required, as will happen in their future professional lives.

This study has proven how PBL fosters a more real-life and meaningful way of learning that helps students create connections to life outside the classroom and become aware of the usefulness of classes for their future success. Not only does it improve language skills but it also provides professional skills such as collaborative working, the abilities of decision making and problem solving. In a final questionnaire the students highlight the importance of taking initiative and responsibility achieved by this project. In addition to this,

they admit that their knowledge of new technologies was lower as they were not aware of the full potential of mobile apps and audiovisual materials.

Finally, it has to be said that when the project was introduced to our students, they were initially reluctant as they were not used to learning on a project-based basis. Their fears were related to the lack of lists of specific vocabulary to memorise and exercises designed around traditional methodologies. However, they became easily engaged in the project as, firstly, it revolved around a topic of their interest; secondly, they benefitted from the possibilities offered by new technologies and audiovisual materials; and thirdly, they realised the activities proposed could be tasks they would have to carry out in their future jobs. Students' motivation and the appealing nature of the tasks have been decisive in the standard of results obtained in both the assessments undertaken throughout the project and the final individual test designed in a traditional format.

Endnote

[1] This research has been carried out within the framework of the project entitled *Comunicación Internacional y Retos Sociales*, financially supported by local and national authorities (*Diputación General de Aragón*, H16_17R CIRES).

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The implementation of a blog-based activity with prospect teachers: constraints and difficulties

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ABSTRACT

The development of the Web 2.0 in recent years has triggered the use of web-based tools like, for instance, blogs that can be used both as language development and assessment tools (García Laborda, 2013). This article addresses the difficulties that teacher trainees have when they create and manage in groups their own blogs in a fourth-year course on Didactics of the English language. A sample of blogs created by 15 students in the fourth year of a teacher training program for primary school teachers at the University of Alcalá (Spain) was analyzed qualitatively. Specifically, the usefulness of blogs, as well as the difficulties and constraints encountered by students when creating and managing a blog and the effort put into the creation of social applications in the classroom, among other items. Finally, a questionnaire was handed out to students to analyze the limitations and benefits of this tool in the classroom. The main conclusion is that the identification of the analysis of difficulty that students present during the implementation and management of a blog will provide suggestions for teachers-to-be and current university teachers in education Degrees.
Keywords: blogs; constraints; difficulties; teacher training.

RESUMEN

El desarrollo de la Web 2.0 en los últimos años ha permitido la evolución y posterior uso de herramientas web como, por ejemplo, los blogs, que pueden ser usados tanto como herramientas de desarrollo como de evaluación (García Laborda, 2013). El artículo que aquí se presenta muestra las dificultades con las que aspirantes a docentes se encuentran al crear y manejar, en grupos, sus propios blogs. Para este estudio se han analizado de manera cualitativa los blogs de 15 estudiantes en el Grado de Educación Primaria de la Universidad de Alcalá y en la asignatura de Didáctica de la Lengua Inglesa. Más concretamente, se ha analizado el uso de los blogs, así como la dificultad que los alumnos y alumnas percibían durante la creación y manejo de estos y el esfuerzo dedicado a la actividad durante la duración de la asignatura, entre otros ítems. Posteriormente, se pidió a los alumnos que respondieran a un breve cuestionario acerca de las dificultades o beneficios de esta herramienta en el aula. La principal conclusión que se puede extraer de este estudio es que el análisis de la dificultad que presentan los alumnos y alumnas durante la creación y desarrollo de un blog proporcionará sugerencias acerca de su uso beneficioso para futuros docentes y actuales profesores universitarios de grados de educación.
Palabras clave: blogs; limitaciones; dificultades; formación de docentes.

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THE DEVELOPMENT of the web 2.0 has triggered the use of web-based tools in recent years, among which we can find wikis, podcasts, social networks, applications, as well as blogs. According to statistics (Gaille, 2013), although it is difficult to give an exact and reliable estimate, due to the staggered growth of the World Wide Web, there are around 152 million blogs in the world, since its appearance in the late 1990s. The academic environment has also benefited from the birth of this 2.0 technology, where blogging has become a significant way for students to communicate with teachers and classmates, as well as with other members of the academic context in which they are emerged. However, the objectives for setting up blogs vary depending on their use, need and intended audience.

When asked to give a definition of the term, a blog is technically a website in which posts, or also called entries, appear normally in chronological order and are usually updated daily or weekly. The structure that these tools present provide users and bloggers with the possibility of commenting and giving their opinion about the blog. "Blogs are easy to manage and enable students to publish their work in a chronological manner. [Besides,] they help students engage in online exchanges and promote learner autonomy" (Ahluwalia & Gupta, 2011, 29). In addition, blogs can be used for self-reflection (Nambiar & Thang, 2016), self-directed learning (van Wyk, 2018), and instructional communication (Fernandez, 2012; Thomas, 2017). Even though most authors highlight the benefits and advantages of this tool, there are others that, as Freidhoff (2008) who points out that it is also necessary to bear in mind the disadvantages or constraints of taking it to the classroom. One of these major difficulties involved is that blogs need to be constantly updated (also Baxter, 2010). They are not a matter of a one-time task but instead require dedication and devotion alike, which may result in students not being inclined to create them on their own. Miyazoe & Anderson (2010) acknowledge that although they promote constructive communication and learning, they are also dependent on the authors' (here, the students') cognitive and communicative style. Another disadvantage worth mentioning is the need for language proficiency (Bhavana, 2009), as most of the content will be written.

Blogs in education allow a multimodal means of communication (Colwell, 2016), which includes writing (Álvarez & Bassa, 2013; Huang, 2016; Vurdien, 2013; Wen-Shuenn, 2004), author-reader dialogical interaction (Sun & Chang, 2012) through the creation of cyber communities (Sun, 2010), reflective tools (Weatherall, 2015), collaborative activities (Álvarez & Bassa, 2013) and other modes of communication through various learning objects such as visuals and videos (Colwell, 2016; García Laborda, Giménez López & Litzler, 2018).

The creation of blogs in the classroom has a double function. On the one hand, future teachers who are assigned this type of project can have the experience of designing and implementing Web 2.0 tools and will, thus, be able to convey that experience to their students in the future (García Laborda & Magal-Royo, 2009). On the other, the exercise serves to enable them to acquire skills needed to become technologically competent

professionals so as to seize the potential of digital technologies in the classroom and develop the so-called digital competence (Redecker & Punie, 2017), which will help them acquire new technical and cognitive abilities to solve problems and situations in new digital environments, that is, help them be digitally fluent. The European Commission presented a study "for the development of educators' digital competence in Europe" (2017, p. 7) in order to help Member States to promote this competence among students, educators and prospect educators, as well as to boost innovation in education. This study proposed 22 elementary competences organized in 6 different areas.

Figure 1: The digital competence and its areas (own elaboration based on Redecker and Punie, 2017)

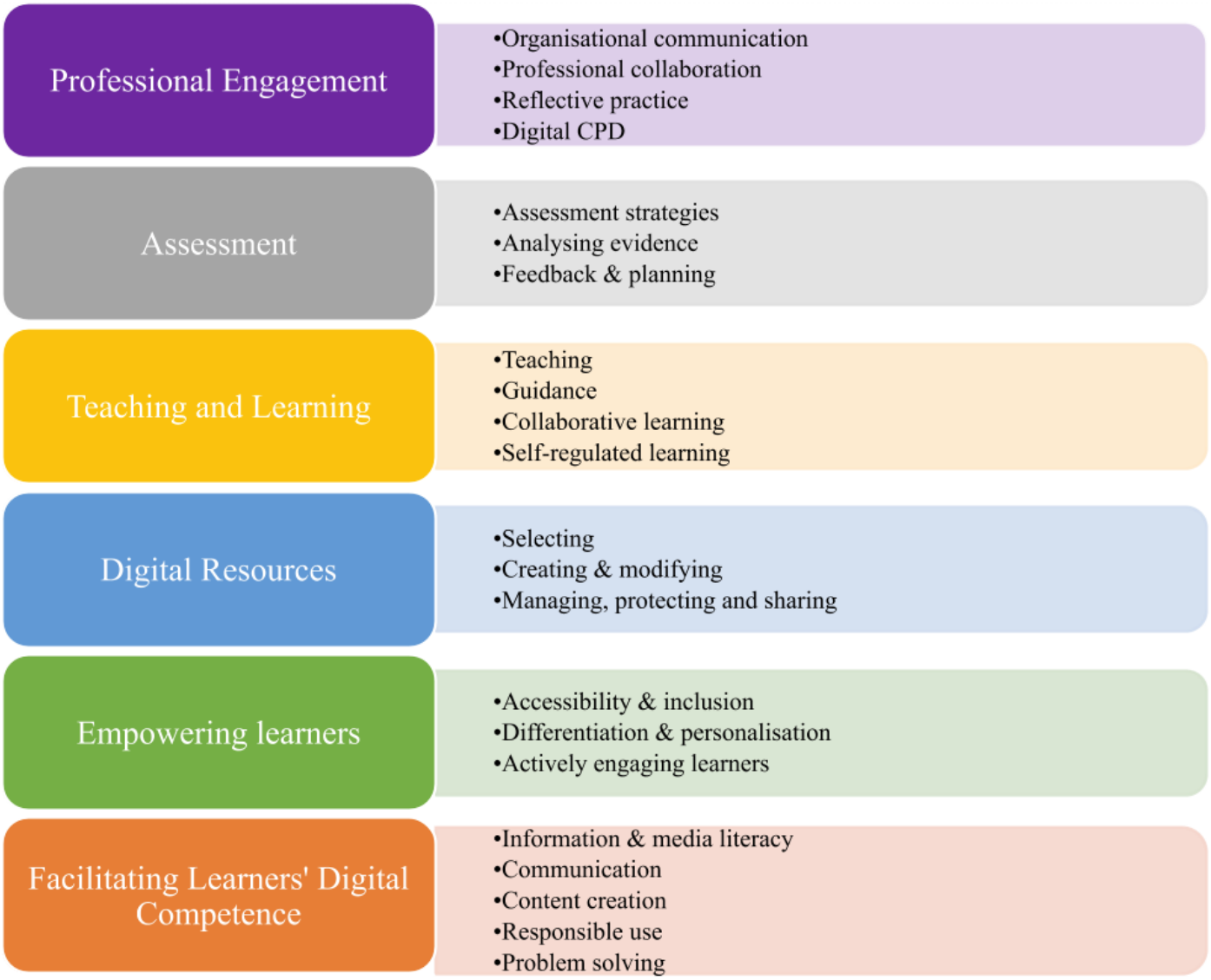

Figure 2: Elementary digital competences divided in areas (own elaboration based on Redecker and Punie, 2017)

These competence stages are linked to the six proficiency levels used by the Common European Framework of Reference for Languages (CEFR, 2001) and ranges from A1 (awareness) to C2 (innovation). As Figure 2 synthesizes, there is a commitment to present a reference framework directed towards educators at all levels of education and as members of the university academic community we are obliged to provide students with all these digital competences through the inclusion of significative activities in the classroom. The study that we here present aims at developing these six areas, due to the fact that we are (1) actively engaging students (empowering learners) in the (2) creation of content (facilitating learner's digital competence) that they can put into practice in their (3) future jobs as teachers (professional engagement), (4) assessing the activity (assessment) as part of the subject's grade, (5) working in groups (teaching and learning) and (6) selecting the information they want to publish on their blogs (digital resources).

The use of a blog-based activity in a classroom is, ultimately, a powerful tool that can have a direct impact on "students' perceptions of satisfaction and perceived impact on learning" (Ifinedo, 2017, p. 322). Active blogging can facilitate the understanding that student teachers can have of complex processes that might take place both in the classroom and outside (Luehmann & Frink, 2009). It can also facilitate management of learning on the part of primary school children by providing support knowledge (Huang & Yang, 2009) and by developing collaboration (Byington, 2011). These factors can favor the use of blogs but, in order for teacher trainees to benefit from them, they need to experience the difficulties involved in designing and actually creating them first hand.

Method

As already mentioned, this article aims at describing the constraints and difficulties encountered by students when they created a group blog as part of a fourth-year course (Didactics of the English Language) on the Degree of Primary Education. The activity was included in the course syllabus as part of the teaching innovation project "Web 2.0 for teachers of English in training (UAH / EV891)," which consisted in the use of blogs to incorporate teaching content that would serve in their professional development as teachers. Fifteen students were enrolled in the course Didactics of the English Language, and they created 6 blogs in groups of 3-4 students. This activity was firstly explained in the classroom, through a ninety-minute lecture on the setting up of a blog, and was later taken outside the classroom, as students had to from the beginning of the course until its end update the blog weekly with content related to their future job as teachers of Primary Education. Moreover, each group had to access the other group's blog and write comments, suggestions or include additional resources. The main research questions were the following:

- Which do students think are the constraints when creating blogs for Primary Education?
- Which uses do blogs have according to the students?
- Will students use this type of tool once they complete their degree?
- Which aspects from the creation of blogs has been the most and least complicated?

Students responded to an eight-item questionnaire as a part of the final assessment of this course. This questionnaire was delivered through SurveyMonkey and the participants responded to it online.

Results

In this chapter we will include the opinions and perceptions from fifteen students when asked about the creation of blogs. Each question will be accompanied by a graph that will show a clear overview of students' constraints.

Figure 3 shows the results obtained from "Do you consider blogs useful as part of your formation as a future teacher?". It is worth noting that here, as in every question posed in the questionnaire, all students recorded an answer, and none skipped.

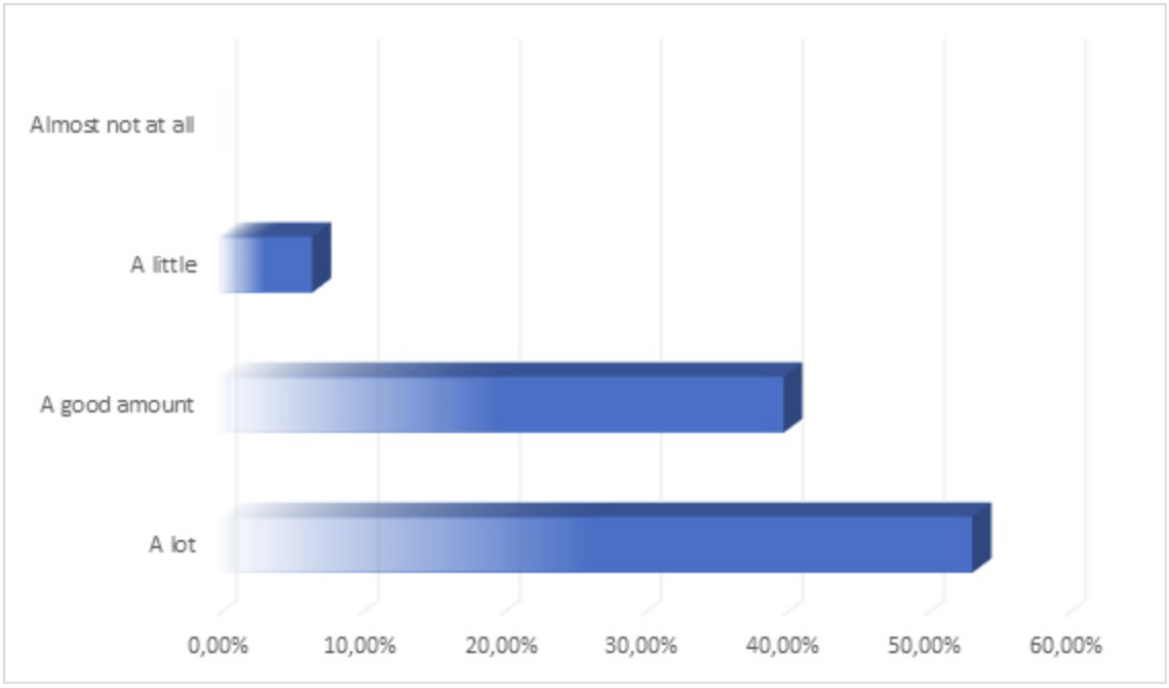

Figure 3: Do you consider blogs useful as part of your formation as a future teacher?

As illustrated on the graph above, categorical answers in the survey included 'a lot', 'a good amount', 'a little', and 'almost not at all'. The answer with the lowest score for this question was 'almost not at all' with zero percent (0 students) indicating this choice. This result was followed by 'a little' with 6.67% (1 student), 'a good amount' with 40% (6 students), and finally 'a lot' with the remaining 53.33% (8 students). These results show that most students viewed using blogs as part of their formation as teachers as useful. In fact, 93.33% of students surveyed looked favorably upon the usage of blogs.

Figure 4 indicates results obtained from "Is it worth the effort to create social applications for your own future practice?". As aforementioned, all students answered this question. As can be seen on the table below, options for answers here were arranged similarly to question one and included 'yes, a lot', 'yes, a good amount', 'no, not very much', and 'no, too much effort'.

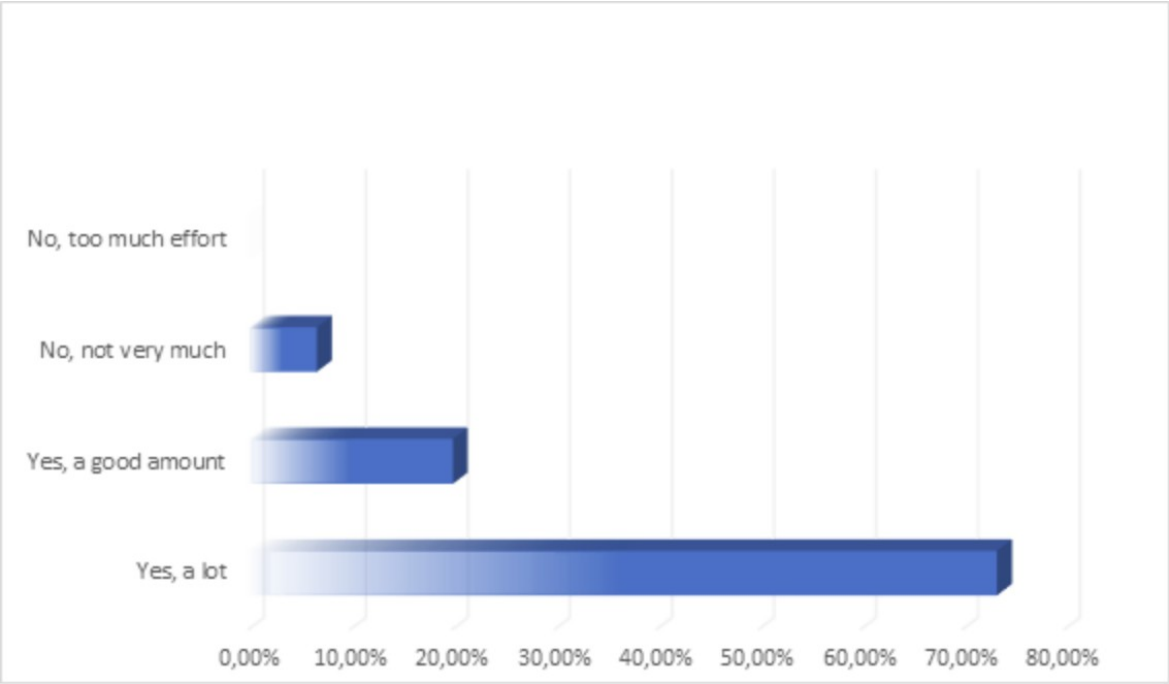

Figure 4: Is it worth the effort to create social applications for your own future practice?

Once again, zero percent (0 students) selected the response 'no, too much effort', thus showing that all students found expending effort in creating social applications for future use at least somewhat worth the effort. Following this result, 6.67% (1 student) indicated said effort as 'no, not very' useful, while 20% (3 students) indicated the effort as 'yes, a good amount' when referring to the usefulness of blogs. Finally, the remaining 73.33% (11 students) recorded 'yes, a lot' about blog usefulness. It is interesting to note here that while 73.33% of students said blogs were worth the effort in their future practice as future teachers, 53.33% responded that they were very useful during their training process. This extrapolation illustrates a 20% difference (3 students) between the answers of the two questions, and it would be useful to determine the reasoning behind the discrepancy shown.

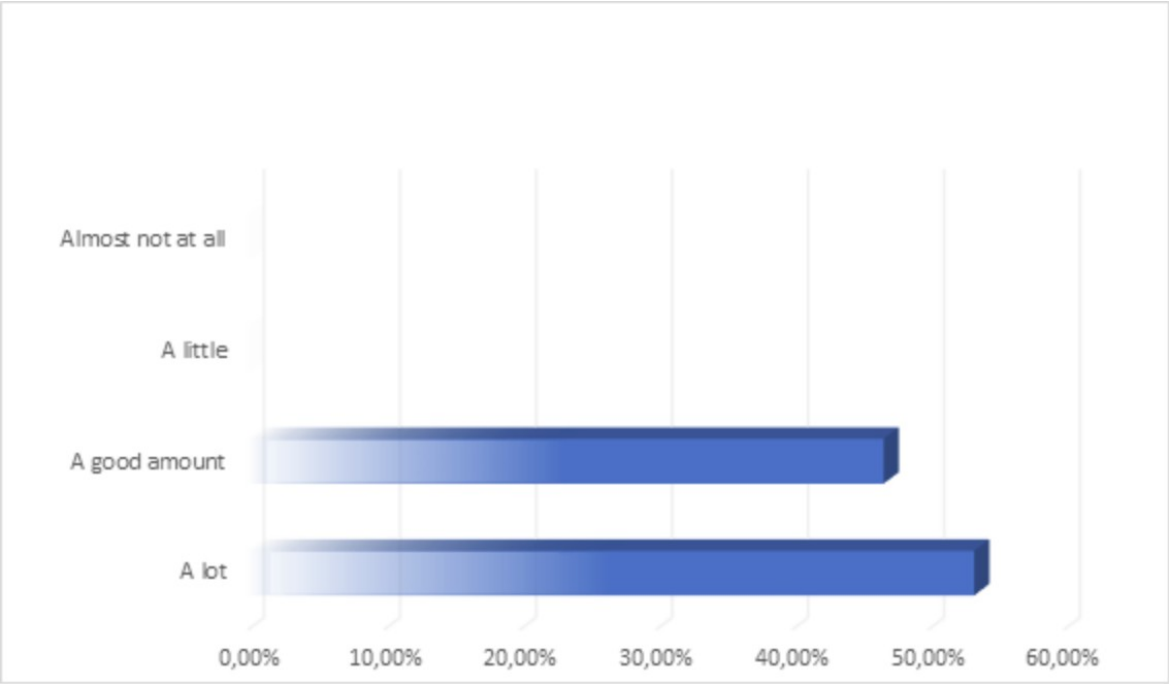

Figure 5: Is it reasonable to ask for this kind of work in a didactics class?

Figure 5 indicates results obtained from "Is it reasonable to ask for this kind of work in a didactics class?". Here, just as in Figure 3, answers included 'a lot', 'a good amount', 'a little', and 'almost not at all'. As reflected in the graph, all students indicated either 'a lot' or 'a good amount', and no students responded negatively with 'a little' or 'almost not at all'. This shows that all students participating felt that it was perfectly reasonable to ask for blog work in a course. This result corroborates the findings from previous questions, which indicate that most participants (over 50%) find blogs useful and worth the effort.

Figure 6 shows the results obtained from "What should blogs be used for in the formation of teachers? Indicate the three most pertinent responses." Here, eight response options were entered, including (1) 'to communicate themes of study in my class,' (2) 'to design activities that will serve my future and present primary students,' (3) 'to take informative tools and putting them into practice,' (4) 'to learn how to use new applications,' (5) 'to use tools in academic ways that were formally used other ways,' (6) 'to have fun in the classroom,' (7) 'to improve my writing in English,' and (8) 'to develop ideas on how to improve my teaching skills'.

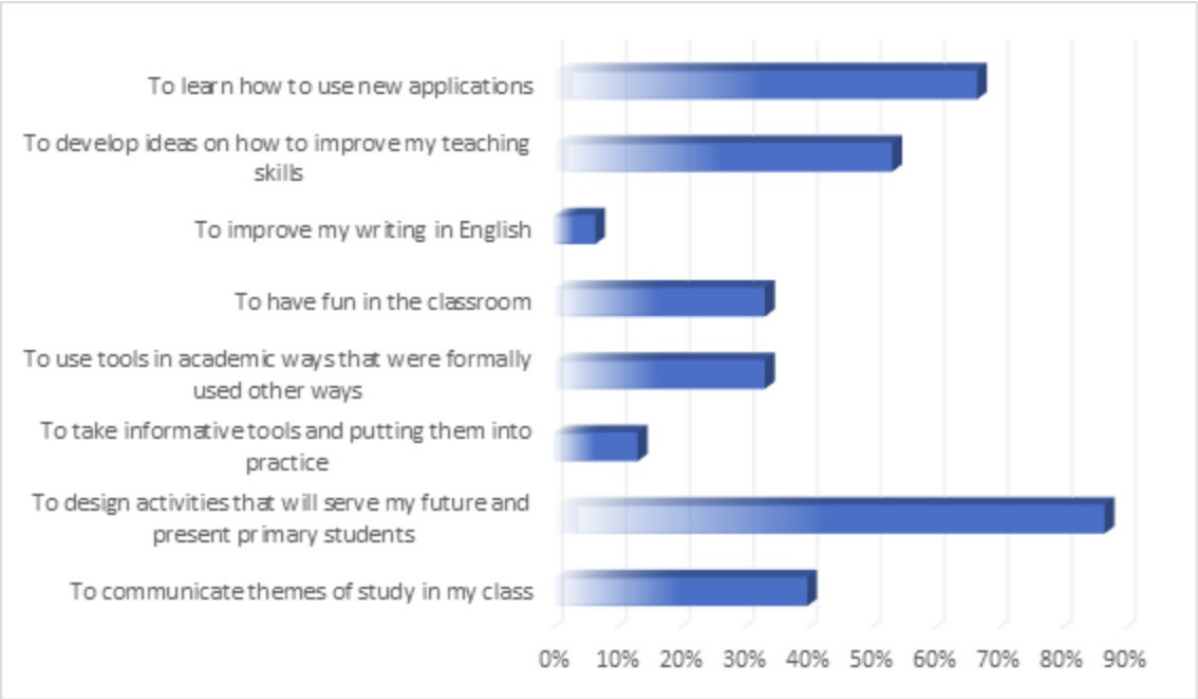

Figure 6: What should blogs be used for in the formation of teachers? Indicate the three most pertinent responses.

