Vinagre, Margarita. "Developing Key Competences for Life-Long Learning through Virtual Collaboration: Teaching ICT in English as a Medium of Instruction." Handbook of Research on Foreign Language Education in the Digital Age, edited by Congcong Wang and Lisa Winstead, IGI Global, 2016, pp. 170-187

DOI: https://doi.org/10.4018/978-1-5225-0177-0.ch008

Developing Key Competences for Life-Long Learning through Virtual Collaboration:

Teaching ICT in English as a Medium of Instruction

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ABSTRACT

This study presents the findings from a group of forty-nine fourth year undergraduate students who were trained in a blended learning environment over two months in order to acquire base knowledge and hands-on experience of information and communication technologies (ICT) and their possible applications to the EFL classroom. The course was taught in English as a medium of instruction (EMI) and participants worked in a wiki designed specially to facilitate discussion and collaboration in the foreign language. Data were gathered from the participants' answers to an end-of-course questionnaire and quantitative and qualitative analyses were carried out on the answers to eight five-point Likert-scale questions and five open-ended questions. Findings and discussion elaborate on the impact the course had on the participants' perceptions regarding the acquisition of key competences for life-long learning.

INTRODUCTION

Many important changes have taken place in Higher Education (HE) in Europe since the Bologna process was launched in 1998 with the aim of creating a European Higher Education Area (EHEA) in which diverse HE systems would converge. The need to strengthen the connection between the education system and the business world has been a priority in this process. In this respect, university study programmes have included a series of reference points which are described in terms of learning outcomes and key competences[1] for life-long learning that students are expected to achieve by the time they graduate. Learning outcomes refer to what students are expected to know, understand and be able to demonstrate after the learning experience. According to the European Commission (2007), these transferable competences are a combination of knowledge, skills, attitudes and values, which are particularly necessary for personal fulfilment and development, social inclusion, active citizenship and employment. The development of these competences, which are a major factor in innovation, productivity and competitiveness, also guarantees greater flexibility in the labour force by allowing it to adapt more quickly to the constant changes of an increasingly interconnected world.

Many studies and reports have provided frameworks with descriptions of key competences for lifelong learning (European Commission's Framework of Reference, 2007; the OECD's Definition and Selection

[1] Although some authors (Teodorescu, 2006) suggest that there are differences between the terms competence and competency, most dictionaries define them as synonyms and the majority of studies use both terms interchangeably. In this paper, we have adopted competence since it is the term used by the European Commission in its European Reference Framework.

of Competencies (DeSeCo) Project, 2005 and the Tuning Higher Education Project (González & Wagenaar, 2005; Villa & Poblete, 2008). These key competences have also been described by many authors (Marin et al., 2011; Penttilä et al. 2012; Shuman et al., 2005). In this study we shall adopt the European Commission's proposal (2007) which considers the following as key competences for life-long learning[2]:

Table 1. European Reference Framework (2007): Key competences for life-long learning

Competence	Knowledge, Skills and Attitudes
Communication in foreign languages: This involves the capacity for listening, speaking, reading and writing in the foreign language together with mediation and intercultural understanding.	• Ability to communicate in a second (foreign) language • Appreciation of diversity and multiculturality
Basic competences in science and technology: These competences refer to the mastery, use and application of knowledge and methodologies that explain the natural world. These involve an understanding of the changes caused by human activity and each individual's responsibility in this process.	• Capacity for analysis and synthesis, abstract and analytical thinking • Grounding in base knowledge (knowledge and understanding of the subject area) • Ability to make reasoned decisions • Research skills • Ability to act on the basis of ethical reasoning
Digital competence involves the confident and critical use of information society technology and, thus, basic skills in information and communication technology (ICT).	• ICT digital skills • Information management skills (ability to retrieve and analyze information from different sources)
Learning to learn refers to the ability to pursue and organise one's own learning, either individually or in groups, in accordance with one's own needs, whilst being aware of methods and opportunities.	• Ability to plan and manage time • Ability to identify, pose and resolve problems • Critical and self-critical abilities • Capacity to learn and stay up-to-date with learning • Capacity to apply knowledge in practical situations • Ability to work autonomously

Research on key competence development in educational environments has highlighted that only a limited number of these competences have been assessed to date. Thus, a report by Eurydice (2009) emphasized that only three competences, namely communication in the mother tongue, communication in foreign languages, and basic competences in mathematics, science and technology were commonly assessed in national tests. By contrast, in many European countries, other core competences such as learning to learn or social competences were not formally assessed (Eurydice, 2009). These lesser assessed competences included digital competence, learning to learn competences, social competences, sense of initiative and entrepreneurship and cultural awareness. Similarly, the European Commission (2010) had itself found that, in comparison with subject knowledge, the challenge of assessing key competences across the curriculum was "acute and ongoing". Current efforts to address this issue include Alsina, Boix, Burset, Buscà, Colomina, García, Maurí, Pujolà & Sayós, (2011), Blömeke, Zlatkin-Troitschanskaia, Kuhn & Fege, (2013) and Watts, Marín, García & Aznar, (2012). Similar concerns have