As results show, the three most pertinent responses chosen were that blogs should be used for the formation of teachers in order (1) to design activities that will be of use to my future and current primary students (86.67%), (2) to learn how to use new applications (66.67%) and (3) to develop ideas on how to improve my teaching skills (53.33%). This last reason was closely followed by the option of using blogs to communicate themes of study in my class (40%), to use tools in academic ways that were formally used other ways (33.33%) or to have fun in the classroom (33.33%). The two least favorite options were taking informative tools and putting them into practice (13.33%) and to improve my writing in English (6.67%).

13 students found the use of learning about these applications in the classroom and putting them into practice at university level useful for their current jobs as teachers as well as for their future ones. Closely linked is the second most popular answer, as 10 out of 15 students find learning about new applications of vital importance for their lives. It is, therefore, obvious that the third most frequent option would be the need to develop new ideas so as to improve their teaching skills. However, it is worth noting that only 8 students out of 15 found this choice among the three most pertinent. It is clear that students want and need the inclusion of subjects or courses in which applications and new technologies are paid close attention to, as they are in need of guidelines and parameters to take their teaching practice to the best technological level possible. These results show that students are aware of their importance in the education system and of the need of being qualify and up-to-date teachers.

Figure 7 shows the results obtained for “In which primary level should we introduce the use of blogs?”. As can be seen on the graph below, options for answers here were

arranged from ‘first or second level’, ‘third or fourth level’, ‘fifth or sixth level’, ‘they should not be used in primary levels’ and ‘it is complicated to use them with primary level students’.

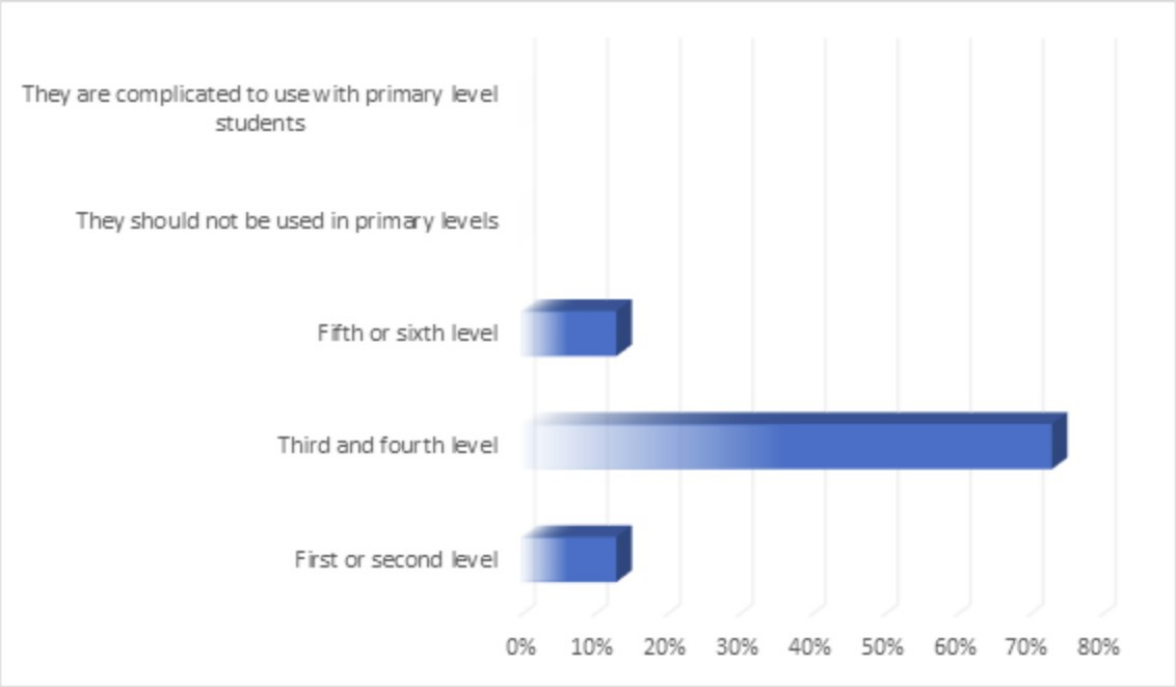

Figure 7: In which primary level should we introduce the use of blogs?

11 students out of 15 (73.33%) think that the best primary levels to introduce the use of blogs in the classroom are levels three and four. Whereas 13.33% of them decided on the first and second level or the fifth and sixth level. None of the students opted for the options in which the use of blogs was not recommended or too complicated for being used with primary students. These results clearly indicate the positive attitude that future primary teachers show towards the inclusion of blog-like activities in their classrooms, as Figures 3 and 4 have already attested. The next question is closely linked to this last one as it delves into the benefits and direct impact that the use of their own blogs could have among primary level students.

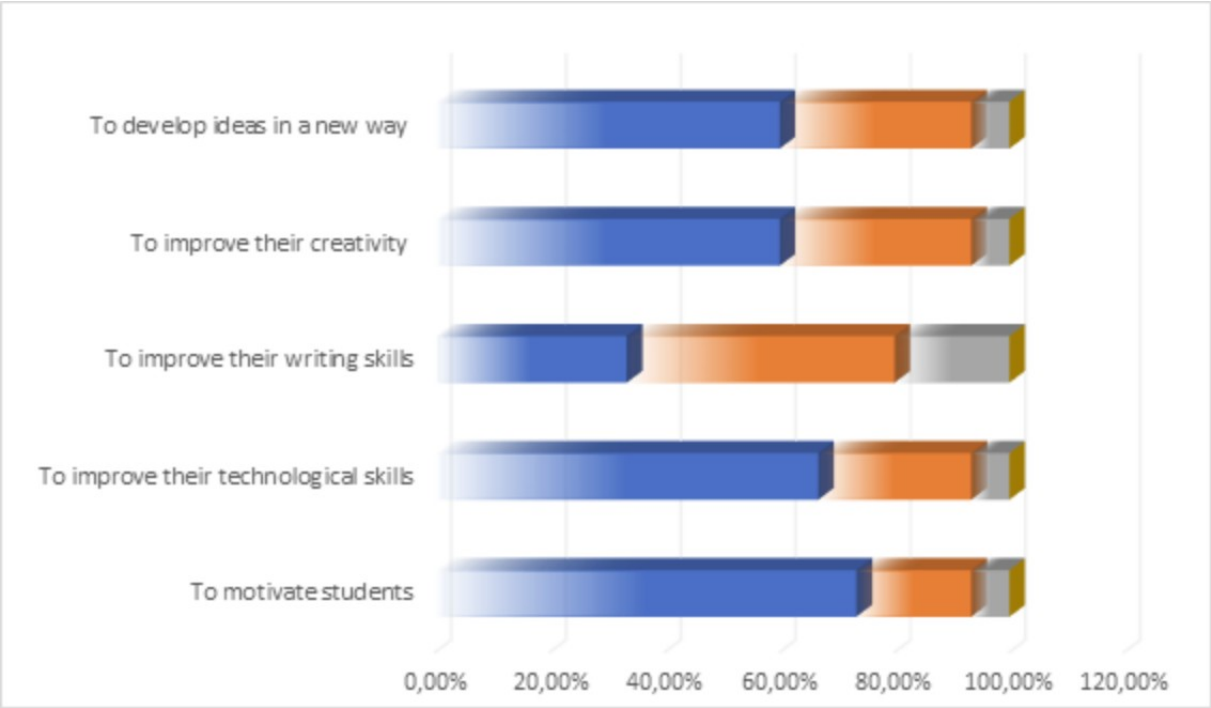

Figure 8: Which could be the most significant benefit for students of using blogs created by them in primary education?

As illustrated on Figure 8, six options were given to students to answer to the question "Which could be the most significant benefit for students of using blogs created by them in primary education"?: (1) to motivate students, (2) to improve their technological skills, (3) to improve their writing skills, (4) to improve their creativity and (5) to develop ideas in a new way. Categorical answers in the survey included 'a lot', 'a good amount', 'a little', and 'almost not at all'.

11 students out of 15 (73.33%) chose 'a lot' so as to describe that blogs are beneficial for students to motivate them. As for the second option, 10 students (66.67%) agreed 'a lot' on the fact that these help students develop their technological skills. The improvement of writing skills was thought to be quite beneficial for 7 students (46.67%), while for 9 students the improvement of creativity (60%) and the development of new ideas (60%) was also beneficial. These last two options clearly indicate that future teachers see the inclusion and creation of blogs by students as having a direct effect on their inventiveness, imagination and originality.

As Figure 8 shows, none of the students chose the option 'almost not at all' to describe the benefits listed, which reinforces the aforementioned idea. It is worth noting, though, that teachers see the use of blogs in primary level students as beneficial for improving students' writing skills, but they do not see them as useful for their own writing techniques development, as was seen in Figure 6. It would be interesting to find out the reason or reasons behind this discrepancy.

Figure 9 indicates the results obtained from asking several questions and statements related to the level of effort put by prospect teachers into this course activity. The questions are the following:

- How difficult was it to work with blogs?
- This activity has helped me learn about new tools I did not know about.
- This activity has helped me develop and improve my digital competence.
- This activity has helped me work with others.
- This activity will help me in my future job as primary teacher.
- This activity has helped me develop my creativity.
- This activity has helped me learn things I did not expect to learn at university.

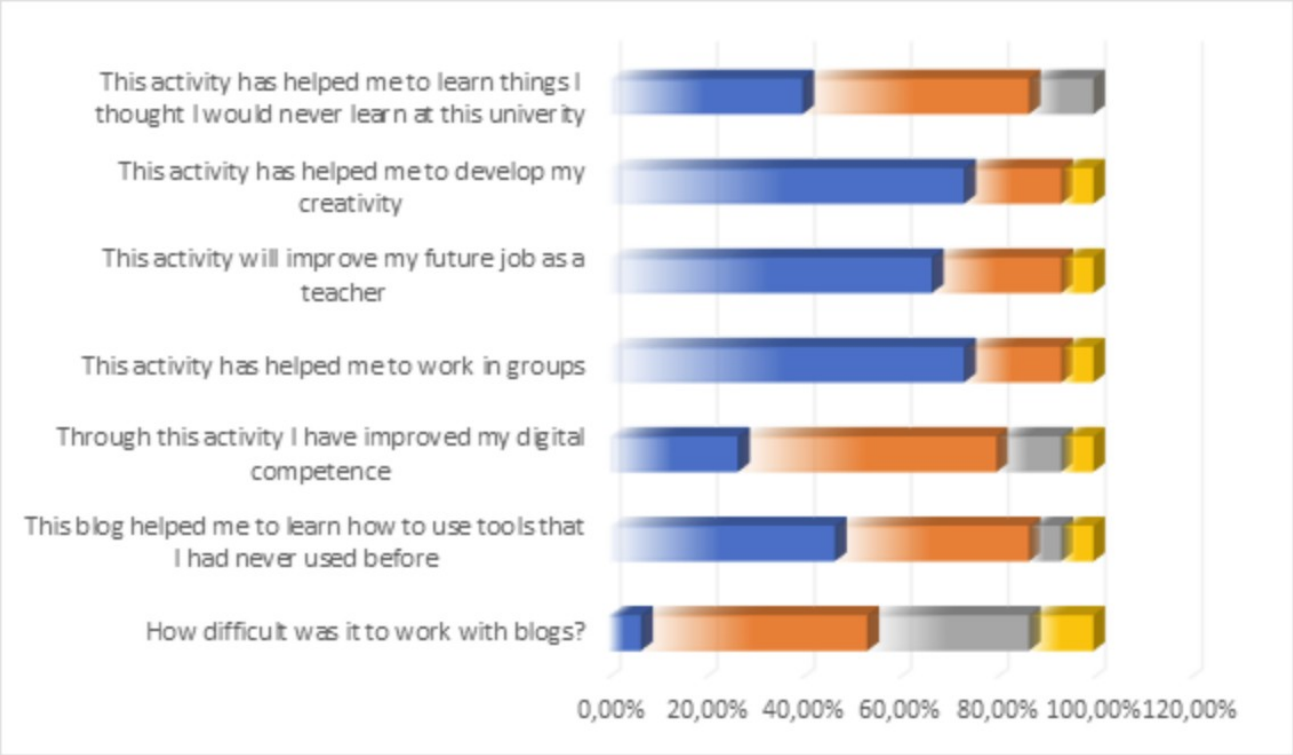

Figure 9: Regarding your personal work in this activity

As has been done in several questions of the survey, categorical answers included ‘a lot’, ‘a good amount’, ‘a little’, and ‘almost not at all’.

As the above included table shows, the design and work with blogs was not an easy task as 7 out of 15 students (46.67%) stated that it had been quite difficult to work with these. There is even one student that found this activity very complicated, as opposed to 5 who found it a little complicated and 2 who did not find it difficult at all.

As it has been demonstrated throughout this paper, the use of blogs has been beneficial for our students as they have learnt about new applications they were completely unaware of. There is data that supports this affirmation as 7 (46.66%) and 6 students (40%) state that the blog has helped them improve, a lot and quite, respectively, their knowledge on new technologies and software.

Students have to a great extent already developed their digital competence, hence, 4 students (26.67%) affirm that this activity has helped them improve ‘a lot’ their digital competence, whereas 8 students (53.33%) have developed it ‘quite a lot’.

Team-work has benefited ‘a lot’ from this activity as results show. 73.33% of students (11 out of 15) state the creation and development of blogs has improved the capacity of working in groups.

It is clear that the activity will help them in their careers as teachers of primary levels and results confirm this reality. 10 students (66.67%) are very positive and 4 students quite positive (26.67%) about the use they would be able to give of these applications in their future classes.

The development of creativity and imagination has also benefited from this activity as results demonstrate that 73.33% of students (11) have developed it a lot and 20% of students (3) quite a lot.

Finally, students were asked to analyze if the proposed activity has helped them learn things they would not expect to learn at university level, to which 6 students answered that they agree with this statement ‘a lot’ (40%), 7 students agreed with it ‘quite a lot’ (46.67%) and 2 students agreed only ‘a little’ with it (the remaining 13.33%).

There is only one student that answered to all these statements with the option ‘not at all’. As this is an anonymous survey, we would need to find out who this person is, if it is indeed the same person, and the reasons behind this situation: was it because of the lack of interest in new technologies? Because he or she found the activity very complicated to carry out? Or just because he or she found it useless?

The last question asked in this survey has to do with the general opinion of the activity in this course: ‘Do I consider this activity very positive in this course?’. The options given were again ‘a lot’, ‘quite a lot’, ‘a little’ and ‘almost not at all’.

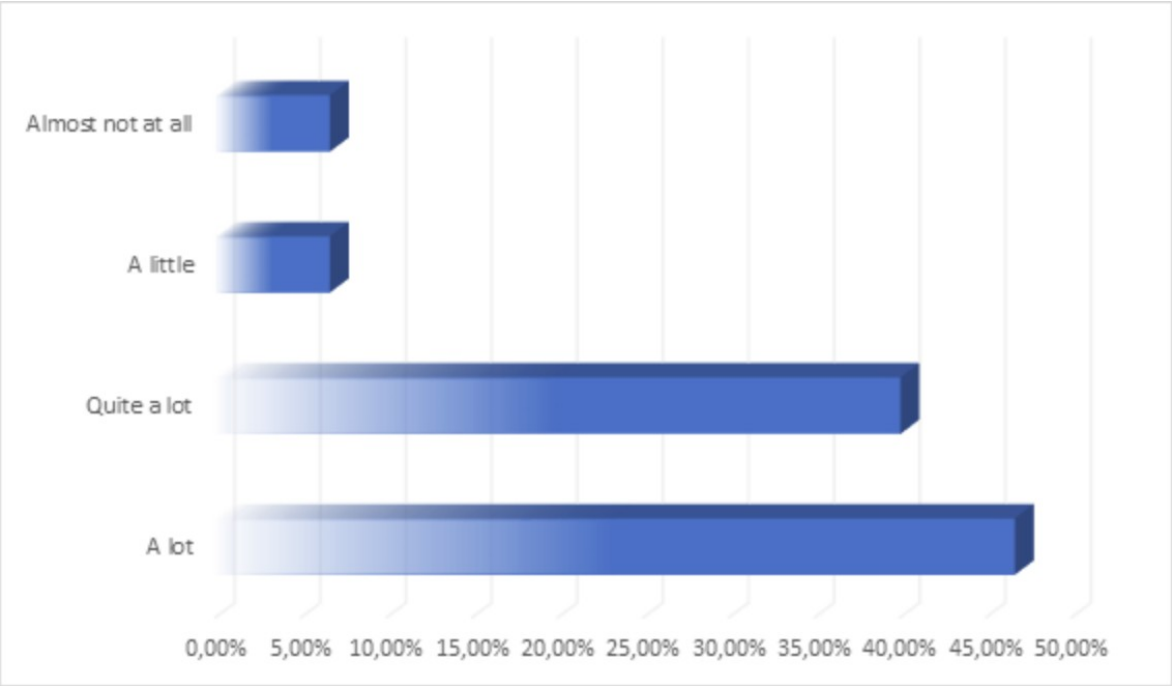

Figure 10: Do I consider this activity very positive in this course?

Following the results we have obtained throughout the entire survey, 7 students out of 15 (46.67%) consider this activity very useful in the course and 6 out of 15 (40%) see it as quite positive. The remaining 13.34% (2 students) do not agree with them as they find the activity not so positive. These last results are in accordance with the previous question (Figure 10) as there is somebody in the class that shows general discrepancy towards the use and inclusion of blogs in the classroom.

Conclusion

Though we are aware that this study represents a first approach to the difficulties and constraints students present when creating a blog for primary students, we believe that the produced results show the very positive attitude students show towards the inclusion of blog-like activities in the classroom. The use of significative activities that will enrich their teaching skills are welcomed, especially if related to the development of their digital competence.

In conclusion, active blogging is seen by students as very positive and useful for both their future careers and the development of their imagination and creativity. They find the inclusion of blogs in their training at university as reasonable and positive, as well as in their teaching practice in primary classes in which they see it as beneficial for students to develop motivation, technological skills, writing skills, and improve creativity and innovation. When asked about the amount of work put into the activity, they affirm that although it has been somewhat complicated, it has allowed them to develop their technological skills and digital competence, improve their team-work and learn things they would not have expected to learn at university level. It is worth noting, though, that there are some discrepancies in the results shown like, for instance, on the importance that prospect teachers give to the

improvement of their own writing skills through blogs and the benefits they see with the use of this tool for the development of this skill on their students. Furthermore, the differences found between Figure 3 and Figure 4 show another discrepancy on this survey, as 73.33% of students state that the use of social applications is worth the effort, while 53.33% of students find the use of blogs very useful as part of the formation of teachers. This extrapolation illustrates a 20% difference (3 students) between the answers of the two questions, and it would be useful to determine the reasoning behind the discrepancy shown.

The teacher trainees and teacher who participated in this teaching innovation project involving the creation of blogs for the teaching of English at the primary school level coincided in their impressions that this type of university assignment requires a substantial amount of time to complete and that a lack of prior experience complicates the situation. From the teacher's point of view, students completing this type of assignment also need assistance in structuring and explaining their ideas in a class presentation, often due to a lack of English-speaking ability or proficiency in the language. Nevertheless, the students found that the task was meaningful and adequate for the course. Teachers who are interested in implementing a similar project in their teacher training courses need to bear in mind the extra burden that students will find as they plan and create their blogs in groups. This is especially the case of those who are only able to create an "average" blog. If time is allotted from other course requirements and scaffolding is provided in terms of presentation structure and language, students will be able to benefit from the advantages of blog creation in the educational setting mentioned at the start to this article.

Future studies on the field could focus on how primary level teachers see the use of blogs in the classroom, if used whatsoever. Because, as pointed by Pinya, Tur & Rosselló (2016), there are still teachers with a very low level of digital and technological competence. Would they find that the creation of blogs also implies constraints and difficulties?

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Paradoxical paradigm proposals - Learning languages in mobile societies

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ABSTRACT

The concept of paradigms gives us the capacity to look analytically at historical scientific and intellectual episodes in a broader framework. It does however potentially also give us the capacity to look more analytically at contemporary scientific and intellectual activity and make conjectures and predictions. This paper looks at various contemporary pedagogic paradigms, including language learning and mobile learning, and suggests both their failings and then their replacement by an over-arching pedagogic paradigm more suited to societies permeated by personal digital technologies. This might be called the mobility, learning and language paradigm. The paper uses these examples as a way of exploiting paradigmatic thinking in order to catalyse intellectual progress.
Keywords: social; digital; language; learning; paradigms; mobility

RESUMEN

El concepto de paradigma nos permite mirar desde una perspectiva analítica los episodios científicos e intelectuales históricos en un marco global. Sin embargo, potencialmente también nos permite acercarnos analíticamente a la actividad científica e intelectual contemporánea y hacer conjeturas y predicciones al respecto. En este artículo se examinan diversos paradigmas pedagógicos contemporáneos relativos al aprendizaje de lenguas y el aprendizaje móvil, y se señalan sus deficiencias y limitaciones, para pasar a proponerse su sustitución por un paradigma pedagógico general más adecuado a las sociedades con tecnologías digitales personales. El artículo utiliza los conceptos de aprendizaje, lengua y movilidad como una forma de catalizar el progreso intelectual.
Palabras clave: social; digital; lengua; aprendizaje; paradigmas; movilidad.

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THIS PAPER ARGUES for the emergence, definition and promotion of a new educational paradigm, and highlights its application for adult language learning. This follows on from *mobile open social language learning*, or MOSLL, discussed elsewhere (Traxler et al 2018) and explored in the SWITCHED-ON project[1]. The authors argue that what are clearly its apparent predecessor educational paradigms, namely mobile learning, open learning, and social learning, are now inadequate since perhaps the start of the current decade[2], and make a *paradigm shift* necessary and imminent. Such a shift is not envisaged as an incremental change to what currently exists, or a convergence of one or more existing paradigms, but a fundamental departure from what currently exists.

The form of the argument is along Kuhnian (Kuhn 1970) lines, in looking at how these apparent predecessor or component paradigms are constituted and how discomforts, disquiets or discrepancies at their respective margins together constitute the impetus or justification for an incipient paradigm shift and thus for the emergence of a new paradigm. The authors reflect on the possibility that the existing paradigms grow out of a specific philosophical, in fact modernist, milieu and out of a particular set of political, technological and economic circumstances and that perhaps we need a new paradigm to cautiously reflect the new milieu with its new circumstances. In this sense there is a resonance with the ideas of evolutionary epistemology (Bradie 1986), especially the notion that knowledge itself evolves by something like Darwinian natural selection.

The purpose of this paper is to stimulate and provoke researchers in various communities to think about their work, their direction and findings in a wider context, and to raise helpful and productive questions. The structure of the paper is first to briefly explain the nature of paradigms and paradigm shifts and then test their relationship with innovations and their diffusion, and to critique some existing paradigms and some aspects of culture and politics in which they exist in order to finally enunciate a new paradigm.

Paradigms in Crisis

The argument for the paradigmatic crisis in canonical mobile learning has already been made (Traxler 2019a) but centres around mobile learning's foundational axioms being situated in settings where mobile devices were scarce, fragile, difficult, expensive, where learning with mobiles was innovative and institutional (and research was the consequence of specific economic and political conditions) and where the research community's mind-set was a legacy or inheritance from 1990s e-learning. Mobile learning, as defined in general terms to be learning mediated by personal connected mobile digital technologies (Traxler 2008), has now ironically become static, stuck in institutions that are not moving forwards, doing what it did ten years ago but to ever-smaller audiences. Authors still refine their definitions of 'mobile learning' but our worry is that these treat learning itself as unchanged and unchallenged (Traxler 2018a). While there is a plethora of different definitions, some key characteristics can be identified, namely that learning can be extended in terms of its

reach or catchment and enhanced and enriched in terms of its experience (Traxler 2019b). Implicit in these definitions is however little evidence that learning itself is changing as the nature of society changes together with its relation to technology within it.

Open learning, has been defined in general terms as learning that is accessible regardless educational qualifications, educational experiences and educational expectations (Keegan 1990). Whilst there are many different definitions, the focus is on the nature and meaning of 'open' rather than the nature and meaning of 'learning'. As such, it can be argued to be a manifestation of the open movement, is clearly a paradigm in trouble (e.g., Knox, 2013; Atkins *et al* 2007) and historically confused with distance learning (Lewis, 1986; Rumble, 1989). It is continuing to refine its principles, diversify its constituent disciplines and multiply its artefacts, whilst struggling to break through to wider popular acceptance and take-up in spite of continued official endorsement and in the face of the much stronger appeal of free systems, free software and free access. Open learning is stuck between the flat unstructured participative Web2.0 ideologies that it espouses and the hierarchic standards-driven Web1.0 institutions that try to promote it.

Social learning has been defined as individual learning that takes place in a social context and is hence influenced by social norms. Alternatively, it might be a process of social change in which people learn from each other in ways that can benefit some wider social-ecological system. It might be learning how to collaborate (Reed *et al* 2010). It is perhaps by its nature least easy to pin down as a clear paradigm and that may be its weakest point. *Sociality* has changed and *digitality* is now a major factor or ingredient; mobility and connectedness are ever increasing determinants of social life for a large proportion of adults in globally rather than geographical proximity and traditional groupings. The emerging sociality of mobility and connectedness defines its own learning, and this is part of our argument.

Language teaching as pedagogic practice suffers from a lack of response to the fluidity and fragmentation of language, brought about by the multicultural influence of different groups communicating online, extending its vocabulary and syntactic structures. Whilst languages have always been fluid, we argue that the scale and agency of that fluidity is vastly altered. It also suffers from a lack of recognition that personal digital technologies are not dumb or inert or passive conduits and receptacles of language (Traxler 2013, 2017, latter work refers specifically to the global South but is in fact generalizable). They are now deeply complicit in the transformation of language and its social and epistemological context (Traxler 2018b). Furthermore, language learning embraces a rather different and broader demographic and economic context, one populated by publishers and commercial schools, with a different take on change and shift, currently governed by a range of very specific business models which seem stuck in apps and courses.

We should emphasise at this point, because it becomes significant later, that the choice of language as a domain is not arbitrary. In fact, we regard learning in general and learning a

language in particular as almost synonymous at a conceptual level. Learning to converse with Germans and enter their community and culture is no different in essence from learning to converse with physicists and enter their community and culture, and is the mark of acceptance and competence.

While subsequent observations and analyses may refine or refute this initial position, there is however, an underlying assumption that any paradigm has a finite lifetime and carries within it the seeds of its own destruction. As the associated community mines out the obvious research questions and fills in all the blanks, it heads to the more uncertain periphery. In short, the paradigm, like Ourobus, is destined to eat itself and destroy its children[3].

Common to all of these paradigms is a failure to recognise that technology is no longer an inert add-on, comprised of, to repeat ourselves, dumb passive conduits and containers for language and/or learning. It is part of a dynamic – language, learning and digital technology are intrinsic and pervasive aspects of our societies, the same thing from three different angles. Specifically, even talking about *technology* is still seeing it as *other*.

This may point to specific but implicit common assumptions or tacit axioms that spring from the underlying modernist culture of all the paradigms we explore. There is a belief that teachers and their institutions should do the teaching and should do this from authoritative and canonical texts, that the nature of language, learning and society are stable and coherent enough for this to happen, that the methods, approaches and attitudes of the past fifty years can be extrapolated to the next fifty years, and that the role and purposes of education will continue to be largely taken-for-granted. There is also the remembrance of a society that was pre-digital, one that can still conceptualise technology as something that was added into society within living memory.

We should point out that we used definitions, albeit deliberately slightly vague ones, to define the paradigms but should in fact recognise that paradigms are social phenomena and perhaps it would be more accurate to say something like, ‘mobile learning is what people talk about at mobile learning conferences’.

It is of course also possible that these earlier paradigms all developed within a paradigm of *innovation*, in the economically and politically benign climate before the crash of 2008[4] and the rise of the neo-liberal marketisation of higher education, and that the failure of these earlier paradigms is merely the failure of the innovations paradigm to nurture and sustain its various progeny. Certainly the rhetoric and lexicon of *innovation*, derived from Rogers’ account (2010), for example *critical mass*, *early adopters* etc, was itself a clear example of a paradigm - it had axioms, advocates and orthodoxies - but its downfall, its catalyst for a paradigm shift and a new account of change, was the almost comprehensive failure of *innovations*, that is those changes that explicitly bought into the rhetoric and mechanisms derived from the canonical *diffusion of innovations* account, to endure, diffuse and sustain. This analysis might in part account for the rise of alternative formulations such

as the *theory of change (ToC*[5]*)*(Taplin *et al* 2013), currently popular with the international development community. The 'fluffy' evidence base for *innovation* and the lack of rigour did probably not help either and illustrate the fact that paradigms are not intrinsically evidence-based, since paradigms provide the context for evidence and evidence cannot stand outside paradigms.

A side effect of this discussion might be to stimulate the search for metrics of indicators of a paradigm's progress and maturity. Would bibliometric data, conference attendances and textual analysis tell us something about the cohesion, saturation and future of a paradigm?

So, we are keen to develop a new paradigm out of a critique or analysis of earlier paradigms in paradigmatic terms.

The Process

We will be analysing and critiquing the existing paradigms (in perhaps a mechanical, modernist and fundamentally Kuhnian fashion) in order to arrive at 'our' new paradigm by a logical and repeatable process, as much for the method as for the outcome. The ways in which we phrase our project seems to perfectly justify such an approach if we want a theoretical justification alongside any empirical or practical ones.

We will attempt to make the case that the emergence of a new paradigm is justified by a strictly canonical approach to the concept of paradigms. As we are specifically talking about a paradigm shift in the organisation of ideas, this discussion should however take place in a broader discussion of forms of change.

We would recognise that much of our current argument for the apparent sclerosis of paradigms rests on expertise and experience rather than evidence, and we hope that in future it would be possible, perhaps with more sophisticated bibliometrics and data analytics, to recognise a research paradigm that was struggling past maturity. Perhaps the proportion of circular citations or the reliance on dated definitive publications or the lack of new authors would be useful metrics. Perhaps data analytics working on research semantics would make this possible.

The diffusion of innovations framework (Rogers 2002) is also an account of change, of change travelling through communities, organisations and societies, change that may be behavioural, societal, ideological, technical, commercial, ... whatever, and crucially the accepted innovation framework attempts to identify those characteristics of the situation that determine whether an innovation, shift or change, will be successful. If we equate our proposed paradigm shift to the diffusion of an innovation, then we have another perspective on our arguments. There is of course an element of interdependence here - the diffusion of innovations is a widely accepted paradigm (and may shift) and paradigm shift, and the acceptance of a paradigmatic viewpoint, is the successful diffusion of an innovation. We

hope however to use the similarity between innovations and paradigm shifts as the basis for our discussion.

Learning too is, at an individual level, both a paradigm shift, since it transforms learners' conceptions, and an innovation, since it represents the replacement of old understandings by new ones. This does however promote a particularly transformative view of learning, one that is culturally specific and sets learning in a juxtaposition with *mere* training, with phrases like *job-ready employment skills* demonstrating the ambivalence and ambiguity that happens between these extremes.

Laying out the Foundations; Asking the Questions

So, to start, we must recollect exactly what is meant and what is implied by a paradigm and then what is implied by an innovation, in order to discuss whether our new paradigm is likely to be a successful innovation and whether it will precipitate and encapsulate a paradigm shift. These questions address our topic from a slightly different angle - in effect, firstly, is a paradigm shift anticipated by an analysis of existing paradigms in the way that we propose here and secondly will our new paradigm cohere and propagate successfully?

We set out earlier the defining characteristics of innovations and paradigms and then apply them. Our central questions are,

- what are the characteristics of a paradigm and what precipitates a shift in paradigms?
- what constitutes an innovation and what governs its diffusion?
- what is the role of culture in change?

Firstly, what are the characteristics of a paradigm and what precipitates a shift in paradigms?

A *paradigm* (Kuhn 1970) is characterised in practice by a community of adherents, some central axioms to which they adhere and then derived from these, the textbooks, professional bodies and exam questions used to enforce orthodoxy, and the research agenda used to extend it. It is definitely a social phenomenon not an abstract intellectual one. It may resemble a community of practice devoted to a specific intellectual mission. In our case the communities adhering to the various paradigms are taken to be drawn from the wider population of academics in the globalised universities and research institutes. As it matures, the community explores more and more of the consequences and questions that follow on from its foundational axioms and its adherents consolidate their beliefs in textbooks, professional bodies, institutes and journals, to use appropriate modern forms. This would mark the paradigm as vigorous and mature - and there might be a comparison here between the advance of the paradigm and the diffusion of an innovation. Necessarily it seems, as the more obvious and central details are filled in, the focus of enquiry moves further away from the central axioms and what seem to be anomalies, discrepancies, mistakes and contradictions start to appear. The literature is full of examples, the most frequent being the rise of heliocentric astronomy, the rise of Darwinian evolution, the rise of object-oriented

programming, the rise of grounded theory and the rise of special relativistic physics. It would be methodologically fair to ask whether there were examples of paradigms where no such anomalies, discrepancies, mistakes and contradictions appeared and no shift took place, fair but in the current context irrelevant.

It would also be fair to ask whether these anomalies, discrepancies, mistakes and contradictions constituted evidence that would decisively resolve which paradigm, the established or the challenger, was objectively correct. At this point, we should emphasise that evidence of itself does not refute or support competing paradigms, in that paradigms provide the context in which evidence can be understood. So, the fossil record that might seem to support theories of Darwinian evolution and natural selection, might also have been planted by a mischievous creator to test our faith.

There is almost a resemblance between a paradigm shift and the catastrophes of *catastrophe theory*, those large-scale qualitative events triggered or presaged by a multitude of miniscule quantitative changes (Zeeman 1976) and so perhaps we should look for our incipient catastrophic paradigm shift amongst the minute manifestations of academic or scientific data, perhaps bibliometric data, search terms, research grants or conference attendances.

Secondly, what constitutes an innovation and what governs its diffusion?

An *innovation*, specifically a successful innovation, is, according to the accounts of the diffusion of innovations (Rogers 2002), characterised in practice by four sets of characteristics, namely that successful innovation, meaning the spread, take-up and adoption of a new idea, concept, practice, project, process or product or in our case a paradigm, depend on four broad characteristics, as follows. "*Diffusion* is the process through which (1) an innovation, the paradigm, (2) is communicated through certain channels (3) over time (4) among the members of a social system" (Rogers, 2002:990).

The first covers a range of general characteristics of the innovation itself. The characteristics of an innovation, as perceived by the members of a social system, determine its rate of adoption. These first set of characteristics are:

1. relative advantage, namely is the innovation, the new paradigm, perceived as more advantageous than whatever it might supersede.
2. compatibility, is the innovation perceived as consistent with the existing values, past experiences, and needs of potential adopters
3. complexity, is the innovation perceived as difficult to understand and use.
4. trialability, meaning, can the innovation be experimented with on a limited basis, with minimal commitment and risk.
5. observability, is whether the results of an innovation are visible to others.

So, innovations that are perceived by individuals as having greater relative advantage, compatibility, trialability, observability, and less complexity will be adopted more rapidly

than other innovations. In our case, we ought to be able to conduct this analysis with paradigms to account for a successful paradigm after the shift.

Secondly, formal or mass media channels are more effective in creating initial knowledge of innovations, the new paradigm, whereas informal or interpersonal channels are more effective in forming and changing attitudes toward a new paradigm, and thus influencing the decision to adopt or reject it.

Thirdly, innovativeness is the degree to which an individual, organisation, social system or other unit of adoption is relatively earlier in adopting new ideas than other members of a social system. And here we have the classic, five adopter categories of the members of the social system on the basis on their innovativeness, are: (1) innovators, (2) early adopters, (3) early majority, (4) late majority, and (5) laggards. The success of the innovation depends on the composition of the social system in respect of these categories and they are in some respects representative of wider national, generational and national culture. It also depends on the processes used to spread the innovation through it (Rogers 2002).

Finally, the fourth factor is culture, in this case, academic or intellectual culture, and this carries us forward to a later part of our discussion. Rogers and others make the point that organisational and institutional, that is university, cultures differ, and may be, for example, collegial, command-driven, consensual or some variant or combination of these (Rogers and Shoemaker 1971; Baldridge 1971). We have to remember the observations about the extent to which universities in particular embody and embrace conflicting cultural modes simultaneously, from the managerial top-down culture to the collegial and consensual, albeit competitive, culture of the academics (Winter 2009; Hellawell & Hancock, 2001). Rogers' work was widely used in educational technology during the era of innovation (Sahin, 2006).

Critics of the innovations approach would argue that the theory, if that's what it is, is flawed, in perhaps being based in particular Western consensual cultures and of only documenting successful innovations (Rogers & Adhikarya, 1979; Lyytinen & Damsgaard, 2001). We can ask about the evidence or experience of unsuccessful innovations, or paradigms, but the literature is understandably a lot less forthcoming about events that did not actually happen.

One **subsidiary question** that arises from our organisation of this argument is whether, despite obvious differences in terminology, granularity, emphasis and provenance, these two accounts are talking about fundamentally the same thing. The subsidiary question is, are paradigm shifts and innovations that diffuse essentially the same thing?

So, having outlined the two concepts, we can now attempt an answer and attempt to relate it to our current concern, that of developing and defending a new paradigm. On balance, yes, there is sufficient similarity or overlap to make this a fruitful perspective. There might, of course, also be other relevant theories, accounts, approaches and viewpoints.

Academics Responding to Change (Trowler 1998) is one such. It describes and analyses how English university lecturers variously responded to a change in curriculum philosophy. There were various individual attitudes and behaviours in the academics confronting this change. There were apparently two dimensions, mutually independent, that would account for them:

i. one axis showing attitudes from *content* to *discontent*
ii. the other axis showing behaviour from *working around/changing policy* - or in our case - *paradigm,* to *accepting the status quo*

Combining these two dimensions gave four possible states

1. *swimming*, that is content and accepting *status quo*
2. *sinking*, that is discontent and accepting *status quo*
3. *using coping strategies*, that is discontent and working around/changing policy
4. *policy or rather paradigm reconstruction*, that is content and working around/changing paradigm

Whilst there are differences in granularity and focus, the analysis is another view of the likely range of reactions to an education innovation or a shift in educational paradigm, and could be said to define a range of possible sub-cultures within an academic institution. This earlier work obviously predates today's more managerialist, corporate and competitive universities in a world of globalised higher education informed by neo-liberal and consumerist ideologies (McNay 1995; Farnham 1999). Academics are under increased and rather different pressures to change (though no longer to *innovate*) and perhaps we need to adapt and apply a rather different typology to them perhaps the connected traveller, the liquid modernist, swimming in permanent beta, someone for whom the obvious and eager response to life's challenges, opportunities and changes is to move and connect, to travel and transport, as opposed to the *sedentarian*, for whom there is safety in stability, satisfaction in stasis, peace in passivity. The **questions** arising out of Trowler's earlier analysis and taxonomy are, how would the different categories or sub-cultures respond to our proposed paradigm, would they swim or sink? This is not to assume that these remarks or factors are generalizable to other places or communities that host a paradigm, merely that they illustrate the wealth of possible factors.

We need however at this point to clarify two inter-related questions of take-up and acceptance, the first being, will teachers, academics, lecturers and perhaps their managers, institutions and trainers switch their pedagogic allegiances and make the paradigm shift, and secondly, will their students and learners, and perhaps parents, employers and other stakeholders accept or even notice the shift? It could be argued that these are moot points and not even observable or verifiable since the evidence is often of dramatic differences between the espoused pedagogy and the enacted pedagogy, and of many in the education

communities not knowing or noticing any differences or changes in pedagogy. This is probably telling us that a paradigm shift in pedagogy can only be observed in teachers who actually have espoused a pedagogy, irrespective of whether they are enacted. Perhaps this kind of pedagogic change is propagated by authoritative thought leaders and teachers, and lecturers engaged with learners are swept along by the new orthodoxy. This is perhaps the point where Trowler's (1998) work or something similar is useful.

Another more pragmatic approach to change and shift is captured in the Concerns Based Adoption Model (Anderson 1997; Roach *et al* 2009). Again, this is nationally and culturally specific. It is included here to add to the diversity of perspectives and issues that might come, filtered through local culture, into play. It says that anyone attempting to promote change amongst academics must first reassure them that new practices will not involve loss of face or loss of job. In our discussion, this may not be possible, and this change or shift may not happen. So, we would ask, how does our proposed paradigm disturb, disconcert or appease teachers, lectures and researchers? Or their learners and managers? Evidence from various sources in the empirical data from digital literacy research suggests that lecturers are already feeling disempowered by students with greater digital competence than their own and perhaps this is not a good omen for a more radical shift. It does however reflect the increasing discrepancy between students' digital experiences within formal education and their digital experiences before, after and alongside formal education, in *real life*.

A similar factor may be any *theory of moral panic*, any theory that describes the artificial moral climate that inhibits change (Critcher 2008), and here we should remember press prognostications about cyber-bullying, sexting and mobiles (Goggin 2012) and how these kinds of linkage might slow down any movement away from the status quo or any paradigm shift. This might however be contrasted or contradicted with the advantages of *positive deviance,* (Pascale *et al* 2010*),* meaning the advantages to oneself or others of breaking away from the crowd, of paradigm shifting.

So thirdly, what is the role of culture in change?

Noticing however that this was a very culturally specific analysis we must attempt to explicitly factor culture in, as best we can (Schein, 1991; Hall 1976). Anecdotal accounts of culture are of no use and we need ways to address the differences and distances between cultures as a way to predict the differences in their likely reaction to our proposed paradigm shift or educational innovation, to engage in some sort of cultural calibration.

The obvious source of the necessary tools and measures is Hofstede, his colleagues and competitors. His work (Hofstede 1997, 2001) looks at different cultures and proposes that any culture, strictly speaking any national culture, can be characterised by a handful of variables or dimensions or axes, by a handful of quantifiable variables on a handful of axes, for example,

- risk-taking vs. risk-avoidance
- individualism vs. collectivism
- hierarchy vs. equality
- the extent of gender inequality
- control vs. consensus
- short-term vs long-term orientation (Minkov & Hofstede 2012)
- indulgence vs. restraint (Hofstede & Minkov, 2010).

The details vary and perhaps are not in themselves important, but they have numbers (if one is interested at a country or nationality level, there is even a mobile app giving a straight read-out across all the axes). These axes could tell us something about how well different pedagogic paradigms (social learning for example) are aligned to different cultures and enrich Rogers' account of the medium through which innovations or paradigm shifts travel. If we argued that the dominant global culture derives much from the relatively risk-taking and individualistic culture of North America, we can see why some globalised pedagogies fail to engage with cultures in other parts of the world, ones that are either more cautious or more communal, and why this might be true of our proposed new paradigm.

Obviously, there are concerns about granularity – are we working at an inappropriate national, regional or local level and making assumptions about homogeneity, stability and consistency? And there are other concerns about seeming to understand culture as merely one-dimensional and ignoring the ways in which individuals populate varied aspects of various cultures – generational, ethnic, religious, gendered, political, socio-economic and caste/class to name but a few. And this even without factoring in those more fragmentary, volatile and ephemeral cultures in cyberspace.

Alternatives to Hofstede, though ones exposed to comparable criticisms, propose various other dimensions, axes and attributes. One is the Lewis Model (1999), according to which cultures can be classified in relation to three main categories focused more on communication and interaction skills. These are firstly, linear-active, secondly, multi-active and thirdly, reactive. People in linear-active cultures demonstrate task orientation. They look for technical competence, place facts before sentiment, logic before emotion; they are deal-orientated, focusing their own attention and that of their community on immediate achievements and results. They are orderly, stick to agendas and inspire their community with their careful planning. Multi-active people are much more extrovert, rely on their eloquence and ability to persuade and use human force as an inspirational factor. They often complete human transactions emotionally, investing the time to developing the contact to the limit. These people are networkers, working according to people-time rather than clock-time. Finally, people in reactive cultures are equally people-orientated but dominate with knowledge, patience and quiet control. They display modesty and courtesy, despite their accepted seniority. They create a harmonious atmosphere for teamwork. Subtle body

language replaces excessive words. They know their communities well, giving them balance and the ability to react to complex pressures.

There is also the Inglehart-Welzel cultural map (Inglehart & Welzel 2005, 2010), dividing countries along axes of traditional vs secular-rational and survival vs self-expression values. Each of these dimensions is strongly correlated with scores of other important orientations. The traditional vs secular-rational values dimension reflects the contrast between societies in which religion is very important and those in which it is not. A wide range of other orientations are closely linked with this dimension. Societies near the traditional pole emphasize the importance of parent-child ties and deference to authority, along with absolute standards and traditional family values, and reject divorce, abortion, euthanasia, and suicide. These societies have high levels of national pride, and a nationalistic outlook. Societies with secular-rational values have the opposite preferences on all of these topics. The second dimension is linked with the transition from industrial society to post-industrial societies, which brings a polarization between survival and self-expression. The argument is that unprecedented wealth has accumulated in advanced societies in recent generations means that an increasing share of the population has grown up taking survival for granted. Thus, priorities have shifted from an overwhelming emphasis on economic and physical security toward an increasing emphasis on subjective well-being, self-expression and quality of life.

Both of these alternatives to Hofstede suggest a variety of competing cultural factors that may inform education and research cultures and affect an innovation or paradigm shift.

This allows us to consider the influence of risk, authority, trust and consensus on shift, innovation and change. Rao *et al* (2018) discuss these in relation to education and learning.

The Politics of Our Paradigm

We should not assume however that these forces work themselves out in some neutral homogeneous space – no, digital technology is the product and expression, perhaps the defining characteristic, of one specific society, language, culture and political system, and the institutions and actors that espouse or resist paradigms and innovations are all positioned somewhere in a political (and economic and social) space. To be clear, we are talking about technologies that are mostly designed in America, made in China and sold by global corporations. The differential effect on aspects of learning and language are exemplified by, for example, the balance of languages supported or not supported by different mobiles, social media, translation technologies, word processors, dictation systems, autocorrect, operating systems, predictive texts, graphic interfaces and keyboards, and the likewise balance of pedagogies by different aspects of digital technology (Traxler 2017). The consequences for our proposed paradigm include the need to recognise the nature of hegemony in language, learning and digital technology and its impact on fragile languages, small market segments and less profitable pedagogies.

We must recognise, furthermore, in a more *small-p-political* sense, that the paradigms are usually expressed and operationalised as projects, as research projects and development projects and that these projects exist within the context of stable, albeit simplified, paradigms that determine which are funded, disseminated and managed. There is an argument that the project management environment is pre-disposed to steady improvement within established ideas, and that the funders of research projects are predisposed to projects that offer technical and tactical improvements within an established paradigm rather than (riskier) ones that challenge accepted thinking (Traxler 2016, refers to the global South but easily generalisable to the global context).

Unfortunately, our new paradigm is not the vanishingly small intersection on yet another Venn diagram of modern digital learning, purporting to be the next framework or model - its name misleads, all names do. This is especially true here, where we have a selection of adjectives seeming to constrain or limit the fundamental concept of learning without actually recognising that learning itself, in the world we are describing, is fundamentally changed (Traxler 2018a).

Our critique is based on the need to build a new learning, one based on the changed epistemological foundations of society and the changed basis for change, perhaps learning in liquid modernity (Bauman 2000). These epistemological foundations actually vary from culture to culture, from country to country; each community has its own history of learning and knowing, but all are impacted by movement and connection.

Furthermore, even in the limited context of a modernist discourse, we must not only consider the ongoing growth of mobility and connectedness in the technical senses but the synergy and convergence with other technological developments. These undoubtedly include the Internet of things (IoT). In our current context this will have the effect of making the physical environment - or rather those parts that are economically and scientifically useful and technically possible - more wrapped into the digital environment, populating cyberspace and phone space with more varied active entities. Artificial intelligence (AI) will have a comparable impact as more apparent intelligence is built into the digital environment. So, we must position our paradigm accordingly. If it is to be of any valuable in the middle-term future, our new paradigm must offer the perception of increasing differential advantage or utility compared to its older competitors. Its axiomatic alignment with societies characterised by massive mobility and connectivity are clearly in its favour and needs to be worked through. Certainly, the connotations of *learning* and *language* will evolve ever more rapidly even if the denotations lag behind.

Espousing a 'Theory of Change' (TOC)

Of course, we could shift the focus from asking whether our new paradigm would propagate and embed to asking how we could ensure that it would! Certainly, Rogers and his followers have identified the various policy options and strategies that might be used within organisations and societies, and the relationships between them. These include exemplars, champions, opinion-formers, early adopters … the classic lexicon (Dooley 1999). So how would these work, how could we adapt Rogers' work to effect a paradigm shift?

If culture were not an issue, we could draw on the strategies implied across a vast range of initiatives that have exploited the diffusion of innovations concepts (Kezar & Eckel 2002; Dearing 2009; Jebeile 2003), namely co-opting innovators, opinion-formers and early adopters, supporting small-scale pilots and projects, using informal channels alongside formal ones and as a last resort using regulation and enforcement.

We should however ask how well our new paradigm matches the earlier set[6] of characteristics for a successful innovation and what do these criteria mean in the context of a conceptual and theoretical innovation. In terms of the first characteristic, we ask,

1. Is it offering a relative advantage? We hope our new paradigm as it emerges is better aligned to people's experiences of the societies in which they live.
2. Is it trialable? Our new paradigm, being conceptual, can clearly be tested alongside any existing paradigm, and thought experiments can be devised to refine it.
3. Is it compatible, meaning compatible with existing values, past experiences, and needs of potential adopters? This is interesting because at a certain point these past experiences begin to lose their coherence and cease to meet the needs of existing adherents and thus provide the opportunity for a new paradigm.
4. Is it perceived as complex? We hope not, because the whole point of a paradigm shift is to resolve confusion and reduce complexity.
5. Is it observable? As the new paradigm becomes operationalised, meaning as a research agenda emerges, with foundational texts and leading advocates, opportunities emerge to observe its implications and consequences.

The second characteristic is communication, meaning the means by which an understanding and acceptance of paradigms takes place. For our new paradigm, there is a complication in that whilst academia already has its channels, both formal and informal, our new paradigm proposes a better alignment with societies where mobility and connection redefine these channels. So, our new paradigm is by definition better suited to these societies. This is compounded with the time characteristic. We suggest our new paradigm can out-compete any older ones in terms of the rapidity with which it can spread, again, because by its nature it is more attuned to digital media than its predecessors.

Finally, there is innovativeness, the degree to which individuals, organisations or social systems. This is mostly where culture kicks in. We must ask, if we use Hofstede's dimensions, questions like, how attractive is our new paradigms to risk-taking or to risk-averse cultures, to consensual or authoritarian cultures, to individualistic or collectivist cultures? We are however talking mostly about the cultures inside educational research, and its communities and institutions, inflected somewhat by the culture of their host societies, and this takes us back to some analysis comparable to Trowler's, suggesting responses that are fragmented across a range of categories. Again, the medium is the message, or rather, the culture is the innovation, because digital media define their cultures, alongside and entwined with physical ones, suggesting our new paradigm is innately aligned to digital culture.

However, our new paradigm is not comfortably situated in a modernist discourse; its analysis is based around an account of societies that are distinctly postmodern. There are accounts of the impact of digital technology, on the abundance of mobility and connectedness, that range from the merely evidence-based, technical and quotidian (which in the current context it might be inappropriate to identify) to the speculative and philosophical (for example Kirby 2009; Fortunati 2002; Geser 2004; Nyı´ri 2007; Cooper 2002) and so it is not fanciful to see our new paradigm as potentially or partially postmodern, especially given the centrality of language. This does however put it in an uneasy relationship with modernity, the mother of paradigms; in that sense our proposed paradigm is perhaps paradoxical.

The New Paradigm

Taking a canonical Kuhnian approach, our new paradigm is based upon the following axiom, subject to improvement and revision

> *in most societies today, characterised as they are by permanent, ubiquitous and pervasive connectedness and mobility, language and learning and digital technology are no longer separable or discrete; they are simply and merely manifestations and aspects of the ways things now are, skewed however by the powerful interests that control bandwidth and connectivity, that control the design and manufacture of technology, that control education systems and economic opportunities*

This only has to be plausible, not objectively or verifiably true, and to be thought to be effective in solving or resolving discrepancies and discomforts in earlier paradigms.

If we have to give our new paradigm a name, then provisionally and clumsily, it is the *mobility, learning and language* paradigm.