[2] The European Commission's proposal also includes an eighth competence namely *Communication in the mother tongue*, which we have excluded from this study since the participants' mother tongue was not used during the course.

also been present in Higher Education institutions in the United States since the year 2000. An example of this is the MIT's CDIO Project (*Conceive, Design, Implement & Operate*) which aims to provide solutions to solve the mismatch between what is taught at universities and the needs of the labour market. In order to address this issue, the European Commission (2010) calls on educators to implement new methodological techniques that facilitate the development of core competences, "especially digital and entrepreneurial competences in order to encourage initiative rather than simple reproduction of received knowledge and to better adapt to learners and employers' needs" (p.5). The development of these lesser assessed competences and their respective knowledge, skills and attitudes (e.g. capacity to work autonomously, effective team-work, entrepreneurial spirit, participation in international or multicultural groups) can be difficult in many educational settings given the number of contact hours and the limitations posed by face-to-face learning environments. In this respect, the European Commission (2010) suggests that this can be solved by integrating technologies and "more cross curricular and innovative approaches, such as learning by doing or project based learning" (p. 26). Virtual collaboration is such an approach, since it is project-based and encourages experiential learning by providing students with first-hand experience that is directly related to successful professional practices in the global workplace. It also offers educators an opportunity to develop students' base knowledge and competences by transcending the traditional-learning classroom (Vinagre, 2015). Computer networks offer the promise of increasing student-student and student-teacher interaction, not only locally but also globally, through resources such as the Web 2.0. Whereas students have traditionally been limited to fifty minutes of classroom interaction three times a week, they can now consult one another and their teacher out of class. Moreover, they can interact and carry out tasks with peers around the world so that they can glimpse other ways of seeing the world.

BACKGROUND

Virtual collaboration for competence development

The ability to integrate new technologies in the classroom has become an essential part of learning in the 21st century. One approach to teaching that facilitates this process is virtual collaboration. This refers to the application of online communication tools to bring together learners with the aim of developing their base knowledge and competences through collaborative tasks and project work. Authors such as Graham & Misanchuk (2004) discuss the benefits of virtual group collaboration, concluding that it encourages negotiation of meaning, re-conceptualization of previous knowledge, motivation to learn, high-quality decision-making and reasoning, general cognitive development, creativity, reduction of anxiety and the creation of learning communities. Other authors such as Kaye (1989), mention that computer-mediated collaboration fosters more evenly distributed turn-taking and also more thoughtful inputs when compared to face-to-face collaborative learning. Authors such as Pallof & Pratt (2005) suggest that virtual collaboration has been shown to contribute to better learning outcomes, including development of critical thinking skills, co-creation of knowledge and meaning, reflection and transformative learning. These authors also mention that different learning styles and cultures can be accommodated more easily because effective collaborative learning values diversity (p.5-6). Furthermore, competences gained from experiencing collaborative learning are highly transferable to work environments (Shaw, 2006).

The theoretical principles that underlie virtual collaboration are not new. These principles are based on socio-constructivist approaches to learning (Daniels, 2008; Vygotsky, 1987) that emphasize the importance of social interaction for the construction of shared knowledge. Current literature often associates them with the pedagogical paradigms of situated and distributed learning (Brown, Collins & Duguid, 1989) as well as with activity theory (Engeström, Miettinen & Punamäki, 1999). In such approaches, learning takes place as a result of socially situated interactions that are conducive to the creation of knowledge and development of competences. This process requires active participation, interaction and reflection, and technologies are considered to be mediating tools in this process. In a collaborative learning environment, knowledge is shared among learners as they work towards common goals. They take an active role in the learning process as they participate in discussions, search for

information and exchange opinions and feedback with their peers. Knowledge is co-created and learners depend on each other's contributions to complete their goals (Vinagre, 2010). According to Palloff & Pratt (2005) collaborative learning processes help students achieve richer knowledge generation through shared goals, shared exploration and a shared process of meaning building.

Recent research on virtual collaboration in foreign language learning has shown its potential to support learner autonomy (Fuchs, Hauck & Müller-Hartmann, 2012), foster foreign language awareness and accuracy (Sauro, 2009; Vinagre & Muñoz, 2011) and develop higher order thinking skills (Von der Emde, Schneider & Kötter, 2001). This mode of learning can also encourage the development of learners' socio-pragmatic skills (Kinginger, 2000), intercultural awareness (Vinagre, forthcoming), electronic literacies (Hauck, 2010), telecollaborative competences (Vinagre, 2015) and multiple literacies (Guth & Helm, 2011). Despite all these benefits, research has also highlighted the limited impact of virtual collaboration in university contexts to date (Belz & Müller-Hartmann, 2003; Guth, Helm & O'Dowd, 2012).