And in talking of societies characterised by mobility, we embrace "five highly interdependent 'mobilities' that form and re-form diverse networks:

- corporeal travel of people for work, leisure, family life, pleasure, migration and escape.

- physical movement of objects delivered to producers, consumers and retailers.
- imaginative travel elsewhere through images of places and peoples upon TV (1 billion worldwide).
- virtual travel often in real time on the internet so transcending geographical and social distance.
- communicative travel through person-to-person messages via letters, telephone, fax and mobile."

(Urry 2007: 47 & elsewhere)

and take these as the transformed foundations of language and learning. Broadly speaking our research agenda could then address questions like,

- 'what, in more detail, characterises and differentiates these societies, from each other and from earlier models of society?',
  - in terms, for example, of social practices and norms, political organisation and activity, economic transactions and commodities, expressive and creative genres, the nature of culture and hegemony, the nature of epistemology and ontology, the nature of exclusion, development, disenfranchisement and disadvantage
  - how does our particular depiction of societies align or interact with other parallel depictions of societies impacted by climate change and ecological degradation, or by the rise of neo-liberalism, populism, radicalism and nationalism?
- 'what is the nature of learning, and what is its purpose?' which leads to more specific questions about the definition and nature of epistemology, pedagogy and didactics,
  - and practically how should we conceptualise the roles and responsibilities of educators, their organisations and institutions and their practices and procedures, such as courses, exams, qualifications and
  - the nature of learning in relation to existing pedagogic theories such as connectivism, constructivism etc?
- 'what is the nature of language?', meaning what are the symbols, conventions, interactions, contexts, media and gestures that constitute the language used to exchange meaning and feeling?
  - how do we understand ecology of dialects, lingua franca, mother tongues and global power languages in a world where so much language is mediated digitally? What shapes and controls language?
  - how do real-time translation, voice activation, auto-correct, emojis and home automation change, for example, the nature of language, community and communication?
  - given the emergent postmodern stance of our axiom, what is the nature of language in shaping the society we describe in our axiom (as opposed to a modernist position that language merely recorded it)?

- 'what is the nature of research?', meaning what are the methods, tools and techniques; what constitutes proof, reason, logic, trustworthiness and authority; how do we explore the changed human condition and its social context?
    - And how in practical terms would the research community operate in a world of fractured fluidity? Are journals, conferences, studentships and the other formats still adequate? Are questionnaires, surveys, focus groups, semi-structured interviews and other accepted research tools still sufficient?
    - Are there implications for project management, research management etc?
- and, having deconstructed research, language and learning within the constraints of our foundational axiom and depiction of societies,
- 'how does the emerging community research the interaction between language and learning?'
- Whilst language has always been in some senses the property of some hegemony, the current hegemons are mostly anglophone global digital corporations and our axiom explicitly recognises and problematizes this observation. Perhaps,
- 'how would the concerns of a critical pedagogy interact with our axiom?'

Some of these questions and themes may seem grandiose in relation to the mission of an educational paradigm but there is, for example, a straight line from mobile digital technology to increased populist radicalism via the Arab Spring and the cyber Intifada, and from global corporate capitalism to fragile mother tongues via the information superhighway. And we should point out that these are not necessarily new questions – there is no reason why they necessarily should be - but merely some questions to be addressed within the context of the new paradigm's defining axiom.

The consequences of thus articulating our paradigm should be not only the formulation of the associated research agenda, but also the scholarly community and the foundational texts that are part of it.

The breadth and diversity of the outputs and personalities from within the 'sociology of mobilities' are clear candidates for our new paradigm. They provide a gradually increasing range of insights and perspectives on the transformation of our societies, and a reorientation in terms of methods that recognise movement as crucial manifold for our perceptions and understandings (Büscher & Urry 2009). Perhaps we are simply proposing to add learning and language dimensions (this is understandably still a paradigm struggling to define its boundaries and its relationship with earlier sociology, that one might call the *sociology of immobility*).

What Have We Learnt?

The purpose of this paper was to stimulate and provoke researchers in various communities to think about their work, their direction and findings in a wider context, and to raise helpful

and productive questions. We have done this, firstly, by demonstrating that some merger of ideas and methods from the *diffusion of innovations* and the *structure of scientific revolutions* enables us shape intellectual progress and secondly, by formulating new perspectives at the intersection of language, learning and digital technology within our rapidly transforming societies. This is a work in progress but does, however, provide plenty of clues as to how we may test, refine and improve both these.

Endnotes

[1] SWITCHED-ON project is funded by the Spanish Ministry of Economy and Competitivity (FFI2016-80613-P).

[2] Because of the impact of iPhone and the change in the political and economic zeitgeist.

[3] Refers appositely to, "La révolution dévore ses enfants" from an essay by Jacques Mallet du Pan in 1793.

[4] Meaning the global economic change precipitated by the sub-prime mortgage crisis in the USA and the collapse of bankers such as Leamann Brothers

[5] https://www.theoryofchange.org/what-is-theory-of-change/

[6] See the sub-section," Secondly, what constitutes an innovation and what governs its diffusion?"

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Mindfulness for human-centred digital learning

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ABSTRACT

Drawing from a decade of informed exploration, educational research and personal practice, this reflective article discusses the construct of mindfulness and its application in digital learning, including language learning. Latest discoveries in neuroscience and scientific research in mindfulness, have bridged the science and practice of mindfulness providing evidence on its positive effects on human-centred teaching and learning. Regular mindfulness practice can alter the function and structure of the brain and help learners train their mind to, among other skills, pay attention in a purposeful way and not get distracted by the abundance of external and internal stimuli. It can promote learners' awareness, self-regulation, and other metacognitive skills so they become more resilient and ready to face the challenges of the increasingly-overwhelming digital world.

Keywords: digital learning, language learning, human-centred design, mindfulness practice, self-regulation

RESUMEN

A partir de una década de exploración informada, investigación en educación y práctica personal, este artículo reflexivo analiza el concepto de atención plena y su aplicación al aprendizaje digital, incluido el aprendizaje de idiomas. Los últimos descubrimientos en neurociencia y la investigación científica de la atención plena han servido de puente entre la ciencia y la práctica de atención plena proporcionando evidencia sobre sus efectos positivos en la enseñanza y el aprendizaje centrados en el ser humano. La práctica habitual de la atención plena puede alterar la función y la estructura del cerebro y ayudar a los estudiantes a entrenar sus mentes para, entre otras habilidades, prestar atención de manera resuelta y no distraerse con la abundancia de estímulos externos e internos. Puede promover la conciencia de los estudiantes, la autorregulación y otras habilidades metacognitivas para que sean más resistentes y estén listos para enfrentar los desafíos del mundo digital cada vez más abrumador.

Palabras clave: aprendizaje digital, aprendizaje de idiomas, diseño centrado en el hombre, práctica de atención plena, autorregulación

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THIS REFLECTIVE ARTICLE is based on over a decade of informed exploration and educational research - exploratory case studies, ethnography, and action research that I conducted with online and mobile learning graduate students (L1 and L2 speakers), as well as personal practice. It introduces the construct of mindfulness and situates it in the context of digital learning, including mobile/computer-assisted language learning. Drawing on recent literature and scientific evidence from interdisciplinary research, this discussion encourages educators to incorporate mindfulness practices to provide human-centred learning design and practice with focus upon the people, their shared human needs and experience. Considering the very limited research in the area of mindfulness in language learning, the key goal of this article is to invite language educators to reflect on and research the application of the knowledge shared hereby within their own educational contexts.

Latest discoveries in neuroscience, enabled by innovative neuro-imaging technologies, combined with over 35 years of scientific research in mindfulness, have bridged the science and practice of mindfulness, pointing to multiple benefits of the practice. Mindfulness as a scientific construct sits in the intersection of many disciplines, including, neuroscience, psychology, neurobiology, sociology, anthropology, religious studies, and education. The study of mindfulness examines human nature, human consciousness, and the shared human condition. It concerns the nature and function of our attention, awareness, self-regulation, emotional and cognitive discipline, as well as integrity. Increasingly popular investigations into mindfulness not only provide evidence on its effects on the human brain but also continue examining the works of our brain and nervous system to expose the human condition we all share. While many of the challenges we experience, in learning as well as other aspects of life, are a function of the structure and operation of the brain, our surroundings and the tools that we use have an evident impact on our mental well-being. The same digital technologies that open up new learning possibilities can be a source of unhealthy mental and physical habits that hinder the learning experience.

As discussed in more depth in an earlier publication (Palalas, 2018), the current digital learning context is characterized by multiple challenges on our attention with people feeling digitally overwhelmed, experiencing information overload, as well as experiencing persistent distraction and chronic distractibility, both internally and externally. The desire to multitask in order to attend to the overpowering number of competing responsibilities often leads to mental immobility, stress, and frustration as the human brain rapidly switches from one task to another, resulting in the inability to give enough attention to any of them. This often leads to the state of *Continuous Partial Attention*: "trying to follow and deal with everything while, in fact, failing to focus on anything" (Stone, 2006). This unwelcomed state of fragmented attention becomes a habit of mind, resulting in what Rose (2013) termed as "rapidly shifting, perpetually overstimulated" hyper-attention. Not only has our attention been overstrained but it has also become a commodity in the world of attention economy (Palalas, 2018) in which we live and learn.

There are numerous other challenges that characterize the digital learning context. These include but are not limited to: the impact on language and communication, including its hyperpersonal dimension (Walther, 2007); the online privacy and safety concerns; the ever-increasing pace of living and time pressures (Levy, 2016); the feeling of isolation in the world of social media; the issues of mental health and burnout of teachers and learners; and resultant increasing pressures on our self-regulation and time management, just to mention the most glaring ones. These have an evident impact on the learning experience within the classroom and also the well-being of the stakeholders. For instance, feedback on the quality of learning experience that I gathered from both mobile language learning students and graduate-level online learning students (Palalas, Mavraki, Drampala, & Krassa, 2018; Palalas, Karakanta, Mavraki, Drampala, & Krassa, in press), as part of research on mindfulness in digital learning, pointed to students' exhaustion and frustration with the need to do more studying in less time due to all the various demands coming from their professional and personal lives. While appreciating the flexibility afforded by digital learning, the students used the following phrases to describe their learning experience prior to the introduction of mindfulness practices: "no time to think," "no time off," "expected to be working 24/7," "need to produce quickly," "sense of overload and confusion," and "stressed by the always-on lifestyle and its requirements." Other themes that emerged from their comments included feeling distracted and experiencing an urge to multitask to stay current and socially included, for example, checking text messages while participating in an online Adobe Connect session. Respondents also referred to information overload and its fragmentation, requiring skills to weed through the information-intensive digital content (including fake news). Some of the learning technology-related feedback pointed to the multiplicity of technological tools, often misused. Another conflicting theme was that using digital technology to learn sometimes brought about a feeling of being impersonal and disconnected from others, as opposed to the intended online connection and communication with classmates and teachers; some even referred to feeling isolated in the "network of connections."

When asked about the kind of support learners needed from their online/mobile learning facilitators, the three key themes were a need for guidance on how to use technology wisely for connection and meaningful communication; how to "create greater calmness and clarity" in the course (despite the busyness outside the classroom); how to "organize their time online and offline" towards more effective and enjoyable learning. Respondents also repeatedly stressed that they needed help to self-regulate and keep their work-life-study balance so that they were able to continue course participation. It is worth noting that when encouraged to spend less time on their devices but apply more focus and intentionality to the on-device time, the majority of students expressed fear of being disconnected from the information and "action" available online.

This feedback combined with research and personal mindfulness practice informed my investigation into the effects of mindfulness practices in digital learning, including language learning. Some of the strategies incorporated into my teaching and their impact are discussed in the second part of this article, after the discussion of the concept of mindfulness, along with related mind-brain-body practices and their potential benefits.

Defining Mindfulness

The contemporary construct of mindfulness has been examined and described in literature through a variety of multidisciplinary lenses. It builds on different traditions of thinking, diverse epistemologies, and sciences. It bridges spiritual traditions and their focus on transforming the "self" with the evidence-based understanding of the habits of mind offered by contemporary sciences. One of the broadly accepted definitions of mindfulness has been submitted by Kabat-Zinn (1990, 1994, 2003): "the awareness that emerges through paying attention on purpose, in the present moment, and nonjudgmentally to the unfolding of experience moment by moment" (Kabat -Zinn, 2003, p. 146). The whole-person, mind-body process of actively being in the present moment involves attention on the experience of what unfolds both internally (thoughts, body sensations, and emotions) and in the environment. This perspective has roots in contemplative traditions, such as Buddhism, "where conscious attention and awareness are actively cultivated" (Brown & Ryan, 2003, p. 822). Two central components to such a view of mindfulness are: (1) regulation of attention on the immediate experience, and (2) approaching experiences with curiosity, openness, as well as acceptance, regardless of whether they are positive or negative. Cultivating mindfulness helps to "train skills by placing some constraint or imposing some discipline on a normally unregulated mental or physical habit" (Mind and Life Education Research Network - MLERN, 2012, p. 2).

In the tradition of socio-cognitive psychology, Ellen Langer and her co-authors (Langer, 1992, 1993, 2000; Langer & Moldoveanu, 2000; Pirson, Langer, Bodner, & Zilcha-Mano, 2012) have been more selective in defining mindfulness as "the process of active drawing of distinctions that increase live options for thinking, feeling and action" (Moldoveanu, 2016). Langer demonstrated in her numerous studies that people could be either in a mindless state where they miss a lot of significant information or in a state of mindfulness - a flexible state of mind in which people are actively engaged in the present (2000), a state of conscious awareness when they are "implicitly aware of the context and content of information… a state of openness to novelty in which the individual actively constructs categories and distinctions" (Langer, 1992, p. 289). Langer (1993) further elaborated that "mindfulness is a state of mind that results from drawing novel distinctions, examining information from new perspectives [many possible perspectives], and being sensitive to *context*" (*emphasis in original*; p. 44), as well as to the conditional nature of information. She also warned that, in educational settings, when information is presented in

absolute terms, such teaching might foster mindlessness and rigid mind-sets (2000). Perkins, Jay, and Tishman (1993), citing Langer's research, referred to the construct of mindfulness as a thinking disposition because it concerns "how disposed people are to process information in an open, alert, flexible way" (p. 74). Langer's socio-cognitive approach considers mindfulness as a means to enhance problem-solving and other goal-oriented cognitive tasks; it also often involves working with and manipulating information external to the learner (Baer, 2003).

What the two views on mindfulness appear to have in common is an active process of noticing what situates the observer in the present, being aware of the "now" and thus experiencing a choice. Regularly practicing and cultivating our awareness, attention, and discipline, enhances our ability to make skillful choices of where to place our attention and when to allow the auto-pilot mode. Thus, mindfulness helps us to distinguish what is and what is not important, thereby informing our seeing and knowing. Essential to the mindfulness perspective is also the value of experiential knowledge and first-person knowing.

In my research, I have followed the definition put forward by Kabat-Zinn and popularized by numerous works of Western researchers, clinicians, and educators who incorporated mindfulness principles in their practice. Indeed, mindfulness has been seen in the recent years as a therapy, strategy, philosophy and even a lifestyle to help people manage their minds and bodies better in the face of the everyday-life challenges and stress. Creating a learning environment infused with mindfulness practices has been proven to promote connected learning that shifts focus away from digital tools, albeit often indispensable, and back to the individuals communicating in their shared space.

Contemplative Pedagogy and Practice

The construct of mindfulness falls under the umbrella of contemplative science, which studies the mind-brain connection. Informed by the science, contemplative pedagogy incorporates into the curriculum an array of contemplative practices to offer holistic learning (or whole-person learning; Brown, 2014) that respects our human nature, our needs and wants, as well as our innate capacity for learning and knowing. Contemplative practices have been integrated by many into their teaching with the aim of helping the learner to connect the knower and the known (Barbezat & Bush, 2014). These practices include silent reflection, witnessing, beholding, journaling, meditation, self-inquiry, deep listening, silence, dance, work, volunteering, and many others. Their goal is to deepen our understanding and insight, improve our attention and awareness, as well as cultivate compassion and self-compassion while one's mind is present with one's body (Miller, 2013). These practices provide a strategy and a space for people to listen to themselves, to others, and to the knowledge present in the world around them. They support critical reflection by offering a methodology for "thinking through" that transcends understanding by intellectual analysis

and allows to connect with knowing from the emotional, psychological, creative, physical and spiritual vantage points, as well as the intersection of these points (Brown, 2014; Hart, 2004; Haynes, 2005; Miller, Irwin, & Nigh, 2014; Zajonc, 2013).

Contemplative practice, including mindfulness-based techniques, activates metacognitive modes and connections that promote first-person investigations leading to "unobstructed" meaning-making and the unpacking of our personal misunderstandings and pseudo-beliefs. This allows us to access our innate knowing and connect it with the knowing that exists in the connections between people and spaces around us. Hyland (2009) observes that mindfulness practices can have positive impact on the personal growth and development of learners of all ages.

Cultivating Mindfulness

Drawing from the discoveries of neuroplasticity, "the malleability of the brain, observable as changes in neuronal structure and connectivity" (Lillard & Erisir, 2011), experience changes the brain (Goleman & Davidson, 2017; Hanson, 2016; Kays, Hurley, & Taber, 2012; Lillard & Erisir, 2011) and we have a choice to shape our experience. Neuroplasticity is activity-dependent: sensory, repeated motor, and cognitive activity drive alterations in human neural circuits producing functional changes (Lillard & Erisir, 2011). Relatedly, the science behind mindfulness provides evidence that our experiences, behaviours, and practices, for instance regular meditation, can alter our mind, brain and body over time (Goleman et al., 2017). Mindfulness practice promotes neurogenesis, the process by which new neurons are generated, and neural circuits are being formed, weakened, strengthened, and purged, *willfully* shaping the brain through self-directed neuroplasticity (Hanson & Mendius, 2009; Schwartz & Begley, 2002; Schwartz, Stapp, & Beauregard, 2005). Schwartz et al. (2005) noted that the basic thesis of self-directed neuroplasticity research is that directing attention "will affect both the experiential state of the person and the state of his/her brain" (p. 1313). Furthermore, "[m]indfulness training supports volitional control of attention toward a selected object" (Leyland, Rowse, & Emerson, 2019, p. 109). Thus, regular practice over time, including that incorporated into curriculum, can alter psychological and neurological functions of the brain-mind-body connection, such as attention and emotion regulation. Most neuroplasticity is incremental, not dramatic, hence requiring systematic practice.

In short, attention directs change. We are the architects of our own brain and can use intentional attention practice to shape the direction of the plasticity of our brain, and along the way, new brain and mental habits can be formed. This ability is essential to our well-being as well as to our ability to learn, both at conscious and unconscious levels. Integrating mindfulness practices that strengthen our self-regulation of attention, awareness, and emotion, while connecting us to our innate knowing and to our surroundings, can have a profound impact on learners' experiences both in class and beyond.

Moreover, mindful communication strategies encourage us to put attention and awareness on our words and meaning, shifting the focus from the product to the process of communication and meaning-making, as well as from the negative (e.g., errors in communicative output) to the positive (e.g., co-created meaning) – learner-empowering practices and feedback which are particularly of benefit in the language classroom.

Benefits of Mindfulness

There is a considerable body of research reporting benefits of mindfulness-based practices and interventions. It has been demonstrated that cultivating and increasing mindfulness can result in positive impact on our health, longevity, and well-being. Some of the cited psychological and physical impacts include better attention skills (e.g., Becerra, Dandrade, & Harms, 2016; Jha, Krompinger, & Baime, 2007; Sedlmeier et al., 2012); improved immune functioning (e.g., Carlson, Speca, Faris, & Patel, 2007; Davidson et al., 2003; Hanson et al., 2009); emotional and mental well-being (e.g., Carmody & Baer, 2008; Chiesa & Serretti, 2009; Hanson et al., 2009; Hassed, De Lisle, Sullivan, & Pier, 2009; Hofmann, Sawyer, Witt, & Oh, 2010; Hölzel et al., 2013; Teasdale et al., 2000; Shapiro, Brown, & Biegel, 2007; Siegel, 2007, 2016); strengthened empathy and compassion (e.g., Hanson et al., 2009; Hutcherson, Seppala, & Gross, 2014; Hofmann, Grossman, & Hinton, 2011; Siegel, 2007, 2016); and richer, more positive personal relationships (e.g., Carson, Carson, Gil, & Baucom, 2004; Coatsworth, Duncan, Greenberg, & Nix, 2010).

While these aspects are of great importance in the whole-person learning environment, studies on mindfulness in education have also identified other positive effects specific to the educational context. Findings of these studies pointed to the following advantages of mindfulness practice: improved cognitive functioning (e.g., Jha, Rogers, & Morrison, 2014; Maynard, Solis, Miller, & Brendel, 2017; Ortner, Kilner, & Zelazo, 2007; Vickery & Dorjee, 2016) and readiness to learn (David & Sheth, 2009); reduced anxiety and stress levels (e.g., Ratanasiripong, Park, Ratanasiripong, & Kathalae, 2015; Song & Lindquist, 2015); increased self-regulation (e.g., Meiklejohn et al., 2012; Tang et al., 2007); improved awareness and attention (e.g., David & Sheth, 2009; de Bruin, Meppelink, & Bögels, 2015); better academic performance (e.g., David & Sheth, 2009; Schonert-Reichl et al., 2015; Schonert-Reichl & Roeser, 2016); improved resilience of students and teachers (e.g., Jennings et al, 2013; Meiklejohn et al., 2012). Other advantages for learners comprise the promotion of self-reflection and self-calming; social and emotional learning; pro-social behaviours and healthy relationships; improved participation in consequence of impulse control - all of them leading to holistic well-being (David & Sheth, 2009).

Accordingly, mindfulness practice can be transformative not only to our students' learning but also to their general well-being, if more consideration is given to true human nature and how our basic needs are affected by changing environments. Cognitive and emotional growth and awareness may align, particularly in language learners, with the

language awareness approach and its five interrelated domains: affective, social, power, cognitive and performance (James & Garrett, 1991). When students are encouraged to become autonomous learners and active contributors to their language learning journey (James et al., 1991), they can benefit cognitively and affectively from deeper exploration, reflection, and analysis of language for deeper understanding (Svalberg, 2007), amongst other strategies. A non-threatening learning environment characterized by trust, interaction, self-discovery, and focus on the positive is essential to language awareness methodology.

Safety First

Discussing the full extent of the various human needs of learners and how they can be addressed by mindfulness practices deserves a comprehensive volume. This article merely signals the issue by looking at the basic desire for safety and connection with others, and situating it in the learning context.

Seeking Safety and Emotional Regulation

Jensen (2008), in his comprehensive investigation of brain-based learning, advocated working with natural tendencies of the human brain to create holistic brain-based learning environments. Jensen observed that "the brain structures involved in emotional processing influence cognition" (p. 85) because of their role in perceptual processing, safety or threat evaluation, motivational evaluation, self-regulation of states, and memory modulation. With the brain being a natural extension of the body (Damasio & Dolan, 1999), educators need to consider the "complex interplay between emotional states and cognition" (Jensen, 2008, p. 82), starting with primary emotions, such as our pre-programmed negativity bias and "fight or flight" reactions. A closer look at the autonomic nervous system and social-emotional processes highlights the essential human need to feel safe and avoid any potentially dangerous situation that would cause anxiety and stress (Porges, 2011; 2015).

Feeling safe is critical to human development and learning (Durlak, 2015). Therefore, creating safe, non-threatening environments (physically and mentally) is the sine-qua-non condition to promoting learning. It starts with the way the seating is arranged in the class or avoiding excessive noise when using mobiles for learning on-the-go, and extends to the emotional atmosphere created in the learning environment. While positive emotional states support learning, negative emotions can narrow our scope of attention and thinking (Sousa, 2006), hindering our cognitive processes. Although some level of stress may improve motivation, feeling safe and secure is critical to thinking abilities. Jensen (2008) submits that educators should create environments in which negative emotions are processed and positive ones celebrated. Correspondingly, latest research in language learning points to the significance of fostering positive emotions and reducing negative ones in the classroom (Dewaele & MacIntyre, 2014; MacIntyre & Gregersen, 2012; MacIntyre, Gregersen, & Mercer, 2016).

Digital learning environments introduce additional threats to the learning environment, hence practice of emotional regulation should be incorporated into the design of human-centered digital learning. Mindfulness practices, such as mindful communication, time-outs, deep breathing, meditation, or reflecting on feelings promote emotional regulation; they can increase positive mood and lower rumination and negative internal narrative. By accepting "what-is" non-judgmentally and refraining from internal reactivity, one can increase reflection, positive reappraisal, resulting in a non-threatening learning context that encourages experimentations and communication.

Social Brain

Moreover, our autonomic nervous system unconsciously mediates social engagement, trust, and intimacy in order to ensure safety (Porges, 2011), which has additional implications to the design of learning. Porges (2015) elaborates that social engagement and co-regulation are critical to human experience. This notion is associated with the concept of "social brain," introduced by the evolutionary anthropologist, Dunbar (1998), which addresses the social nature of human condition and cognition (Mercer, 2013). The ability of the social brain to instinctively attune to others, their underlying emotions and mental states may indeed play a role in learning and academic performance (Blakemore, 2010; Mercer, 2013). According to the social brain hypothesis, connecting with and attuning to others helps build new neural connections that are central to learning and teaching (see Mercer, 2013 for a more in-depth discussion of the social brain, language, and goal-directed collective thinking). While this concept deserves more focus in future interdisciplinary research, it is observable that the rapid social interactions, that characterize modern life and digital-based communication, frequently do not support the need of our social brain to share and connect at the levels that produce interpersonal or intrapersonal benefits. It is hence of great importance to slow down and invest in nurturing interpersonal connections.

To this end, one of the strategies that could be integrated into the curriculum is mindfulness-based practices that have been found to reinforce empathy and compassion (Hanson et al., 2009; Hutcherson et al., 2014; Hofmann et al., 2011; Siegel, 2007, 2016) and enrich relationships (Parker, Nelson, Epel, & Siegel, 2015). In addition, mindful listening and speaking strategies are designed to quiet the habitual chatter of the mind thus allowing for deeper communication and language practice. Mindful communication also supports the development of intercultural competences.

Mindfulness Practice in Digital Language Learning: Examples

This examples have been selected based on the feedback from my students, EFL speakers, who experienced the effects of mindfulness practice in their online classroom. An abbreviated list of such practices includes:

- mindfulness and neuroscience training, and discussion forum for students;

- safe, non-threatening, empowering environment (synchronous and asynchronous): choice based on dialogue, focus on process versus product, mindful feedback (language and content), time and space boundaries negotiation;
- self-regulation through self-awareness and reflection: journaling (mind & digital habits); self-inquiry, introspection; insights, "a-ha" moments;
- mindful, respectful, and relational language to express messages of support, gratitude, and compassion;
- centering breathing practice: slow down, notice, and redirect energy/awareness;
- intentional attention practice (focusing attention on intention);
- mindful expression, speaking and listening;
- mindfulness reminders and messages;
- virtual meetings designed to enable attention and emotion regulation;
- socio-emotional presence emphasized;
- conflict handled mindfully;
- mindful reading activities (reading aloud alternating readers by line/sentence, e.g., "lectio divina" to promote attention, varied voices, and deep meaning-making).

Conclusions

Human-centred learning design and practice need to concentrate on the people, their shared human needs and experience. The latest mindfulness research, informed by multidisciplinary studies, highlights the inherent human needs and behaviours, and the way they can be addressed through the body-mind practice exemplified above. The seven attitudinal foundations of mindfulness practice, according to Kabat-Zinn (1990), are the cultivation of non-judging, patience, beginner's mind, trust, non-striving, acceptance, and letting go. Regular mindfulness practice, based on these notions, can alter the function and structure of the brain and actually help the learner train the mind to, among other skills, pay attention in a selective and purposeful way and not get distracted by the abundance of information and other external as well as internal stimuli, including those coming through multiple digital channels. As evidenced in literature, through regular practice, learners can foster their awareness, self-regulation, and resilience. These competences are essential in the context of digital learning characterized by fast pace, fragmentation, and distraction.

In addition, mindfulness practice has proven to promote emotion regulation that is central to cognition and indispensable in overcoming affective barriers common among language learners. Positive emotional climate is also associated with the quality of connection and communication with other people. Learners' social brain and their need for a safe, connected learning environment is essential to successful learning; it can be supported by cultivating socio-emotional presence and mindful communication. A whole-person learning environment also encourages deeper engagement and first-person knowing that can be accessed through reflective practice and expression, for instance journaling, self-inquiry,

and introspection. Inner subjective experience and insights deserve more consideration in the design of learning spaces, as they contribute not only to the personal growth of individual learners, but also to communication and collective meaning-making. Language classroom that encourages mindful listening and speaking combined with other contemplative practices of the body-mind, can promote holistic embodied learning that integrates four language skills with other channels of communication. I submit that just the way we can train our bodies through daily exercise in the gym, we can train our minds in the "neuro gym" of the mindfulness-infused language classroom to become stronger learners and communicators. Further research is needed to explore the many facets of the use of mindfulness practices and concepts in digital language learning. I strongly encourage language educators to contribute to this worthy inquiry.

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Schools in the City of Buenos Aires: scenes of language policies

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ABSTRACT

This article focuses on certain language policies that have taken place in the schools of the City of Buenos Aires. More specifically, from a historical-structural perspective (Tollefson, 2015) and within the theory of language management (Spolsky, 2004, 2009), this article inquires into the socio-historical factors that determine the presence or absence of the foreign languages taught at primary level schools as well as their geographical distribution. In this way, we expect to contribute to a deeper understanding of the emergence, validity and transformational capacity of the language policies in the school domain.
Keywords: primary education; foreign language teaching; language policy; language management; historical-structural analysis.

RESUMEN

Este artículo se enfoca en las políticas lingüísticas que han tenido lugar en las escuelas de la Ciudad de Buenos Aires. Más específicamente, asumiendo una perspectiva de análisis histórico-estructural (Tollefson, 2015) y enmarcado en la teoría de la gestión de lenguas (Spolsky, 2004, 2009), indaga en los factores sociohistóricos que determinan la presencia o ausencia de enseñanza de lenguas extranjeras en las escuelas primarias de la Ciudad, así como su distribución geográfica. Busca así aportar a la comprensión acerca de los modos de emergencia, vigencia y capacidad transformadora de las políticas lingüísticas en el ámbito escolar.
Palabras clave: educación primaria; enseñanza de lenguas extranjeras; política lingüística; gestión de lenguas; análisis histórico-estructural

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THE EDUCATIONAL CONTEXT has traditionally been one of the privileged domains of language policy application, so much so that a specific subfield in this discipline has arisen: educational language policy (Beacco, 2016). The centrality of these issues lies in the relevance of language, languages, and their teaching and learning in the school context and in the children's formative period. Indeed, what is at stake is their social insertion and identity, the development of skills and abilities to take the floor, their possibilities to access knowledge and to open up to other cultural universes, among other things; which is why it is relevant to understand the decisions that affect linguistic learning, the way they are implemented and their effects. That is the avenue of research that will be adopted in this article to gain greater understanding of language issues implicated in the schools in our work area, the City of Buenos Aires.

In order to make progress in this inquiry, the scope of "language policy" in this paper should be clarified. A restrictive definition that only attributes to the state the power of initiative and the responsibility of implementation, or that implies a linear and direct relation between decision, putting into practice and results would not show the complexity of the factors that guide linguistic practices in concrete fields. Actually, even a quick glimpse reveals that decisions related to languages and language at schools are made by different kinds of people that participate in the educational process, and not only the public power (local or national) through norms, political and pedagogical orientations or allotting of resources --teacher planning and methodology options, choice of texts and examples, and also the linguistic varieties they adopt at work or how they perform their normative function; parents with their support, resistance or pressure; heads of school when they conduct an institutional project which includes, implicitly or explicitly, decisions about the literacy development model, which language/s are/is taught besides the mandatory one/s, the place given to the languages spoken by the students' families, the role that all of the above have in the definition of the identity of the institution. Decisions like these have been taken in the past and still sometimes generate effects in the present, or are renewed or redefined according to social evolution, to the different representations attributed to the languages, to the demands of the community, to the changes encouraged by the educational authorities. They are also influenced by offers and incentives of other areas (with more or less weight in different times and contexts): the market, local or foreign NGOs, agencies of linguistic promotion of other countries with their contests, prizes or donations. In sum, multiple actors who participate, each in their own way, with their own interests and temporalities, at different levels (micro level at classrooms and breaks, institutional level, local and national government level and even the one of trends encouraged by international organizations and global "fads") articulated with each other in different ways, cooperative, neutral or conflictive. The traditional concept of language policy (Calvet, 1996 and other authors) is narrow to account for concrete phenomena in their complexity and multidirectionality. Therefore, we will adopt the concept of "language management" (Spolsky, 2004, 2009) to

cover this variety of courses of action about language and we will keep "language policy" to characterize these processes in their political sense and effects.

In this article, we intend to explore how language management takes place in the schools of the City of Buenos Aires. In order to limit the scope and the problem and considering the structural historic approach applied to research in this field (Tollefson, 2015), we ask ourselves about the socio-historical factors that explain the current distribution of additional languages taught at primary level in the city. Thus, the first section of this article introduces the scope and object of analysis, and focuses on sociologic factors. The middle sections address processes that derive from state initiatives or other actors (institutional, community) from a historic viewpoint. The last section focuses on a specific case, the teaching of Chinese. With this analysis, we wish to cast some light on the emergence, validity and transformational capacity of language policies at schools.

The territory of the City of Buenos Aires: schools and additional languages

According to results derived from 2013 Annual Survey carried out by the National Department of Research and Quality Evaluation in Education (*Dirección Nacional de Investigación y Evaluación de la Calidad de la Educación - DINIECE*, Ministry of Education), there are 883 primary schools in the City of Buenos Aires, attended by 280,525 students. The offer comprises a variety of proposals and modalities: there are 424 private schools and 450 state schools, the institutions may offer a single shift (morning or afternoon) or double shift, and they may depend on different Departments (*Primaria, Formación Docente, Gestión Privada*). Also, state double shift schools offer different educational proposals: 35 schools oriented to a field of knowledge (Arts, Science, P.E.), 26 plurilingual schools (intensified in foreign languages) and a Mandarin Chinese bilingual school.

Of all registered primary level students, the 2013 Annual Survey shows that 267,009 study foreign languages. Not only at state primary schools but also at private ones, English is the language mostly taught (studied by 90.3%), distantly followed by French (2%). The rest of the foreign languages taught at state and private schools --Chinese, Italian and Portuguese (taught in both sectors), and German or other community languages (taught at private schools)-- reach 1% altogether when it is the only language taught; however, they account for 6.7% when taught together with another language.

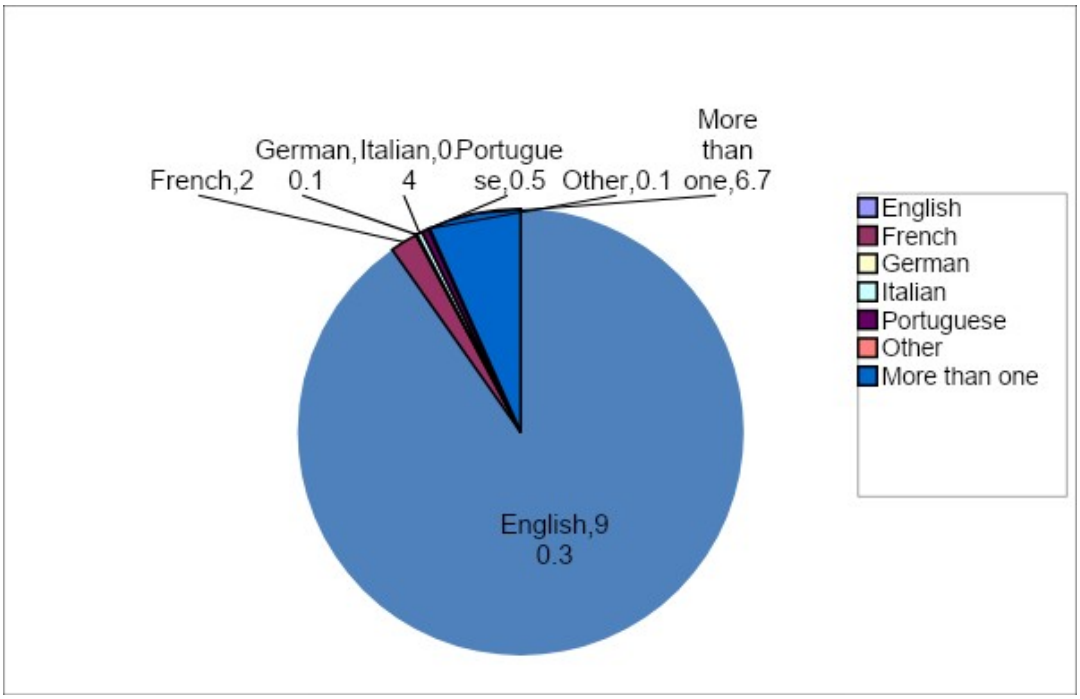

Figure 1. Percentage of students studying foreign languages at primary school level in the City of Buenos Aires
Source: Own elaboration on the basis of the 2013 Annual Survey, DINIECE.

When taking each sector (state or private) into consideration, significant differences can be seen in the amount of students that learn each language, particularly among the group that studies more than one language. In the private sector, the latter triple those in the state-run. Unluckily for our research, the instrument of data collection used in the Annual Survey does not enable us to identify the languages taught when they are more than one; however, inquiries made in representative institutions tend to confirm that the "more than one" category in private schools usually combines a community language (Arabic, Armenian, Hebrew, German, Greek, Italian, etc.) and English, while in state schools the combination is a Neo-Latin language (French, Italian or Portuguese) and English.

Another difference between state and private schools lies in the distribution of those languages which is unequal, except for English. While French and Italian are widely present in the state-run sector, German and Portuguese have a bigger number of students in the private one.

	English	French	German	Italian	Portuguese	Other	More than one language	Total
State-run sector	133.217	4.815	0	920	181	0	4.554	143.687
Private sector	107.662	590	360	171	1.131	180	13.228	123.322
Total	240.879	5.405	360	1.091	1.312	180	17.782	

Table 1. Students by language and sector at primary school level in the City of Buenos Aires
Source: Own elaboration on the basis of the 2013 Annual Survey, DINIECE.

Distribution of language teaching in socioeconomic key

Due to its history and size, the City of Buenos Aires is far from being socially homogeneous. For this reason, as Di Pietro *et al* (2014) suggest, demographic and socioeconomic data is essential when analyzing offer and distribution of educational units and languages in the various areas.

The socioeconomic characteristics of the field we base our research on is backed by studies made by Di Pietro *et al* (2014), Di Virgilio *et al* (2015) and Fachelli *et al* (2015). These authors coincide in identifying three big areas according to their population profile: a residential area of high socioeconomic level in the north (communes 2, 13 and 14), a residential area of mid socioeconomic level which stems from the centre of the City (communes 1, 3, 5, 6 and 7) and stretches to the west (communes 11, 12 and 15) and a low socioeconomic level area to the south (communes 4, 8, 9 and 10)[i].

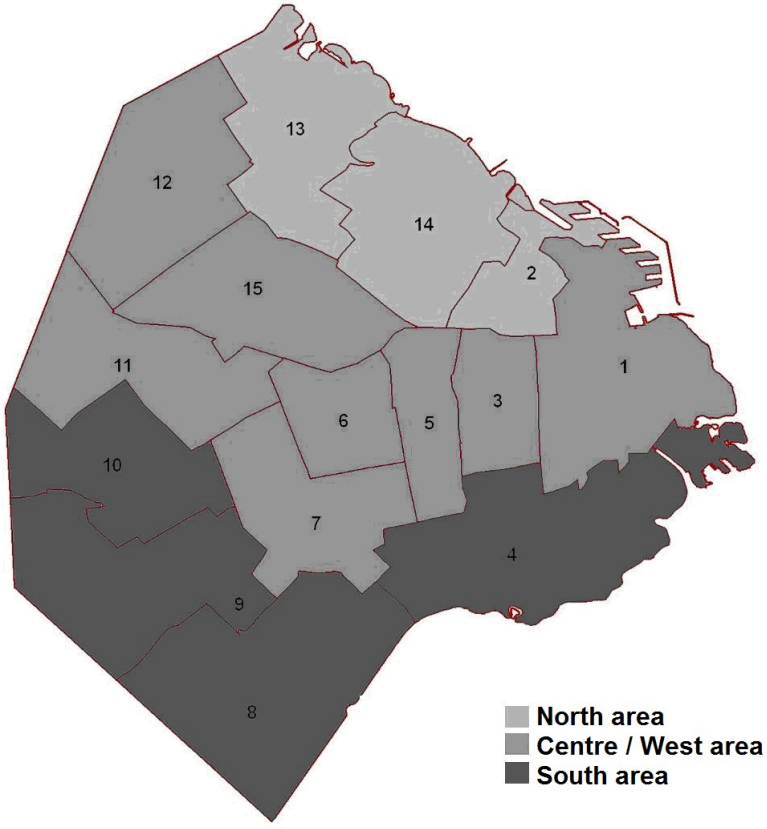

Figure 2. Communes and areas in the City of Buenos Aires. Source: Own elaboration on the basis of Di Pietro et al., 2014; Di Virgilio et al., 2015 y Fachelli et al., 2015.

As mentioned above, the total amount of service units is allotted evenly among the sectors. However, when analyzing offer per area, this balance is kept only in the centre/west. While in the south state schools nearly double those in the private sector, the opposite occurs in the north. The same situation can be observed when analyzing enrolment numbers per area and sector.

Area	State-run sector		Private sector	
	Service units	Students	Service units	Students
North	57	17.209	116	33.817
Centre/West	240	69.212	220	66.895
South	162	60.365	88	33.027
TOTAL	459	146.786	424	133.739

Table 2. Service units and students by area and sector. Source: Own elaboration on the basis of the 2013 Annual Survey, DINIECE.

The above disparities lead us to wonder what happens when an additional variable is considered: the additional languages taught. Thus, when the students enrolled at school are analyzed per language and sector in the different areas of the City, the scenario is far from being balanced.

In the north, where enrolment in the private sector is twice as much as in the state-run sector, the relation stays the same among the number of students who study English. In contrast, access to more than one additional language is exclusive to the private sector. Also, the number of students of French is twice as much in the state-run sector and there is nearly the same number of students of Italian and Portuguese in both sectors.

In the centre, where total registration is the same between sectors, the equivalence is only kept among students who have access to English. The private sector concentrates the whole of the students of German and Portuguese and triples the amount of students who have access to more than one additional language. On the other hand, the state-run sector concentrates all the students of Italian and most of the students of French.

In the south, where state registration doubles the private one, such relation stays the same only with the English language. The same number of students of each sector accesses more than one language (therefore offer is lower in the state sector), while the other Neo-Latin languages exist only in the state-run sector.

Area	Sector	English	French	German	Italian	Portuguese	Other	More than one language
North	State-run	14.467	800	0	180	29	0	512
	Private	25.986	302	87	171	25	0	4.784
Center	State-run	63.225	2.992	0	236	0	0	2.373
	Private	52.164	288	273	0	1.106	180	6.785
South	State-run	55.525	1.023	0	504	152	0	1.669
	Private	29.512	0	0	0	0	0	1.659

Table 3. Students by language, area and sector, at primary school level in the City of Buenos Aires Source: Own elaboration on the basis of the 2013 Annual Survey, DINIECE.

The data allows for some preliminary hypothesis regarding the logics and criteria of distribution of languages at primary level. First, the offer of English (visibly predominant in both sectors) is predictable, following the variations of total enrolment numbers. On the

other hand, data about other languages taught at primary level show a variety of processes: a correlation between French and Italian, the state-run sector and mid and low socioeconomic level areas, which supposes the dependence of these offers on decisions of the public authorities; in contrast, the offer of German at this level is supported by private initiatives exclusively in areas of mid and high socioeconomic level; the highest amount and diversity of languages in the private sector and in favoured areas may reveal positive assessment and high investment of these sectors in early language learning, particularly Portuguese, which contrasts the weak presence and uneven distribution of this language in the state offer. Lastly, the almost null presence of "other" languages alongside the high number of students of "more than one language" in the private area might be considered as two sides of the same phenomenon.

To sum up, this initial quantitative analysis reveals a scenario characterized by a distribution of the offer of languages which, although diverse, is by no means random. In order to interpret the underlying processes it is necessary to disentangle the different ways of language management: state language policies, institutional projects, community and third party actions which overlap, intersect and tense.

State language policies in the City of Buenos Aires

In this section we will discuss the origin and nature of state decisions related to the inclusion of foreign language teaching in primary schools. The choice of a historic viewpoint has led us to detect relations between such decisions and the ups and downs in both domestic and, above all, foreign policies.

Teaching of foreign languages at schools: a diplomatic issue

Apart from a couple of schools which depend from teacher training institutions, modern languages (*lenguas vivas*) were not part of the primary school curricula in the City of Buenos Aires until the end of the 1960's, when they were introduced in the schools which started offering double shift (210 out of 425 schools). In fact, the set of regulations adopted by the National Council of Education (*Consejo Nacional de Educacion*) in 1968, after assessment of experiences as from 1957 when double shift was introduced, determined that a foreign language should be taught as from 4th form[i]. In contrast to the set traditions at secondary level, which acknowledged a certain evenness in the offer of English and French (at least until the 1943 reform –Azar, 1999: 78-, which introduced the teaching of Italian in spaces formerly reserved for French), English would be offered widely in most schools, while French only in 16 and Italian in 2.

Such quantitative difference and the shift from the traditional position of French in Buenos Aires culture can be explained by international historical processes. In 1961 Argentina joins the Alliance for Progress, a program of economic, social and political aid that USA offered to Latin American countries and thus ratifies its integration to the zone of

influence of the northern power. In an attempt to recover prestige and attractiveness, France proposes cooperation agreements to the countries in the region, such as the one signed by Argentina in 1964[ii]. This agreement required that the teaching of French should be encouraged at all educational levels without any restrictions and giving the language a predominant place (art. 1). The decision to include French among the languages taught at double shift schools (7.5% of all) can be interpreted as a materialization of such commitment. The spatial distribution of the offer reveals practices and social representations related to language at the time. Most of the schools which teach French are located in the central area (*cf. supra*), on an axis that goes from the centre of the city to the west (coincidental with the route of Rivadavia Av.). This is the same area of settlement of middle class who, in its rise, starts creating modern society. The middle class is the privileged target of public policy (Varela, 2006, 2006 b) and not high class -whose competence in French is taken for granted- or popular classes who, at that time, are not taken into account by such policy.

Although weak (and therefore revealing of the political weight of the different sides), the presence of Italian can also be explained by diplomatic commitments, such as the Italian-Argentine cultural agreement signed by both countries in 1964[ii]. The presence of this offer, however, in southern areas (Boca and Barracas) is explained by different factors: not only by the historical settlement of Italian migrants in the area but also because of the previous intervention of the Italian government through its embassy –maybe supported by communitarian entities- and validated by local educational authorities. Thus, in the July 22, 1957 National Council of Education bulletin the following can be read:

> "Authorization for Italian language courses"
> File 2,920/C.E. 4/56-Buenos Aires. 12/4/1957. 1) Authorize two Italian language courses at School No. 19, C.E. 4; one for children and one for adults from 6:00 pm to 6:45 pm and from 7:00 pm to 8:20 pm, respectively, conducted by Miss. Paula Riva, appointed by the Italian Embassy (p.16). (Our translation).

Shortly before, the same Council had decided

> "to accept and thank His Excellency, the Ambassador of the Italian Republic for his offer to provide financial support for the teaching of Italian at "Republica de Italia" school (No. 4 C.E. 4), to those who wish to attend after curricular hours, and to adults who are interested in such language (National Council of Education bulletin 9/1/57, p.32, our translation).

From such small presence to its current position, we can say that Italian, in proportion, has gained more space in public primary schools than French has. Apart from the Plurilingual Schools Programme (which will be later addressed), where French is taught in 4 schools as a

first foreign language and in 4 as a second foreign language, and Italian, in 4 and 5 respectively, Italian is currently taught in 5 schools as a first foreign language, in 2 others as a second foreign language in different areas of the city, besides the southern areas, where it keeps significant presence. French, in contrast, has retained the same number of schools as that in 1968 (16). Different factors have contributed to the policy for the promotion of Italian to be more effective in proportion; among them, actions derived from the Cooperation Agreement in relation with the launch of a programme for maintenance, strengthening and insertion of the study of the Italian language and culture at schools under the City of Buenos Aires government (GCBA) signed between GCBA and the General Italian Consulate in 1997, countersigned every three years. In 2014, under the government of Mauricio Macri (of Italian origin), this agreement was replaced by a new one, which will be in effect until 2019 by which GCBA commits to

> keeping the teaching of Italian in the period 2014/2016 in those schools where the experience has been highly positive and assessing the possibility of extending it to other realities, especially to plurilingual schools, *maintaining or increasing* the number of school hours taught until the current agreement has been signed[i] (Our translation, emphasis added).

In contrast with the agreements related to the Italian language, those concerned with French signed after 1964[i] do not commit the government of the City of Buenos Aires to extending it (but to *guaranteeing* its curricular teaching[i]). As regards English, however, none of the measures that helped its absolute predominance in the offer of foreign languages is the result of international agreements.

Let´s analyze some of them:

- In 1980 the Curricular Design for primary teaching in the City of Buenos Aires, in effect until 2001, was approved (Resolution No. 3000/1980-Secretariat of Education). The document included teaching guidelines only for English, although both French and Italian were being taught as part of the curricula.
- By 1992 Decree No.538, modules are designed for the teaching of English for students of 1st cycle in some double shift schools, most of them located in the north of the city[i]. Among the recitals of this measure, "the communal demand for learning English", which would be "progressively greater" was argued.
- Resolution No. 841/1996 stipulates the incorporation of the teaching of English in all single shift schools, as from 4th form. In this case, the arguments that support the option for English actually apply to foreign languages in general:

  that the knowledge of foreign languages is an *essential tool* for development in the modern world;

  > that in the framework of a plurilingual offer it is *necessary to ensure proficiency in at least one foreign language* in the school population as a whole;

> *that the choice of the first [foreign] language to teach must be made in consideration of its likelihood of wide use* in order to access the most updated sources of information; [...]"(Our translation, emphasis added)

Nothing, except for implicit evidence, shows that the language to be taught should be English.

What we do observe in this elliptical argumentation is the consideration of "plurilingual offer" (i.e., the effective presence of different languages in the educational proposal of the schools of the city, as a result of decisions made in the past) which reveals at least a friction between an argument that naturalizes the hegemony of English and another which supports plurality as a positive value.

From bi- to plurilingualism

This idea starts to form in the official sphere of the city –in contrast with the movement in favour of the generalization of English as *international language* fostered by the government in those years[i] -- under the Radical party administration led by Fernando de la Rúa (City Mayor as from August 1996). However, it will be in the following period –Ibarra and Telerman (FREPASO) administration- from August 2000 to December 2007, when an innovative language policy will appear. In the framework of this new policy the Bilingual Schools Programme of the City of Buenos Aires is introduced, with the purpose of "introducing foreign languages teaching systematically, intensively and gradually as from 1st form in state primary schools" (Resolution No. 786/SED/01, our translation).

Following a "curricular justice" criterion[i], actions would initially focus on the socioeconomic disfavoured population of the schools to the south of the city. In view of the reality of the field, and at the request of the technical team in charge of the programme, the initial project quickly becomes the "Plurilingual Modality Schools Programme with Intensification in First and Foreign Languages" (Resolution No. 2736/SED/02): a huge change in paradigm that leaves behind the initial objective of a Spanish-English school bilingualism based on an equity criterion and replaces it with one of integration of the knowledge of two foreign languages with the language of schooling and the first language(s) of the students (or "language practices" in general) and the rest of the curricular subjects. The transition between one model and the other also implies decisions as to which languages will be included in the plurilingualism encouraged by the programme: the traditional array of international languages taught in formal Argentine education (English, French, German[i] and Italian), to which Portuguese is added for the first time at primary level.

At this point, it is worth considering how each school adopted "plurilingualism". In other words, how it was decided which languages would be taught and in which order, in each case. According to Ms. Lucila Gassó, former coordinator of the programme, while the schools chosen to participate in the programme (one per school district) were selected by the

authorities because of strategic reasons; the rest of the decisions were left in the hands of the school heads. Thus, several factors were taken into account: previous situation regarding the language taught at the school, historic-identitarian factors (e.g., if the students were in contact with people living close to Brazil, as in the case of the schools named Province of Corrientes and Province of Misiones, which chose Portuguese as the first foreign language, or if they were located in former Italian immigrant settlements, which has undoubtedly had an influence on the incorporation of such language in La Boca and Barracas plurilingual schools), together with other more arbitrary or diffuse factors. The care for balance in plurality, therefore, was assumed by those responsible for the programme and resulted in skilful negotiations with the school heads. As we can still see today[i], the intervention has left long lasting effects in the linguistic school map of the city, and remains even when the political-linguistic orientation of the current administration has taken different ways (*cf. infra,* § 4).

After this brief outline of the state initiatives regarding the languages taught at the schools of the city, we can draw some conclusions. First, there seems to be a straightforward relation between foreign language policy and foreign policy, i.e., the official view about the international positioning of the country, which determines partners or privileged allies in such field. The ideological proximity and the strategic interest that leads two countries (or, recent evolution, sub national entities such as the cities of Buenos Aires and Beijing) to become politically connected has, given certain conditions (recognized vehicular value and prestige to the partner's language, specially) effects on the linguistic and educational policy. In these cases, state schools work as the place for the realization of such projects of diplomatic nature. In contrast to what happens with French, Italian or Chinese, the decisions concerning English do not relate with explicit diplomatic commitments but rather to acceptance by the education authorities of a hegemonic power of diffuse origin: an imperative of the time, or a social demand. Also, it is noticeable that not always have state policies followed top-down movements in their constitution. Local active processes and willingness (in the process of implementation of plurilingual schools) even ended up being conditions of feasibility of the project.

The fact is that founding interventions which take place in certain moments of history under specific circumstances, with defined arguments and objectives, leave a trace: the (small) current plurilingualism in language teaching at Buenos Aires schools is, thus, in great extent, a historic inheritance.

Language policies in institutions and communities

The overlap of interests (international, institutional and communitarian) influencing language management in the curriculum does not take place solely in the state-run sector. In fact, several agents ought to be taken into account to illuminate the underlying reasons for the decisions regarding languages in the private sector as well.

There are a great number of private schools in the City of Buenos Aires, many of which were founded by immigrant communities (Arabs, Armenians, Basques, Germans, Greeks, Italians, Japanese, Koreans, among others). Even if these communities have spread across the city over time, the location of their schools is a reminder of their original settlements, the neighbourhoods where the newly arrived established their first religious and communitarian centres. Such is the case of the Armenian and Greek schools in Palermo and Villa Crespo, the Arab schools in Floresta and San Cristóbal, the Jewish schools in Balvanera, Flores and Villa Crespo, or the Korean school in Flores.

The identitarian adscription of these institutions is undeniable: it emerges in their educational ideals, crests, flags and curricular projects. However, according to the data collected, the number of students studying the community languages at school (Italian, German, and those in the "other" category) is extremely low. This apparent inconsistency in the data is explained by the fact that all these schools have also included English as an additional (foreign) language in their curriculums. The schools differ in the status assigned to the languages taught, though: in some institutions, the community language loses value in relation to English, while in others the community language is stripped off its communitarian status to become an international language.

In the first case we identify institutions that find it impossible to insist of the compulsory learning of the community language, either because the new generations lack interest in it or because the school begins to attract students who do not belong to the community. The schools in this situation (the Arab, Armenian or Greek schools, for instance) have thus opted for English as the main additional language, while the community languages have been relegated to a second place. These languages are taught in optional courses for the children who do not belong to the community (for example Armenian at Colegio Mekhitarista o Instituto San Gregorio el Iluminador) or in after school classes (as the Arab courses at Instituto Argentino Árabe Islámico[ii]), or still remain compulsory subjects but with a low class load (e.g.: Greek at Instituto Incorporado Colectividad Helénica o Hebrew at Escuela ORT). These changes in the status of the languages hardly ever follow a planned institutional language policy. Instead, they tend to occur progressively and "by default". Moreover, they reveal the tensions between varied, and even contrasting, representations about languages, in which the instrumental academic and professional value attributed to English outweighs the cultural and identity value of the community languages, a value which is actually too distant or even nonexistent for most students and their families. Nonetheless, the schools do not relinquish their idenititarian adscription, and since the community language is no longer the main guarantor of the cultural transmission, this role falls mostly on religious practices, art (music, dancing) and school liturgy.

In the second case we find schools which consider their linguistic-cultural patrimony the core of their institutional identity. These are institutions typically located in the north area of the city, with a high academic profile and which attract students from middle or high

socioeconomic levels. In the same scenario of the arrival of students from outside the community, these schools adopt an explicit institutional language policy characterized for adding English to their curriculum, but alongside the community language. They define themselves as "bilingual" institutions (Escuela Comunitaria Arlene Fern, Colegio Beth), "plurilingual and pluricultural" (Instituto Privado Argentino Japonés en Buenos Aires) "bicultural and trilingual" (Escuela Italiana Cristoforo Colombo) or "bicultural and multilingual" (Colegio Pestalozzi), and it is precisely because of the languages they offer that these schools gain competitive advantage. The strategy of keeping the community language does not relieve them from tensions, though. At these schools, the languages depart from their close affiliation to the local immigrant community to get redefined as global or international languages, a new label institutionally supported and consolidated by strengthening ties with foreign universities (such as Cambridge University or Okinawa University) and agencies for language and cultural policy (Jewish Agency for Israel, DAAD, Japan International Cooperation Agency, Italian Ministry of Foreign Affairs and International Cooperation, etc.), which offer access to study trips, international examinations or dual certification of studies.

Both cases reveal that the institutional decisions regarding languages are not taken in isolation. All the community schools that have been investigated share similar characteristics: they were founded by local immigrant communities and they have received international support at some point of their (past or recent) history –by embassies, international cooperation agencies, ministries of foreign affairs or other governmental organizations of their countries of origin. The scope of the synergy varies in each institution, depending on the ability to match the local efforts to the foreign policies of cultural promotion or their financial capacity.

The case of Chinese: state and community policies

According to the Communities Observatory of the City of Buenos Aires statistics, 80% of the Chinese population that arrived to our country settled down in the City of Buenos Aires and Greater Buenos Aires. In the city, the area surrounding Belgrano C train station became known as Chinatown, the centre of the Chinese and Taiwanese community where they set up their institutions: shops, civil associations, religious centres and non-official schools. The latter offer after-school or Saturday courses of Chinese language and culture for the children of the community.

What makes the case of Chinese different from the other community languages is that it has been the target of language policies designed by the local government over the past years. These actions have taken place mostly in the educational arena, and the most salient result has been the opening of the Argentine-Chinese Bilingual School[iii] in 2014. This school, inaugurated by then Mayor of Buenos Aires M. Macri in an event with high media coverage, was born from a strategic and commercial alliance settled in a Cooperation

Agreement[iv] signed in 2009 between the City of Beijing and the local authorities. The agreement establishes cooperation and joint action in several areas, such as urban development and infrastructure, culture, tourism, transport, health and education.

The school is located in Parque Patricios and it offers a bilingual curriculum applying the model of reciprocal immersion. In the opening ceremony, the Chinese Embassy Cultural Advisor explained that the school also meets a recurrent demand of the Chinese community for official education[v]. However, decisions regarding location, human resources and curriculum were made by officials of the embassy and of the Ministries of Education of Beijing and Buenos Aires, with no participation of the community. The two sides also hold different representations of the language: while for some it is a vehicle of cultural transmission and a link to the country of origin, for the others it is a global language for the future[vi]. These disparities may explain the characteristics of the first students enrolled, mostly Spanish-speaking children living in close to the school (Argentinean or from neighbouring countries) and only a reduced number of Chinese students coming from Belgrano and other areas by a bus provided by the school.

The Argentine-Chinese Bilingual School is not the only school where students have access to that language, though. There is another case of a state primary school that has been authorized to include Chinese in its curricula (Res. Nº 1356/MEGC/2015). This school[vii], located in Belgrano neighbourhood and depending from the Department of Teacher Training (*Dirección de Formación Docente*), has been delivering Chinese courses since 2015. In this case, the inclusion of Chinese answers to an actual need of the institution, which, due to its location, was already receiving a great number of students from the community. Yet, the model implemented has little to do with that of reciprocal immersion aforementioned: this single shift school offers an hour extension with Chinese classes for first cycle students (1st, 2nd and 3rd formers) and optional after school classes for students in second cycle (4th to 7th formers).

In a kind of contagion effect, some private institutions have also started to include Chinese classes, either in curricular or extra-curricular courses. Far from communitarian purposes, they base the arguments for its inclusion on the attributed instrumental value of the language from a purely strategic commercial standpoint. For example, at Lincoln College, a traditional private elite school, the primary school students have been learning Chinese since 2014 because it is a "new tool for their future[viii]".

These recent experiences reveal disparity in the financial and human resources devoted to the teaching of Chinese at primary school level, even within the same sector. A similar disparity emerges in the value and status attributed to the language, a global language for the government officials and some institutions, a vehicle for identitarian and cultural transmission for the Chinese-speaking community. It is true that the inclusion of Chinese in state primary level schools is a very young and scarce phenomenon, but it gains greater relevance when looking at other actions of state language policy outside formal education:

the offering of extra-curricular courses at secondary school level[ix], the inclusion of Chinese in the CLE examinations[x] since 2014, the presence of the language in Buenos Aires Book Fair since 2016. All in all, these actions seem to confirm that Chinese has entered into the education system of the city as a language of high instrumental value, which, in the current political scenario, may gain ground against other foreign languages in the curriculum.

Conclusion and implications

In this temporal and socio-spatial journey we have undertaken to try and comprehend the process that have led to the current distribution of foreign languages in the primary school level in the City of Buenos Aires, we have managed to identify various configurations of language policy at different points in time. From top-down interventions planned by the state (the incorporation of foreign languages in double shit schools in 1968), to actions presented as a response to social demand (the widespread teaching of English); from focal interventions negotiated with the beneficiaries (the Plurilingual Schools Programme), to actions conditioned by diplomatic agreements; from institutional policies with explicit rationale and objectives, to other that just happen, driven by inherent inertia.

Nevertheless, these processes take place over a pre-existent social fabric, and they are an expression of it, as well as a manifestation of the intention of the actions that seek to intervene in it. The traces of the Italian immigration in the early 20th century are inscribed in the decisions that sustain the teaching of Italian in the south of the city, even if the language acquires a new meaning in the current context in which Italy seems to be an interesting political and economic partner. The French foreign language policy promoted since the 1960s, which aims at extending knowledge of French in the middle classes from countries such as ours, still produces effects. The community languages resist, with diverse strength, an assimilating process of unknown fate, whereas those which manage to redefine themselves as international or, even better, global, survive and expand. And if the assimilating process turns overwhelmingly to the predominance of English (facilitated, more often than not, by state policies), the elite schools place high value on plurilingualism, to the extent that it becomes the core of their educational proposal and institutional identity. It is a plurilingualism (or cosmopolitanism) of global languages, which includes English, French, German, Italian and, lately, Chinese and Portuguese.

The situation of Chinese and Portuguese, with conspicuous presence or absence in recent state policy, is particularly revealing. In the case or Portuguese, the status of valuable international/global language attributed by some private elite schools has no correlation in the decisions affecting the teaching of languages in state schools, where it is barely present despite its geographical, linguistic and cultural proximity. And when compared to the boosting of Chinese, the difference becomes even more striking.

This last example is a good synthesis and an open door to start new inquires into to language policies that shape the history and place of the languages in the City of Buenos

Aires. To unravel the mechanisms and intentions of the decisions on language policy, we cannot but question the underlying social model and geopolitical project in which they are inscribed.

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i. At the time of the 2013 Annual Survey, the bilingual Mandarin Chinese state-run school did not have students learning that language in the primary level yet. According to the City government, 400 children will be able to enroll in that school (http://www.buenosaires.gob.ar/noticias/la-ciudad-inauguro-la-primera-escuela-bilingue-argentino-china). Nor had the English-Mandarin Chinese intensification started in the primary level at Escuela Normal Superior N° 10 "Juan Bautista Alberdi".

ii. As from 2005, the City of Buenos Aires has been reorganized politically and administratively in 15 communes, decentralised territorial units usually comprising more than one neighbourhood (Law N° 1777/05, City of Buenos Aires). This new organizations has not modified the population distribution that has characterised the different areas of the city since the beginning of the 20th Century.

iii. The few schools chosen to apply a pilot plan included the teaching of a foreign language as from 1st form. This stopped in 1973, after the introduction of the new regulations for double shift schools, which stated the start of language teaching as from 3rd form.

iv. Cultural, scientific and technical cooperation agreement between the Argentine Republic and the French Republic governments.
v. Cf. Bein, n.d., http://www.linguasur.com.ar/panel/archivos/f9227ef50db3de732e1d3f897de85aa8Bein%20lenguas%20extranjeras.pdf.
vi. Cooperation Agreement between the government of the City of Buenos Aires and the Consulate General of the Italian Republic in Buenos Aires, 2014, art 6
vii. Cooperation Agreements between the Embassy of the Republic of France and the former Secretariat of Education of the City of Buenos Aires, 2001 and 2005; Educational, scientific and academic cooperation agreement between the French Embassy and the City of Buenos Aires, 2013.
viii. Cf. art. 5to. Full text of the agreement at http://www.buenosaires.gob.ar/sites/gcaba/files/conven-franciagcba.pdf
ix. Schools involved: No. 4 and 9 D. E. 9, No. 6 and 22 D.E. 10, No. 2 and 22 D.E. 14, No. 3 and 27 D.E. 15, No. 4 D.E. 13, No. 19 D.E. 20, No. 13 D.E. 19, No. 5 D.E. 21.
x. Cf. e.g., Ministry of Culture and Education: *Common Basic Contents for Polimodal Education*, 1966
xi. Cf. Castillo, L., in Ruiz de Aguirre, 2013: 125.
xii. Although the inclusion of German in the programme was considered, it was never implemented (Lucila Gassó, personal interview, May 2017).
xiii. http://www.buenosaires.gob.ar/educacion/idiomas/idiomas-en-primaria/escuelas-plurilingues
xiv. We would like to thank Libertad Fructuoso for kindly sharing information on Instituto Argentino Árabe Islámico, which is part of her research work at Maestría en Gestión de Lenguas, UNTREF.
xv. School No. 28 D.E. 5. In this double shift school, two bilingual classes for 4- and 5- year-olds were authorised in 2014. As from 2015, the Bilingual Modality started at primary level.
xvi. Cooperation Agreement N° 26/2009, Law of the City of Buenos Aires N° 3565/2010.
xvii. "The Chinese residents used to complain because of the lack of official schools to send their children; that is why we put forward this need to Minister [of Education] Esteban Bullrich, and this project was completed soon' explained Mengtang Han, Cultural Advisor of the Chinese Republic Embassy in Buenos Aires" ("Una escuela en la que se hablan chino y español", Diario *La Nación*, 18/3/2014, our translation).
xviii. "In the past, people would learn French to read literature and English to do business. What will the language of the future be? It may be Chinese." Official Facebook post of then Mayor of Buenos Aires, M. Macri on the inauguration of the school (18/03/2014, our translation).
xix. Escuela Normal Superior No 10 "Juan Bautista Alberdi" D.E. 10, located in the vicinity of Chinatown.
xx. Cf. http://www.lincoln.esc.edu.ar/nivel_primario.php. Last access 1/6/2017.
xxi. Bussiness School No. 7 D.E. 10 "Manuel Belgrano" (in 2011) y School No 18 D.E. 18 "Dr. Alberto Larroque" (in 2013)
xxii. Foreign Languages Certificates (*Certificados en Lenguas Extranjeras*), exams to accredit knowledge in foreign languages for students who are studying in state and private schools in the City of Buenos Aires.

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Exploring CLIL in Turkish context: Teacher and student voices

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ABSTRACT

This mixed method study investigates the perceptions of teachers and students on Content and language integrated learning (CLIL) methodology and reports their relevant classroom practices within the Turkish context. With this in mind, a set of qualitative data was collected by means of semi-structured in-depth interviews, teacher documents and classroom observations, while the quantitative data was collected using a CLIL questionnaire. The participants included four teachers applying CLIL methodology and their 5th grade students. The qualitative results indicated that teachers view CLIL as a challenging but pedagogically beneficial teaching practice providing positive affective aspects for the students such as higher motivation and self-confidence. The quantitative results also showed that students had highly positive perceptions toward CLIL as they found CLIL lessons highly effective for their language development and the content knowledge. This study offers practical implications for CLIL teachers and CLIL programme designers.
Keywords: content and language integrated learning; student perspective; teacher perception

RESUMEN

El presente estudio de método mixto investiga las percepciones de docentes y estudiantes sobre el aprendizaje integrado de contenido y lengua extranjera (AICLE) y reporta sobre prácticas significativas en el contexto turco. Con este propósito, se recolectaron datos cualitativos a través de entrevistas semi-estructuradas, documentos de docentes, y observaciones de clases, en tanto que los datos cuantitativos provinieron de un cuestionario sobre AICLE. Los participantes fueron cuatro docentes que aplicaban AICLE y sus estudiantes de 5to grado. Los resultados cualitativos indicaron que los docentes percibieron a AICLE como un desafío pero con beneficios pedagógicos sobre todo en torno a la motivación y la auto-confianza entre los estudiantes. Los resultados cuantitativos también demostraron que los estudiantes tuvieron una alta estima sobre AICLE debido a que evaluaron las clases como efectivas para el desarrollo del inglés y contenido conceptual. El estudio incluye implicancias prácticas para docente y curricularistas de AICLE.
Palabras clave: aprendizaje integrado de contenido y lengua extranjera; perspectiva de estudiantes; percepción docente

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THE TERM CLIL (Content and Language Integrated Learning) coined by Marsh (1994) is one of the educational approaches that includes two dimensions -language and content- which melt in the same pot with equal proportions. "CLIL encompasses any activity in which a foreign language is used as a tool in the learning of a non-language subject in which both language and the subject have a joint curricular role" (Marsh, 2002, p.58). As Coyle (2007) suggested, this definition distinguishes CLIL from the other foreign language teaching methods and approaches through content: "the distinctiveness lies in an integrated approach, where both language and content are conceptualized on a continuum without an implied preference for either" (p.544). In that sense, by means of CLIL approach, language and content have equal status in relation to learning objectives. Ball, Kelly, and Clegg (2015) distinguish CLIL as soft CLIL versus hard CLIL. While the former includes teaching topics from the curriculum as part of a language course, the latter focuses on teaching partial immersion programs where almost half of the curriculum is taught in the target language. In this vein, while soft CLIL focuses on language aspects taught by language teachers; hard CLIL concerns subject content via involving subject teachers in its delivery and language is viewed as a vehicle. In addition, mid-way between these models, some schools teach a modular CLIL program where a subject such as Science or Art is taught for a certain number of hours in the target language as exemplified in this study.

To our best knowledge, despite the increasing importance of CLIL in ELT, very few studies have been conducted in Turkey to examine the EFL students' and teachers' perspectives toward CLIL instruction and limited number of studies carried out to explore teachers' practices in implementing CLIL. Therefore, the present study aimed to address this gap in the literature as it sheds light on the perceptions of Turkish EFL teachers toward CLIL and their practices in their teaching contexts. Also, by means of giving a voice to students to express their views on the CLIL classes, a more detailed and complete picture would be drawn via describing their experiences in terms of their ideas, challenges and feelings while receiving content instruction in a FL, English.

Literature Review

CLIL is an innovative pedagogical approach that has been known and implemented in different countries and educational institutions in relation to their FL or L2 education system and curriculum. As suggested by Coyle, Hood, and Marsh (2010), "CLIL is a dual-focused educational approach in which an additional language is used for the learning and teaching of both content and language" (p. 1). Therefore, CLIL is an integral approach with a flexible function. In that sense, language and content are balanced elements within a classroom without surpassing one another as CLIL "is an innovative fusion of both" (Coyle et al., 2010, p. 1). Furthermore, what makes CLIL as one of the most popular communicative methods known in the 1990s is its characteristic that fosters "the high level of authenticity" (Coyle et al., 2010, p. 5).

There are general parameters for CLIL which consist of cognition, culture, content, and communication, known as 4Cs framework (Coyle, 2005). Any particular CLIL model or methodology needs to consider the relative significance of these parameters. In this context, language as a learning tool functions in three ways: of, for, and through. As indicated in the figure 1, communication, culture, content, and cognition are interrelated elements that link to each other and language education plays a significant role in this respect. Specifically, the 4Cs framework for CLIL began with content including subject matter (such as History, Geography, Arts, Music, Science, Information Technology) and centers on the interrelationship between content (theme, cross-curricular aspects, subject matter) and communication (using language to learn and mediate ideas, thoughts, and values); cognition (development of higher order thinking and knowledge processing) and culture (being aware of self and others) to create links and integrations between learning by means of content and cognition, and language learning via communication and cultures. In this regard, it combines learning theories and language learning theories with intercultural understanding and awareness. According to the 4Cs Framework, effective CLIL occurs by means of continuous improvement in knowledge, progress in skills and understanding of the content or subject matter, engagement in a communicative context, interaction in cognitive processing, enhancing suitable language knowledge and skills in addition to gaining an in-depth intercultural awareness. Within this perspective, CLIL embraces learning to use language suitably whilst using language to learn efficiently.

The following diagram (Figure 1) indicates Coyle's 4C model and the link between four parameters of CLIL.

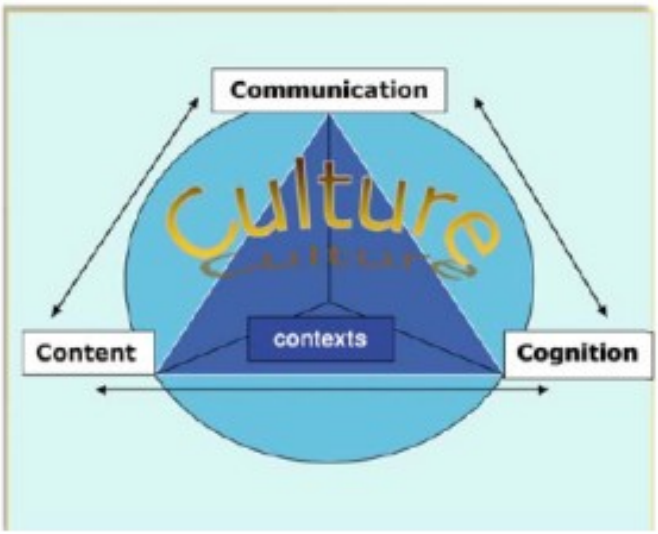

Figure 1. The 4C Framework for CLIL: Adapted from Coyle (2005).

However, the traditional interpretation of CLIL as a 4C-based methodology has recently been criticized as being insufficient. For instance, Gierlinger (2014) uses the term "context-sensitive", meaning the entire CLIL framework is encapsulated within context, suggesting a

'fifth C'. Therefore, a new interpretation of CLIL has appeared by means of adding a further 'C' (context) and CLIL is better described as being 4C+1 but not 5C, as the extra 'C' encapsulates the entire CLIL framework (Lynch, 2015). As shown in Figure 1, 'communication', 'content' and 'cognition' each occur in a cultural environment which allows us to reconceptualise Coyle's earlier 4C Conceptual Framework for CLIL as a 4C+1 framework, with culture affecting each of communication, content and cognition as all exist in a particular context as indicated in the Coyle et al. (2010)'s diagram (Figure 2).
The second diagram (Figure 2) indicates 4C+1 conceptual framework for CLIL via adding context as a fifth component.

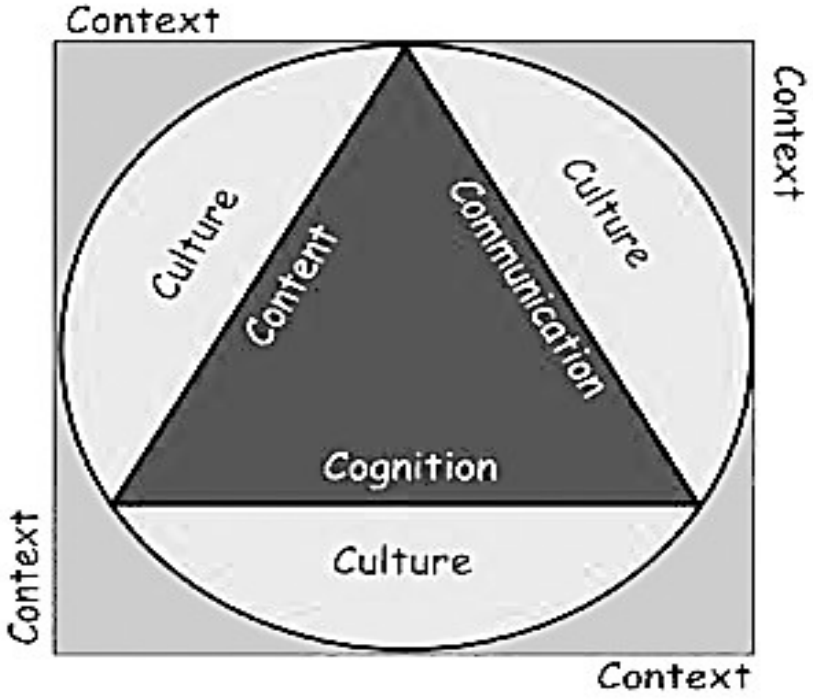

Figure 2. The 4C+1 Conceptual Framework for CLIL (Coyle et al., 2010)

CLIL in the World Education

There have been some studies attracting a great deal of attention in investigating the CLIL practices in different contexts with various aims. For instance, some of these studies concerned about the relationship between CLIL approach and affective factors such as motivation and confidence. In that sense, Marsh, Malijers and Hartiala (2001) claimed that CLIL could be used to increase students' motivation by offering them alternative goals as well as means while Lasagabaster (2011) found that CLIL students were more motivated than non-CLIL students with respect to the degree of interest, instrumental motivation, and attitudes towards learning English at school. In accordance with these, Leone (2015) and Hunt (2011) asserted that CLIL increased learners' motivation. In parallel with these findings, Nikula (2005) figured out that CLIL students had higher confidence in their use of English. On the other hand, some of the studies focused on the linguistic and lexical

advantages of CLIL instruction on students. For example, CLIL students had better linguistic accuracy (Klippel, 2003) and L2 listening and L2 reading affected positively (Dalton-Puffer, 2008). In addition, Naves and Victori (2010) carried out a study to compare CLIL and non-CLIL students and the results of their study revealed that CLIL students outperformed their non-CLIL peers on a number of language proficiency measures in several grades, but also eight grade CLIL students outperformed ninth grade non-CLIL students on all of the measures tested. In the same vein, it was found out that CLIL students' receptive and productive lexicon was larger, contained more words from lower frequency bands, had a wider stylistic range, and was used more appropriately. In this respect, CLIL students deployed not only lexical but also morphosyntactic resources in more elaborate and more complex structures (Jexenflicker & Dalton-Puffer, 2010; Lo & Murphy, 2010; Ruiz de Zarobe, 2010; Zydatiss, 2007).

CLIL in Turkish Context

CLIL in Turkish context dates back to the establishment of Maarif Schools giving education at high school levels in 1955s (Çetintaş & Genç, 2001). In 1975, these schools were named as Anatolian High Schools where most specifically English as a FL was the medium of instruction. As stated in the national government publication, these schools were founded with the aim of educating young people who are capable of speaking world languages, and benefit from scientific studies to catch up with quickly developing economic and technical studies (Çetintaş & Genç, 2001, p.51).

According to the data from Council of Higher Education, there are 188 state, foundation and private universities in Turkey that use English as a medium of instruction (YÖK, 2012). In this regard, CLIL is implemented in various levels of education with different degrees. For instance, CLIL has more recently been practiced in some of the Social Science High Schools and private primary and secondary schools in different cities of Turkey.

In this vein, as an example of non-native context, more recently, Turkey has experienced CLIL studies as a demand of an increasingly popular pedagogic approach. In this vein, these studies have become influential in understanding the contribution of CLIL to the L2 perceptions and development of the learners in an EFL educational environment. For instance, Altınkamış (2009) investigated the relationship between CLIL and motivation and found out that there was a positive relationship between CLIL and motivation in language learning. In addition, Yılmaz and Şeker (2013) conducted a research to find out the impacts of learning English through CLIL and ICT and examined the opinions of Turkish young learners toward learning a FL through CLIL and ICT. It was revealed that the sample implementation of the CLIL was viewed highly positive by the children and students became more motivated and involved in that process. Accordingly, Bozdoğan and Karlıdağ (2013) conducted another study with 15 university students in a state university to explore students'

perceptions toward CLIL and found out that while perceived advantages included English as a global language, practicing English, job opportunities, feeling of success and self-confidence; perceived disadvantages consisted of comprehension of the subject matter and content in L2 due to English, particularly the terminology, and lack of qualified instructors.

In the light of the reviewed literature, it is obvious that there are a limited number of studies in Turkish context on both teachers' and students' perceptions regarding CLIL. Moreover, there are just a few studies exploring teachers' classroom practices regarding CLIL. Grounded on these, further research is needed to contribute to the studies on the views and practices of EFL teachers and beliefs of students abroad and in Turkish context. In response to this gap, this study aimed to find out not only the perceptions and the pedagogical practices of Turkish EFL teachers but also the attitudes of students toward CLIL. The following research questions were addressed in this study:

1. How do teachers and students view CLIL as a course content and practices?
2. What kind of pedagogical practices are adopted by CLIL teachers?

Methodology

The study adopted an exploratory-mixed method design (Creswell, 2003) which included an initial phase of qualitative data collection and analysis followed by a phase of quantitative data collection and analysis in order to explore the perceptions and corresponding CLIL practices.

Participants and Setting

The participants in this mixed method research included 42 A1 level fifth grade secondary school students enrolled at a private secondary school in Edirne, Turkey during the fall semester of 2017-2018 academic years. The participants, who were selected conveniently, were having eight hours of Basic English courses and 2 hours of CLIL courses in their weekly schedule. On the other hand, the teacher participants included an Information Technology teacher (IT), Visual Arts teacher (VA), Music teacher (MT) and an English instructor (ET) who were experts in their field and had at least four-year experiences in their profession regarding this private school. When the school context is concerned, it is an International Baccalaureate (IB) accredited School regarding Primary Years Programme, Middle Years and Diploma Programme. In that sense, the curriculum, assessment tools and materials are all organized according to the principles and criterion of IB.

Data Collection

Classroom Observations

The CLIL classrooms were observed twice within two weeks in order to examine the pedagogical practices of teachers regarding CLIL instruction. In order to have an in-depth understanding on classroom practices and implementations including not only teachers' role,

materials, methodology and activities but also students' engagement, their response to CLIL instruction and their involvement in the activities, these participant observations were obtained in CLIL classes that consist of IT, Visual Arts and Music classes in English. During the classroom observations, field notes (Cresswell, 2007) were kept by the first author.

Teacher Documents

The documents including unit plans, assessment records, rubrics, students' process diaries were collected and analysed with the aim of exploring the CLIL practices in this EFL context. In this vein, the documentation includes both learning (tasks, assignments, posters, student work) and teaching artefacts (teaching materials and lesson plan).

Semi-structured Interviews

In-depth interviews in semi-structured design were used as the method of qualitative data collection. Convenient sampling was used for the selection of the interviewees. The interviews were conducted with four teachers with the aim of exploring how they view CLIL as a course content and practices. In this context, all of the teachers were informed about the audio-recording at the very beginning of the interview and asked to give informed consent before taking part in the interviews. The interviews, approximately 25-30 minutes in length, were conducted in Turkish, the native language of the participants. Initially, the researcher started with self-introduction and then follow-up questions were asked when further details were needed regarding their perceptions of CLIL.

CLIL Perception Questionnaire

The CLIL Perception Questionnaire was developed by the researcher by means of the inductive analysis of semi-structured interviews to explore the perceptions of students regarding CLIL. The questionnaire contains 10 items which were all answered on a five-point Likert Scale. To ensure validity of the items in the questionnaire, we developed the open codes which emerged from the semi-structured interviews with the teachers into statements that could represent the views of the potential participants to gather quantitative data from a larger sampling. Therefore, the questionnaire includes four different subscales, each of which consists of items referring to different codes regarding CLIL: affection (the statement 3 and 7), content (the statement 5 and 6), language (the statements 1, 2, 4, and 10), and interaction (the statement 8 and 9). The reliability estimate was found to be $\alpha = 0.91$ for the questionnaire, which is categorized as a high reliability score.

Data Collection Procedure

This mixed-method research was carried out in one of private secondary schools in Edirne, Turkey. The participants of the study were 42 fifth graders and 4 teachers lecturing in the same private school. First of all, semi-structured face to face interviews were held with four

teachers in the school to gain in-depth understanding regarding their perceptions, opinions, feelings, and practices on CLIL. In that context, these four teachers were informed about the purpose of the interview and the audio-recording at the very beginning of the interview and asked to give informed consent for the recording and transcription of interviews before taking part in the interviews. Also, the teachers were informed that their identities would be protected. The interviews, approximately 25-30 minutes in length, were conducted in Turkish, the native language of the teachers. Each interview was recorded by using audiotape, and the researcher took field notes during the interviews.

Following the interviews, the data obtained from the interviews was analyzed inductively. Therefore, with the emerging themes from the inductive analysis of the interviews, the researcher designed a CLIL perception questionnaire with the help of a field expert aiming to investigate the views of students on CLIL. The administered questionnaire contained 10 items which were all answered on a five-point Likert Scale ranging from "strongly disagree" to strongly agree" with values 1 to 5 assigned to them respectively.

Accordingly, the classroom observations were conducted twice within two weeks in order to examine the teachers' practices and implementations regarding CLIL instruction in CLIL classes that consist of IT, Visual Arts and Music classes in English. During the classroom observations, observational thick notes were kept by the researcher. Also, the documents including not only the student but also teacher artefacts were obtained to have a detailed understanding of the objectives of CLIL approach and classroom applications.

Data analysis

For the purpose of the study, the data was analysed by means of a combination of qualitative and quantitative strategies which Lynch (1996) calls as a mixed study design and asserts that it provides the most thorough information possible as the data is validated by means of triangulation. The data obtained from the CLIL perception questionnaire was analysed by Statistical Packages for the Social Sciences (SPSS) through descriptive statistics. Also, Pearson Correlation Test was used in order to find out whether there was a meaningful correlation between the subscales of the questionnaire. On the other hand, the semi-structured interviews and observation records were analysed inductively to form concepts and hypotheses in a bottom-up process rather than deductively testing theories (Merriam, 2009, p.15). In this context, by means of inductive analysis, the first step that the researcher followed included reading the collected data and identifying the frames of analysis. The next step required data reduction that necessitated narrowing the focus and making the data reader friendly. For instance, sub themes were formed under major themes in the light of the data analysis process. After reading the data, creating domains and relationships, and connecting the emerging themes, lastly the analysis was completed within domains. For inter-rater reliability, the CLIL questionnaire, semi-structured interviews and observations were evaluated by the researcher and a field expert.

Findings

The pedagogical practices adopted by CLIL teachers

When the observational thick notes and documents were analyzed in an interactive way, it was found out that ET was highly active and dominant while introducing the theoretical background of content specific information while subject teachers were only active during the application process while playing instruments (MT), creating blogs (IT), drawing pictures (VA). Furthermore, the ET and the subject teachers collaborated with each other during planning, teaching and assessing students. However, the CLIL lessons were held with language driven pedagogy in general. In this regard, the main goal of the teachers and the administrators focused on improving language skills of the students during implementation via leaving the content and the subject teachers in the secondary role whilst unit plans and assessment rubrics had content based objectives and put it into primary status.

Teacher Roles and Dominance

Both teachers including the ET who has an ELT background and low content knowledge and the subject teachers who are experts in their fields and have low L2 levels were lecturing in CLIL classes primarily with the aim of improving students' language skills and developing content knowledge in an integrated way. Although the administrators and the education coordinators insisted them to give lectures solely in L2 via giving a highly active role to the ET and a passive role to the subject teacher; the teachers struggle to co-teach as they need each other's' background knowledge, pedagogical support and field expertise while lecturing together.

As revealed in the observational thick notes, English teacher was dominant and had a highly active role during the CLIL lessons, which involve teaching the subject content in Visual Arts, Music and Information Technology specifically for presenting the theoretical knowledge. For instance, during the IT lesson, English teacher asked students what digital citizenship meant and what the nine elements of digital citizenship were to recall pupils' background information in the previous lessons and all of the students tried to participate into class via telling different aspects of digital citizenship. During this process, the IT only monitored students with a passive outsider role. Later, the students started to present their power point presentations from their individual I Pads. While each student was presenting, the other students were taking notes and following their friend's presentation. On the other hand, ET was trying to give feedback to students about their linguistic mistakes including spelling, pronunciation, grammatical errors while the IT was focusing on the content and also the features of power point presentation consisting of the colors of the background, highlighting the titles, adding sound effects. The students preferred to ask questions to the ET in general to clarify the unclear points, check the meanings of the words, and even taking permission to go out. In this regard, they accept the ET as an authority in the class as the ET is responsible of teaching the subject matter, checking students' understanding and

comprehension, clarifying the complex terminology and structures, guiding the students during their involvement in the learning process, giving instant feedback to them. However, the IT teacher who has an observer role similar to the other content teachers in general, is responsible of application process. For example, while the students were trying to open a document or file from their I pads, create a sheet, and involve in technology integrated practices, they depended on their IT for guidance. Then, during practices on computers, the subject teacher appeared on stage. In addition, when the students and the ET were not clear about a specific term related to the content, the IT made further explanations in Turkish.

The process was nearly the same for the Music and Visual Arts lessons conducted by means of CLIL approach. For example, while the students were making power point presentations regarding the musical periods in the Music lesson, the ET had the active role again for monitoring the presentations and giving instant feedback to students regarding their morphological and phonological mistakes. Also, as the lesson plan was designed according to students' and teachers' solely using the target language, the students had to be more actively and frequently interacted with ET. However, with the consideration of specific terms and content, MT was engaging in the presentations as correcting students for saying composer instead of writer or asking content specific questions related to the features of romantic or classical period. Sometimes, the MT had to communicate in L1 due to the low proficiency levels of both the students and him in L2.

In the same vein, for Visual Arts, the ET started the lesson by taking notes for introducing the new unit (Pollution) and for presenting the target vocabulary related to different pollution types. When the ET was active, the students were taking notes to their Ipads and the VA was monitoring them. After that, in the second class, while the students were creating their posters to describe one type of pollution and creating a slogan, they again interacted with mostly the ET in L2 and asked some questions in L1 to VA in relation with their drawings during application process.

The active role of the ET in terms of theoretical aspects and the dynamic role of subject teacher solely in application process are highly supported with some of the unit plans, students' process diaries and assessment records. For instance, when the assessment rubric for IT, unit 1 was analyzed, it was totally prepared in L2 and the students were expected to be competent in L2 to meet the content-based objectives of the lesson and requirements of the criterion-based assessment. On the other hand, without the content-based knowledge, it was impossible for the learners to design an e-book as evident in the records indicated in Appendix A.

Collaboration between Teachers

The ET and the other three subject teachers collaborated with each other while planning the lessons, designing the unit plans, determining the objectives of the lessons and assessment criteria via using rubrics. Furthermore, during the lesson, despite the highly dominant role of

ET specifically for teaching the theoretical aspects of the content and checking pupils' comprehension on content knowledge; the subject teachers were required to support the ET and work interactively with ET particularly when they needed help for content specific terminology and concepts. In parallel with these, during application process of the lessons in spite of having a more active role, content teachers needed the guidance and support of the ET while sharing the content specific knowledge with the pupils in L2. In this regard, the ET and the content teachers had mutual support and experienced learning from each other, needed to co-plan before the lessons and shared the lesson plans, teaching materials, videos, documents, assignments and tasks in goggle classroom at least one week before the lessons and took some highlighting notes before the lessons as evident in the documents included in Appendix B.

Language-focused Pedagogy

The main goal of the teachers and the administrators focuses on improving language skills of the students primarily although the unit plans and assessment rubrics shared the same characteristics in terms having content-based objectives. In this regard, by means of the classroom observations and documents analysis, it was revealed that there was a language focused instruction concentrating on improving language skills of the students in CLIL lessons via leaving the content in the secondary role. For instance, during the implementation process of CLIL instruction, the ET was generally dealing with linguistic competences of students via correcting students' language errors while engaging in productive skills such as presenting their research, working in groups and attending discussions, etc. During the IT lesson, the pupils were making presentations about digital citizenship and the ET was focusing on the structures, spelling, vocabulary and phonological rules the students used. For the Music lesson, the process was nearly the same while the students were presenting their research on musical periods and their favorite instruments. Accordingly, during VA, the pupils were presenting their posters and pictures to reflect their ideas and feelings on a specific type pollution such as air, water, soil and environmental pollution. While they were creating their posters, the ET was emphasizing the importance of using the appropriate structures and vocabulary. However, VA was engaging in the colors, views, painting, etc. Furthermore, as the pupils were expected to interact only in L2, some of them were hesitant to ask questions and share their content knowledge. In this regard, the content seemed to be in the secondary role after language. However, when the unit plans and assessment records were analyzed, the unit specific objectives regarding the content-based knowledge took the initial role and surpass the linguistic knowledge as evident in the documents indicated in Appendix C.

In brief, the CLIL lessons were held with the dominance and active role of ET in terms of presenting theoretical information whilst, the subject teacher took an observer role in general and was more active during application process. During observations, the ET

focused primarily on the development of language skills and then content related vocabulary and subject knowledge of the students. During the implementation, the subject teachers had active roles when their content knowledge was really required by the ET and by the pupils. In addition, while playing musical instruments, creating their process dairies on book creator, designing web pages, drawing pictures and painting them, students had more interaction with their subject teachers. Even though the main emphasis seemed to be on language skills in CLIL lessons, the primary objectives of the unit plans and assessment tools including rubrics were on content knowledge and skills in general. In this regard CLIL lessons were held with language driven pedagogy despite the focus on content-based objectives indicated in the lessons plans and assessment rubrics.

Teachers' Perceptions towards CLIL

Interviews centered on the inductive analysis of teachers' beliefs toward CLIL to have an in-depth understanding on their perceptions regarding their ideas, experiences, and feelings by elaborating on their classroom practices in EFL context. Under the primary category identified as teacher perceptions, the subcategories including challenges, benefits, drawbacks, and affective factors were emerged. In this vein, the results of the study indicated that not only the subject teachers including Visual Arts teacher (VA), Music teacher (MT), Information Technology Teacher (IT) but also the English teacher (ET) have positive beliefs regarding CLIL approach in general.

CLIL as a Challenging Teaching Practice

When the teachers were asked questions whether they face any difficulties in CLIL practices and the reasons, all of them mentioned the lack of teaching training programs, the low academic background of the students regarding their proficiency levels in English, the explanation of complex terminology, time-management problems in relation to the lesson-planning process and high amount of time spent for explaining core concepts, and lastly the lack of teaching materials as indicated in the following quotes:

> As the students' academic and proficiency levels in English low, I feel myself helpless while trying to explain complex terms such as digital citizenship. (ET)
>
> I sometimes find applying CLIL approach time-consuming particularly when we spend several hours for lesson planning, assessment, evaluating students' process diaries together with ET. (VA)
>
> Sometimes even for explaining a single concept, I spend minutes. When I check students' comprehension, I realize that they cannot understand completely despite our effort. (IT)
>
> For me, the most challenging thing is the lack of supplementary materials. Although we are an IB school, we need some universal materials for teaching music and arts. (MT)

> Unfortunately, without any special training on CLIL, everything becomes more difficult. (ET)

CLIL as a Pedagogically Beneficial Teaching Practice

In relation to the benefits and strengths of CLIL instruction in EFL context, all of the subject teacher and the ET mentioned practicing the L2, enhancing English proficiency levels, extending academic vocabulary, and increasing learners' motivation and self-confidence as indicated in the following quotes:

> Our students have a chance to practice what they have learnt in L2 and their proficiency levels increase gradually. (ET)
>
> Even they are fifth graders, their terminology and content related vocabulary progresses a lot. For example, they know what online platform, security, privacy, digital citizenship, digital rights and responsibilities mean and use them in context. (IT)
>
> In visual arts, while the students painting canvas, they learnt many adjectives to describe their posters. Also, while creating slogans for their drawings, they are willing to practice L2 and motivated to learn the new words. (VA)
>
> Students learn new terms related to musical periods including baroque, classical, romantic, and modern. In addition, they prepare presentations about their favorite music types. Therefore, in CLIL classes they not only practice English but also comprehend content knowledge. (MT)

In addition, the IT teacher mentioned that CLIL provides *authentic communication* for learners as indicated in the following quotes:

> The students are creating blogs to communicate in real life context and they discover how they can exchange their ideas by means of their personal blogs. (IT)

CLIL with its Drawbacks

Regarding the disadvantages and weaknesses of CLIL instruction, all of the teachers mentioned students' low proficiency levels in English. Additionally, Music, Information Technology and English teachers particularly added lack of teaching sources, L2 only perspectives and lack of institutional support as indicated in the following quotes:

> As the pupils are in lower levels, the most significant problem for the kids is understanding the complex structures and difficult terminology in English. (ET)
>
> For us, the main problem is trying to teach the content purely in L2. (IT)
>
> We need some specific teaching materials for CLIL classes and it is time-consuming to investigate CLIL aids appropriate for our students and context. (MT)

> Unfortunately, the school does not provide us opportunities for us attending teacher-training programs, seminars and workshops for CLIL approach. Thus, we feel lost even in the beginning. (VA)

CLIL Providing Positive Affective Aspects

When the teachers were asked questions to find out the students' feelings and attitudes during CLIL applications and whether they noticed any changes in the learners´ attitude to a foreign language after they had begun using CLIL at their lessons, the VA, IT, and English teacher mentioned positive affective factors including motivational increases in the students' perceptions in terms of engaging in lessons, willing to communicate in L2 and become active participants while the Music teacher mentioned the increase on students' self-confidence specifically while they were making presentations and engaging in discussions as evident in the following quotes:

> I think students feel more self-confident thanks to CLIL lessons specifically while they were making presentations or introducing their musical instruments. (MT)
>
> The students are highly willing while presenting their posters and drawings to us. (VA)
>
> I observe that most students are highly motivated to learn English and subject content compared to non-CLIL classes. (IT)
>
> The more the kids believe in what we do really work for them, the more motivated they become. I mean they progress in English and subject lesson at the same pace. (ET)

Students' Perceptions towards CLIL

Constructed on the basis of the qualitative data collected from the teachers, the questionnaire elicits the students' perceptions of CLIL. Accordingly, the means and standard deviations obtained from each dimension are analyzed under one major category as the perceptions' of students on CLIL including four sub-scales consisting of affection (the statement 3 and 7), content (the statement 5 and 6), language (the statements 1, 2, 4, and 10), and interaction (the statement 8 and 9) that were derived from the inductive analysis by means of semi-structured interviews conducted with teachers.

Affection

In the questionnaire, the statements (3 and 7) with regard to affection aimed to reveal whether the students believed CLIL enhances their self-confidence and motivation or not (Table 1). The findings indicated that the most of the participants seemed to have similar perceptions on the given statements by indicating the positive effects of CLIL on their self-confidence and motivation (μ= 3.845, SD= 1.119).

Table 1. Descriptive statistics with regard to affection.

Statements	μ	SD
Self-confidence	3.69	1.179
Motivation	4.00	1.059

Content

The questionnaire also consisted of some statements (5 and 6) regarding the acquisition of the content knowledge (Table 2). The overall frequency of students' responses (μ= 4.107, SD= .878) indicated that CLIL enables them to acquire language skills and course content as well as subject content.

Table 2. Descriptive statistics with regard to content.

Statements	μ	SD
Content knowledge	4.286	.835
Comprehension of the subject content	3.929	.921

Language

As for language, the analysis of the items (1, 2, 4, and 10) in the questionnaire revealed the positive effects of CLIL on learners' language development (μ= 4.167, SD= .819) as indicated in Table 3. While the students agreed on the statement "I improve my English in CLIL lessons in general" at most (μ= 4.529, SD= .594), the statement "I express myself easily in English in CLIL lessons" showed the least frequency in students' responses (μ= 3.762, SD= 1.100).

Table 3. Descriptive statistics with regard to language.

Statements	μ	SD
Language development	4.529	. 594
Expressing oneself	3.762	1.100
Vocabulary enhancement	4.427	.547
Linguistic knowledge	3.952	1.035

Interaction

Finally, the analysis of the items (8 and 9) aimed to find out the students' beliefs on classroom communication and interaction in the questionnaire revealed that the students

agreed on the positive effects of CLIL such as classroom interaction and active participation (μ= 3.595, SD= 1.001) as indicated in Table 4.

Table 4. Descriptive statistics with regard to interaction.

Statements	μ	SD
Active participation	3.905	1.008
Questioning patterns	3.286	0.995

In the light of overall results obtained by means of the CLIL perception scale, the descriptive statistics revealed that students have positive attitudes (3.976/.927) regarding CLIL. Their responses to the statements indicated that they have more positive perceptions regarding language (μ= 4.167, SD= .819), following with content (μ= 4.107, SD= .878), and affection (μ= 3.845, SD= 1.119). Lastly, the least positive attitudes were shown on interaction (μ= 3.595, SD= 1.001). In this regard, the findings of the CLIL perception scale showed that students' CLIL beliefs are more positive and higher in terms of language and content compared to affection and specifically, interaction.

Lastly, in order to find out whether there is a significant correlation between subscales, the data set was analyzed by means of Pearson Correlation Test on SPSS statistics and the results revealed that there was a significant positive correlation between the subscales ($p<0.01$) as indicated in Table 5.

Table 5. Person Correlation Analysis for subcategory correlations.

	Affection	Content	Language	Interaction
Affection	1			
Content	0.653**	1		
Language	0.695**	0.739**	1	
Interaction	0.636**	0.534**	0.689**	1

Note. **Correlation is significant at the $p<0.01$ level.

In this regard, the findings of the analysis revealed that there was a moderate positive significant correlation between affection and content (r=0.653), affection and language (r=0.695), affection and interaction (r=0.636). Also, there was a moderate positive significant correlation between content and interaction (r=0.534). Furthermore, it was evident that there was a high positive significant correlation between language and content (r=0.739). Furthermore, there was a moderate positive significant correlation between language and affection (r=0.695), language and interaction (r=0.689) as evident in table 5.

Discussion

The findings of the study in relation to the pedagogical practices and implementations of CLIL teachers are in accordance with the reviewed literature. For instance, the participating teachers in this study mentioned collaboration and detailed planning of a lesson. In the same vein, in the previous literature, the findings including mutual support and significance of learning from each other (Guillamon-Suesta & Renau, 2015) and need to co-plan before the lesson (Coonan, 2007) were also reported in this study.

When teachers' and students' views on CLIL as a course content and practices are considered, the findings appear to be in parallel with those of the previous studies. The teachers' perceptions of CLIL instruction were overall positive (Guillamon-Suesta & Renau, 2015). More specifically, the teachers appreciated CLIL as it allowed the students to contact with target language (Leone, 2015; Hunt, 2011; Vazquez, Molina, & Lopez, 2015) and as it improved English language proficiency (Aguilar & Rodríguez, 2012). In addition, teachers believed that extending vocabulary (Dalton-Puffer, 2008) was one of the significant benefits of CLIL instruction. In line with Altınkamış (2009), Leone (2015), and Hunt (2011), CLIL instruction was reported to increase the students' motivation. On the other hand, the inductive analysis of the semi-structured interviews with teachers revealed some challenges in respect to CLIL such as learners' low level of English (Guillamón-Suesta & Renau, 2015), lack of training and lack of institutional support (Pladevall-Ballester, 2015), and lack of teaching materials and textbooks (Banegas, 2012; Coonan, 2007; Roiha, 2014; Pladevall-Ballester, 2015).

On the other hand, in terms of student perceptions, the findings revealed positive attitudes toward CLIL, which supported the findings of the previous research by Yılmaz and Şeker (2013). Similarly, it was found out that students practiced English and felt themselves self-confident during CLIL instruction (Bozdoğan & Karlıdağ, 2013). The highly positive significant correlation between content and language found in this study was supported by the previous research (Marsh, 2002; Coyle, 2007; Coyle et al., 2010) who claim that focused on the integrative function and dual focus of CLIL with a balanced approach as students' perceptions and their self-reported achievements. This might mean that teacher views, student perceptions, and classroom practices emphasised the importance of balanced, equal and integrative functions of content and language.

In this context, even in a non-native, EFL setting, CLIL is a highly effective approach for building positive attitudes regarding both teachers and students; enhancing collaboration; increasing motivation and self-confidence; improving students' language skills and content related terminology and knowledge. These results offer some implications. CLIL teachers (a) might be supported with teacher training programs, particularly in terms of implementing appropriate strategies and pedagogies in CLIL classrooms according to students' needs, interests and suitable for their academic backgrounds and proficiency levels in L2, (b) appear to need supportive materials and textbooks to use effectively in CLIL lessons, and (c)

need to learn to work collaboratively with their colleagues efficiently not only in planning but also in implementation and assessment process.

Conclusion

To conclude, this study sheds light on the views of teachers and students on CLIL in an EFL context and elaborated on the pedagogical practices and classroom implementations of CLIL in a private secondary school. The results indicated that not only the students but also the teachers accepted CLIL as a facilitative approach for increasing students' both foreign language skills and content specific knowledge, fostering motivation and self-confidence, encouraging collaboration and mutual support among teachers. In this regard, CLIL as a positively perceived method by not only the teachers but also the students could be used in Turkish EFL education system as a facilitative, collaborative and inclusive classroom practice with the aim of increasing learners' vocabulary knowledge, supporting their autonomy, and improving their English proficiency at the same time. On the other hand, teachers are in need of support from their institutions as a solution to overcome the problems and challenges they experience in using CLIL such as the low English proficiency of students and content teachers, the lack of teacher trainings and seminars, and lastly the lack of CLIL materials. Most significantly, teachers seek for effective strategies to deal with and address these challenges. In this regard, in-service trainings, seminars, and workshops could be beneficial for guiding the teachers to find their ways in CLIL.

The present study addresses the gap in the literature suggesting an integrative perspective and synergy not only upon the students and teachers' perceptions. The findings regarding the positive perceptions of teachers and students alike resonate with each other and are in alignment with the classroom practices of CLIL which serves with its facilitative, dynamic, and dual focus including language and content as inseparable and interwoven elements.

The study also had some limitations. One was that the data was collected from one school as research context and data from teachers and students in various other contexts could have yielded richer data. The other limitation was the questionnaire derived from the codes in the teacher questionnaire was not piloted. We recognise that this could have also had an influence on the results we drew from the study.

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APPENDICES

Appendix A

UNIT	Unit 1: Digital Citizenship
STATEMENT OF INQUIRY	Criminal crimes that arise in constantly renewed cyber environments in parallel with scientific and technical developments can be prevented by proper ways of communication and education.
GLOBAL CONTEXT	Scientific and Technical Innovation
ACTIVITY NAME	Designing an e-Book
ASSESSMENT CRITERIA	Criterion A: Inquiring and analyzing Criterion B: Developing ideas Criterion C: Creating the solution Criterion D: Evaluating
RUBRIC CONTENT & OBJECTIVES	The ss were asked to prepare an interactive e-book containing 9 different dimensions of Digital Citizenship. When they used technology, they would create a document that would guide people, make them knowledgeable, and present it to the class society. It was important that they conduct a detailed research and summarize the information they have obtained correctly. They also needed to support their work with pictures, animations and sound recordings. The language of the e-books they would prepare must be in English. The ss were asked to follow the design cycle steps throughout the process and note any process-related work in their process logs.

Appendix B

Digital security:
https://www.youtube.com/watch?v=ni6qM-XeISs
https://www.youtube.com/watch?v=8c5n92Kwy8g
Target vocabulary: Security, safety, precaution, individual, protection, identity
ET: Introduces the target vocabulary, makes the watch the videos and ask questions to check their comprehension.
Ss: Take notes in English to their process diaries in book creator about what they have learned.
IT: Helps ss make an online research about digital security and share their ideas in goggle classroom.

Appendix C

Visual Arts Task: Preparing a poster for describing a type of pollution
Assessment Criteria:
Criterion A: Making a research on poster techniques and preparing a power point presentation on Imovie application about its features, the well-known poster painters and present in to the class.
Criterion B: Improving skills in Arts
Criterion C: Creative thinking: It includes reflecting your ideas with making use of various frames, decorations and designs.

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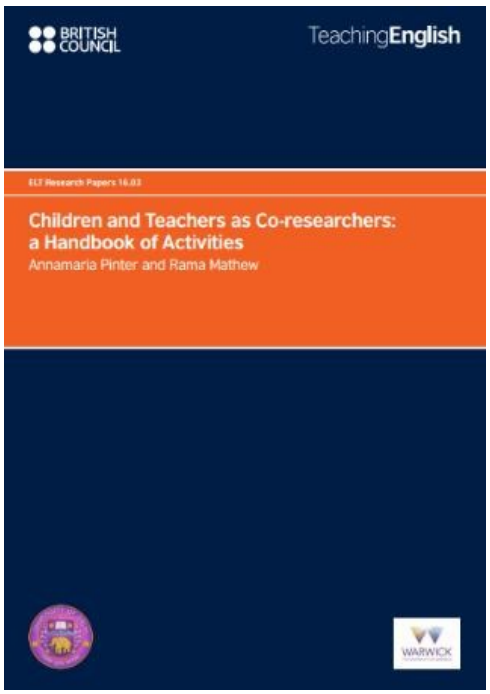
Book review

Children and teachers as co-researchers: A handbook of activities



Annamaria Pinter and Rama Mathew

London: British Council 2016, 102pp
ISBN: 978-0-86355-856-6, PDF, free download at
https://englishagenda.britishcouncil.org/sites/default/files/attachments/27780_eltra_paper_final.pdf

Children and Teachers as Co- researchers: a Handbook of Activities, authored and edited by Annamaria Pinter and Rama Mathew, is the result of a compilation of numerous experiences that took place in different classrooms in India. It constitutes a book every teacher should have at hand as a source for inspiration for their daily work due to its conciseness, clarity and good organization.

The aim of this handbook is to illustrate its target audience - English teachers of young learners - the extent to which it is important to strive for innovation in their practices in order to make lessons attractive and meaningful to their students; but fundamentally, it encourages teachers to become researchers in their own classrooms, continuously searching for new alternatives to enrich their practices. In order to do this, the authors provide readers with extensive information on how a series of innovative practices were carried out by teachers in India, as well as the level of success they got in those particular contexts.

All the activities include a title and are followed by the name of the teacher in charge of the group, the age of the students, the timing, the materials needed and the class organization employed. Next, a step-by-step description on the procedure is provided as well as a final summary of the main ideas and suggestions from the editors on alternative ways to carry out the same activity. Finally, either a work sample or a picture showing students in action is provided.

These activities are divided into six sections, each representing a theme. Although they are presented in numerical order, it is possible for the readers to start from any section. They are as follows: Section 1: Trying out something new, containing 6 activities; Section 2: Children making choices, containing 8 activities; Section 3: Teachers handing over control to children, containing 7 activities; Section 4: Building positive relationships, containing 4 activities; Section 5: Designing research tools and analysing empirical data, containing 11 activities; and Section 6: Feedback and self/peer-assessment, which consists of 9 activities.

Throughout the first section readers will find six examples in which teachers took a step out their comfort zones and tried something different and refreshing with their students, taking into account the context in which they were carrying out the project. In many cases, this sense of innovation was reached just through making small adjustments, changing some details in the way teachers were used to performing certain activities. However, the results obtained regarding students' enthusiasm and involvement were outstanding, and thus highly motivating for those teachers who took their first step towards innovation in their practices.

In the second section, called "Children making choices," by being given the chance to make some decisions concerning their classwork, students' sense of responsibility on their own learning processes was enhanced. The positive impact of the delegation of some responsibilities to students in the classroom is something teachers repeatedly read about in pedagogical theory; however, this handbook provides empirical evidence on the issue, which is far more useful thus valuable for English Teachers and their practices.

In section 3, "Teachers handing over control to children," readers find seven examples of activities in which young learners of English are given the opportunity to create their own learning tasks, and even their own materials. Teachers' roles change, they stop being the leaders of the classroom and turn into supporters who unobtrusively accompany students' learning processes.

The fourth section, "Building positive relationships," clearly illustrates the way in which the themes mentioned in the previous sections have benefited the relationship among teachers and their students. Having given them the opportunity to decide on the way they preferred to work and the tasks they were more interested in, contributed not only to their getting to know one another but also allowed for a friendly and secure learning environment.

In section 5, "Designing research tools and analysing empirical data," readers will see that apart from choosing and designing their own learning activities, children were also given the opportunity to design their own research tools, which were mainly interviews and questionnaires. Students' reactions and outcomes from these research experiences concerning others' opinions and beliefs are clearly described in this section.

The last section, called "Feedback and self/peer-assessment," is related to activities oriented to give and receive feedback on the work they have done. Students' perceptions towards their own productions, their level of maturity, responsibility and empathy while performing the tasks are described and illustrated throughout this section, this time

encouraging teachers to avoid underestimating children's capacity to engage not only with playful activities but also with those requiring seriousness on their part.

"Children and Teachers as Co- researchers: a Handbook of Activities" is a really enjoyable book to read which, in my opinion, has successfully achieved its main goal: it provides a clear and succinct guide for English teachers from all around the world who want to innovate in their practices. Since each activity, explained step by step in a chart, is preceded by a title, the student's age and the materials needed, and followed by some appreciations concerning the results obtained as well as a picture to illustrate the groups' work, they are easy to follow and or adapt according to the group and the context in which they are going to be applied.

In conclusion, the practicality, the clear language, examples and explanations found throughout the handbook, as well as the effective way in which its objectives of encouraging teachers to become researchers in their own classrooms were reached by turning readers into witnesses of the motivation and enthusiasm showed by the participants of the research and, fundamentally, by demonstrating to readers how rewarding this can be, certainly deserve being highlighted. I strongly recommend "Children and Teachers as Co- researchers: a Handbook of Activities" to primary and secondary teachers, especially new teachers, willing to take risks and have fun while looking for new ways to improve students' learning experiences.

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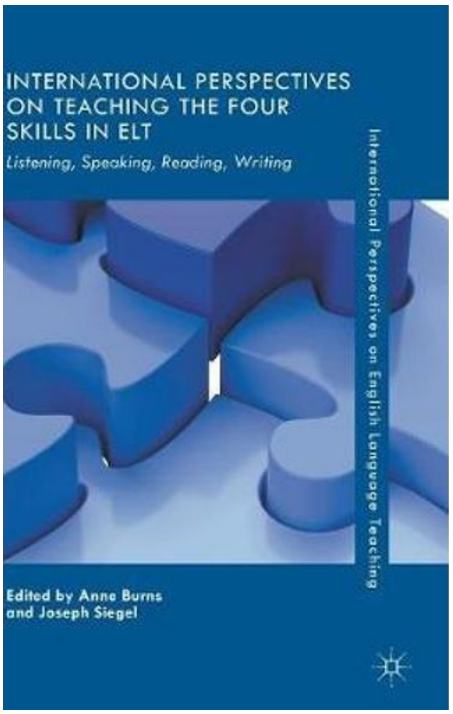
Book review

International perspectives on teaching the four skills in ELT: Listening, speaking, reading, writing



Edited by Anne Burns and Joseph Siegel
Palgrave Macmillan
2018
Pp. xiv+260 pp
ISBN 978-3-319-63443-2, £99.99 (hardcover).

As a student-teacher of English in Argentina taking my first steps into teacher research, I am interested in keeping up with the latest research in ELT. Thus, prior to reading this volume, I was drawn to it by the prospect of learning from what other teachers are doing in other contexts around the globe in order to improve their teaching practices which could, in turn, become a source of inspiration either for my own teaching practices or even research projects. After reading it my expectations were fulfilled and I closed the book with many new ideas that had caught my attention.

The volume consists of 18 chapters preceded by an introduction by Garton and Copland, editors of International Perspectives in ELT book series, who provide an overview of the myriad of teaching contexts presented throughout the volume. Furthermore, the readers are apprised of the issues dealt with by the different authors such as: innovative ways of implementing familiar aspects of teaching skills, practices and beliefs of teachers across contexts, accounts of investigations into the effectiveness of skills instructions, and the relationship between skills teaching and other aspects of language learner development.

In Chapter 1, the editors of the volume provide some ‘key theoretical and practical insights into the teaching of the four language skills’ (p.1). The chapter is divided into fundamental considerations of teaching the four skills and how they are intertwined, as well as why the editors have decided to place special attention to ‘practices that carefully and thoughtfully promote the learning of one particular skill’ (p.4). Then, they proceed to briefly

touch some of the main findings and practical implications of the skills of listening, speaking, reading and writing. Following, the contributors to the volume are succinctly contextualized. Finally, the editors highlight five areas that they find particularly salient: the need to address more widely bottom-up processes and metacognition in skills teaching; the extent to which teachers' beliefs, experiences and professional opportunities influence the effectiveness of teaching skills; how innovative teaching of language skills is contextually based and locally interpreted; the role of creativity in local innovation in skills teaching; and the fact that the teaching of language skills needs to be embedded in sociocultural practices.

Chapters 2 to 17 are research-based accounts of practice on the four skills. Each chapter provides a concise yet comprehensive detail of the context and motives of each research project, as well as its findings, implications for teaching across contexts and questions for reflection for the readers to be able to transfer these findings to their own teaching contexts. Authors come from every continent and all sectors of education, from elementary to tertiary, public and private. Thus, a broad picture of current concerns and teaching practices is presented.

Part 1 (Chapters 2 to 5) focuses on listening skills. In Chapter 2 Santos and Graham explore teachers' stated beliefs and practices about listening and its pedagogy in order to assess the extent to which research-based perspectives are being taken into account in different parts of the world, with a focus on teaching listening as a process rather than as a product. Renandya and Hu present, in Chapter 3, a description of lower and higher level problems of listening that Chinese college students have, as well as pedagogical strategies that teachers are implementing to address these problems. Chapter 4 sheds light on how to develop a listening course for low level students with a focus on bottom-up strategies. The authors, McAuliffe and Brooks, direct the reader to a 2015 publication by Siegel and Siegel in which a case for bottom-up activities is made and which I had personally found quite enlightening. Finally, Tweedie and Johnson explore the importance of intelligibility in contexts in which accurate communication is paramount to safety, such as in healthcare or international aviation. Based on their study, the authors put forward four recommendations pertinent for the teaching of listening in these situations: raising awareness of listening comprehension problems in life-threatening situations, need for authentic material and simulated real-life scenarios, inclusion of frequent profession-specific vocabulary, and exposition to multiple accents.

Part 2 (Chapters 6 to 9) focuses on speaking skills. In Chapter 6, Tante describes the need for curriculum, material and teacher development for the teaching of speaking in inadequately resourced contexts such as primary schools in Cameroon, where traditional, teacher-centred methods are pervasive, with a preference for audio-lingual methods through rote-learning, focusing on accuracy. In Chapter 7, Philip Chappell presents a case for inquiry dialogue for the teaching of speaking skills in opposition to initiation-response-evaluation (IRE) and initiation-response-feedback (IRF), as the former encourages the interaction to

move forward, builds on the interlocutors' ideas and develops cumulative talk. In turn, in Chapter 8, Pang and Burri make a case for the Six Thinking Hats approach in order to develop dialogic speaking strategies, highlighting the fact that the method is useful for focusing not only on form but also on fluency and metacognitive strategies. In Chapter 9, Kozar reports on her findings on online speaking classes via Skype in which students' degree of satisfaction stems from the rapport with the teacher rather than from the use of materials, web cams or chats.

Part 3 (chapters 10 to 13) targets the teaching of reading skills. In Chapter 10, Vraštilová reflects on how authentic literature for children can support elementary students' reading skills by adapting them so as to provide sufficient scaffolding. The author argues that literary texts can be used as a source of language development as well as a means to increase literacy skills. Murtiningsih and Hapsari provide, in Chapter 11, pre-, while- and post-reading activities that they developed for university level students in Indonesia in order to encourage critical thinking and collaborative work, which proved more engaging and motivating than standard methods. Chapter 12, authored by Blaine West, presents an interesting view of learner autonomy as a social rather than as an individual process and thus advocates for building reading communities both inside and outside the classroom as a way of fostering learners' autonomy through choice and cohesion. In line with West, in Chapter 13 Roach recognizes reading literacy as a social practice and, as such, promotes a social practice approach to reading in which it is viewed as a 'social and cultural activity motivated by real-life goals and, most significantly, frequently involves talk around texts' (p. 187).

Part 4 (Chapters 14 to 17) focuses on writing skills. In Chapter 14, a focus on descriptive writing is examined by Hayik, who highlights the need to overcome language differences by Israeli college students whose first language is Arabic. The author introduces the possibility of reading aloud a culturally relevant book in order to inspire students to write similar pieces about their lives. In turn, Pham and Iwashita describe, in chapter 15, their effort to boost learner autonomy of Vietnamese students through the introduction of indirect corrective feedback (IDF). The aim of this type of feedback is to foster students' sense of responsibility and awareness of their own role in language learning, a considerable challenge in a teacher-centred context in which learners are viewed as passive receivers. In Chapter 16, Lam describes how implementing a portfolio assessment strategy may assist students develop their writing skills through self-reflection, as it was proved with secondary and college level students in Hong Kong. Finally, in Chapter 17, Villas Boas provides an account of how a process-genre writing pedagogy was adopted and adapted at a private ELT institute in Brazil. The author highlights the importance of continuing teacher development, as well as the fact that course books can be adapted and expanded in order to build a consistent process-genre writing curriculum.

The editors of the volume authored the closing chapter in which they describe the publication as a 'worldwide whirlwind tour (…) of what the teaching of each of the four

skills can look like in several countries' (p.249). Furthermore, they provide insight into how to adapt the experiences portrayed in the book to different contexts, both by understanding the context in which each innovation originated and, particularly, through action research.

Overall, this volume provides the reader with an idea of how different perspectives and approaches are possible when tackling teaching problems and how these innovations might be implemented across contexts. While the experiences depicted in the book are presented in a reader-friendly narrative, the diversity and length of the text might result confusing at times. Perhaps a brief overview could have been included so as to help the reader navigate the multiple experiences more easily. This volume may be interesting for teacher-educators who wish to equip their trainee-teachers with a global perspective on how the teaching of the 4 skills is approached in different contexts across cultures, as well as with an idea of how keeping updated on research can influence their continuous development. It might also be attractive to teacher researchers, as it could prove a practical resource for their own research projects.

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Book review

Developing as an EFL researcher: Stories from the field

Edited by Sian Etherington & Mark Daubney,
Faversham, Kent: IATEFL, 2017, Pp 85,
ISBN: 978-1-901095-8 (Adobe e-reader).

Developing as an EFL researcher: Stories from the field is the concrete result of a dazzling array of shared experiences put forward by teacher researchers in the context of the Research Special Interest Groups (ReSIG) Pre-Conference Event of the same name during the 2015 IATEFL in Manchester. The meeting comprised a series of poster presentations that aimed to "bring together different participants' experiences of their personal journeys of evolutions as researchers" (Etherington & Daubney, 2017) in the TESOL/EFL area. In this respect, the book depicts to depict vividly the sense of community and friendly ambiance that seized the conference venue. Hence, this compilation of researchers' anecdotes told in the first person typifies a valuable and comprehensible guide for those novice teachers who are planning to embark on the research journey, and practitioners who are already immersed in teacher research. The book addresses explicitly the complexity of research, acknowledges its challenges, and proposes gently a plethora of actions to tackle them.

The book begins with an Introduction by Sian Etherington that sets the context of the ReSIG pre-conference, the characteristics of the participants and the dynamics of the presentations. At this point, the main strands of the programme are stated along with a brief introduction to the authors' papers. The section concludes with the editor's personal reflection of the event. The researchers' experiences are compiled and organized into the three Strands that guided the (ReSIG) Pre-Conference Event:

- Strand 1: A researcher's journey: Challenges, issues and strategies
- Strand 2: Specific methods and specific challenges

- Strand 3: Identities, roles, relationships and contexts in research

Each strand is set off by the words of an "Impulse speaker" that pave the way for the learning experiences that will contribute to the main purpose of each section. Finally, the book ends with a "Panel discussion summary" that highlights the salient points discussed throughout the presentations, and an "Afterword" section by Mark Daubney sharing his personal appreciation of the conference.

Strand 1 has David Nunan as "Impulse speaker" who, through the telling of the shocking experience that led him to become a researcher, encourages the readers to start evoking memories of their own practice as a warm-up for the exciting upcoming stories. The first narrative features Irena Meatrovik Stajduhar who, under the title "The growing pains of a young researcher", identifies accurately the stages every research undergoes in the unfolding of a research identity. Next, Becky Steven's striking narrative, entitled "My research journey: ripples in a big pond", defies teachers' beliefs on research and goes further to foster professionalism in Education. Then, the presentation called "Using exploratory practice to develop teacher research" by Assia Slimani-Rolls introduces a new approach to research that proves to be innovative and prolific in terms of revealing insights into the challenges in the teaching practice. Last but not least, Alexia Piaggio in "My journey as a researcher" shares the frustrations and burdens proper to research as well as the lessons she was taught while doing her MA.

Strand 2 is hosted by Dr. Sue Garton who narrows the scope and deals specifically with the complexity, messiness and constraints of qualitative research that would appeal to most readers no matter their background. These topics are prominent and evident in the experiences coming after, yet they are accompanied by the proposal of diverse and reassuring strategies to tackle these challenges. The strand continues with Sian Etherington's comparison of research to an artwork in her paper "Mess and method: Researching Others' Realities". This telling metaphor presents, in my opinion, the core essence of the book since it adopts a more democratic and inclusive approach to research, one that allows realities to be interpreted at once without the obstacle of a biased interpretation. Next, it is the turn for "Writing for research purposes: crossing the love-hate line" by Volha Arkhipenka who humbly portrays how literature led her to fell in love with writing and how this encouraged her to embark on research as the vehicle to be heard. Finally, the strand has the life couple Stephanie Xerri Agius and Daniel Xerri present "A shared research journey", a work that goes deeper into the challenges, tensions and conflict of collaborative research as well as the prolific results it has yielded in the participants' professional lives. This experience will particularly resonate with those teachers working with colleagues in collaborative research projects as it covers the technical as well as the affective implications of research.

Strand 3 features Professor Cynthia White of Massey University whose paper embodies the umbrella term for this section: affectivity in research. The subsequent

anecdotes will exclusively be restricted to cope with emotional conflicts and tensions between teaching and research. First, Tien Minh Mai through the narrative entitled "What dilemmas have I faced as a researcher?" teaches us that teaching and research are not necessarily two opposite poles, but they complement each other. Therefore, teachers will definitely start visualizing the advantages of taking some time out to reflect and write about their own practice. Second, Mark Daubney in "The role of tensions, constraints and opportunities in shaping researcher identity" shares how he managed to combat the apprehension coming from the complexity of research and the constraints while being an EFL teacher. Similarly, Susanna Shwab coincides with Daubney's assertion on the role affectivity plays in the fruition of research, in "From the novice EFL teacher to teacher educator to researcher". Finally, Susan Dawson, whose paper is entitled "On wearing two hats: 'Practitioner researcher' and 'doctoral researcher'", and Ines.K Miller and Waleska G.Braga, in "Why is it so complex to balance trust, autonomy and control? Challenges faced in a teacher education programme", come up with the emotional factors involved when undertaking research based on Exploratory Practice, the implication for both participants in practitioner research and the vulnerability in the mentor-trainee relationship.

All in all, *Developing as an EFL researcher: Stories from the field* is a book that embraces many voices. Educators from different social and educational contexts gather together, in the frame of the ReSIG Pre-Conference Event, to share experiences in the field of TESOL/EFL research and put on the table the challenges encountered in the journey. This compilation report made out of researchers' experiences definitely serves its purpose by practicing what it preaches: communication in research as a contribution towards the building of knowledge in the educational community. The novice teacher is bound to find in the book a practical guide for research study on the teaching practice and further educational issues. The vivid depiction of the researchers' stories will surely cause deep resonance in teachers-to-be, and encourage self-reflection and self-criticality on the teaching activity, with the only purpose of vindicating professionalization in EFL teaching.

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  CLIL. Content and Language Integrated Learning
  D. Coyle, P. Hood and D. Marsh
  Cambridge
  Cambridge University Press
  2010
  Pp. v + 173
  ISBN 978-0-521-11298-7 (hbk): £54.50; US$ 71.20
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Bruner, J. (2002). *Making stories: Law, literature and life.* Cambridge, MA: Harvard University Press.

Gee, J.P. (2005). Semiotic social spaces and affinity spaces: from the Age of Mythology to today's schools. In D. Barton & K. Tusting (Eds.), *Beyond communities of practice* (pp.214-232). Cambridge: Cambridge University Press.

Lantolf, J. (Ed.). (2000). *Sociocultural theory and second language learning*. Oxford: Oxford University Press.

Little, D. (1991). *Learner autonomy 1: Definitions, issues and problems*. Dublin: Authentik.

Meza Rueda, J.L. (2008). *Historia de maestros para maestros. Pedagogía narrativa expresada en relatos de vida*. Bogotá: Universidad de La Salle.

Pérez-Cañado, M.L. (2012). CLIL research in Europe: Past, present, and future. *International Journal of Bilingual Education and Bilingualism, 15*(3), 315-341.

Prince, P. (2011). What's the story? Motivating e-learners with fiction. In D. Gardner (Ed.), *Fostering autonomy in language learning* (pp. 225-233). Gaziantep: Zirve University.

Richards, K. (2006). "Being the teacher": Identity and classroom conversation. *Applied Linguistics*, *27*(1), 51-77.

Smith, R. (2003). Teacher education for teacher-learner autonomy. In J. Gollin, G. Ferguson & H. Trappes-Lomax (Eds.), *Symposium for language teacher educators: Papers from Three IALS Symposia.* Edinburgh: IALS, University of Edinburgh. Retrieved May 2, 2012, from http://homepages.warwick.ac.uk/~elsdr/Teacher_autonomy.pdf

Smith, R., & Erdogan, S. (2008). Teacher-learner autonomy: Programme goals and student-teacher constructs. In T. Lamb & H. Reindeers (Eds.), *Learner and teacher autonomy: Concepts, realities and responses* (pp. 83-102). Philadelphia, PA: John Benjamins Publishing Company.

Ushioda, E. (2011). Motivating learners to speak as themselves. In G. Murray, G. Xuesong & T. Lamb (Eds.), *Identity, motivation and autonomy in language learning* (pp.11-24). Bristol: Multilingual Matters.

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