Virtual collaboration in wikis

Wikis have gained popularity as an interactive tool for virtual collaboration (Bower, Woo, Roberts & Watters, 2006; Bruns & Humphreys, 2005). Authors such as Parker & Chao (2007) have claimed that wikis bring together many desirable qualities such as "including a virtual presence, a variety of interactions, easy participation, valuable content, connections to a broader subject field, personal and community identity and interaction, democratic participation, and evolution over time" (p.58). Most authors agree on the collaborative nature of wikis and numerous studies have emphasized that wikis can facilitate reflection and collaboration (Lee, 2010; Lund, 2008). Minocha & Thomas (2007) have added that, besides facilitating collaborative learning, wikis are good media for collaborative work (p.198). Other authors have elaborated on this tool's suitability to foster student interaction. In this respect, Huang & Nakazawa (2010) and Li (2012) have described them as enhancers of peer interaction and group work as opposed to competition. According to Boulos, Maramba & Wheeler (2006), they are excellent resources for the learners' own construction of knowledge, since they provide an opportunity to engage in knowledge building at the same time they foster metacognition (higher-order thinking skills). Additional inherent benefits of wikis are mentioned by Wheeler, Yeomans, & Wheeler (2008), who suggest that wikis have the ability to keep learners connected, so that they feel closer to one another and more engaged in the learning task. Wikis are also considered highly democratic by authors such as Lee (2010), since they disperse individual power and all participants have an equal status and the right to contribute or edit entries. They are unique in that they serve as a platform for scaffolding, foster student-centered learning, allow for the incorporation of multiple perspectives and facilitate the development of learning communities.

English as a medium of instruction

In order to foster the development of those competences related to communicating in the foreign language, some educational institutions have favoured the implementation of programmes and courses which are taught using English as a Medium of Instruction (EMI). This practice has received wide recognition from researchers and professionals, since providing curriculum content in a foreign language can lead to both increased subject knowledge and enhanced L2 proficiency (Coyle, 2005; Dalton-Puffer, 2007; Marsh, Maljers & Hartiala, 2001; Stohler, 2006; Wilkinson, 2004). The term EMI has been used to refer to those contexts in which non-language content subjects are taught through English. UNESCO's Education Position Paper (2003) explains it as follows:

> The language of instruction is the medium of communication for the transmission of knowledge. This is different from language teaching itself where the grammar, vocabulary, and the written and the oral forms of a language constitute a specific curriculum for the acquisition of a second language other than the mother tongue. Learning another language opens up access to other value systems and ways of interpreting the world, encouraging inter-cultural understanding and helping reduce xenophobia. This applies equally to minority and majority language speakers (p. 16)

We are increasingly becoming a multilingual and multicultural society in which linguistic diversity is part of everyday life. For this reason, becoming effective communicators in foreign languages has become one of the main priorities of educational policies all over the world. A recent report by the European Commission on life-long language learning (2012) mentions as one of its main aims "spreading the benefits of multilingualism to everybody throughout their lives, starting in childhood" (p. 27). In order to reach this target, challenges such as how to encourage people to learn and what are the best ways to teach and learn languages have to be met. EMI environments originated as an answer to those challenges. In this study, we have understood EMI as a synonym for Content and Language Integrated Learning (CLIL). The term CLIL was adopted by European experts in 1996 as a generic umbrella term to refer to diverse methodologies that can lead to a bilingual education where attention is given to both the subject and the language of instruction. It is used to describe any educational situation in which an additional language is used for the teaching and learning of subjects other than the language itself (Marsh 2006, p. 29).
Despite its broad use, we decided to use the term EMI since, according to some authors (Smit & Dafouz, 2012, p.4-5), it is becoming more widely used and popular in Higher Education settings. EMI programmes can offer a variety of benefits: strengthen bilingualism, foster multilingualism and multiculturality, increase the potential mobility of citizens, revive endangered languages and encourage internationalization (Eurydice 2012; Dearden, 2015; Wong, 2009).

In this exploratory study we decided to use wikis as an online asynchronous tool to integrate virtual collaboration in an EMI course in order to discover the potential of this teaching approach for the development of key competences for life-long learning. More specifically, we looked for answers to the following research questions:
RQ1: What were the students' perceptions regarding the development of key competences while working collaboratively online?
RQ2: According to the students, which key competences were required for successful virtual collaboration?

RATIONALE

During the first semester of 2014 a subject titled *Information and Communication Technologies* (ICT) was offered and delivered in EMI as an optional course on the B.A. in English Studies at a Spanish University. The course aimed to foster a critical stance towards the academic literature underlying computer supported collaborative learning and to involve participants in exploring different ICT tools and their possible applications in EFL (English as a Foreign Language) teaching and learning contexts in order to help them move from theory to classroom practice. The course was delivered by a team of two instructors one of whom is also the author of this paper.

Context and participants

Forty-nine fourth year undergraduate students enrolled in the course. Teachers and students met twice a week but tasks were completed mostly online, working in small groups outside the classroom. The students were mostly Spanish speakers with the exception of four students whose mother tongues were Arabic, Chinese, Swedish and Romanian respectively. As regards gender, thirty-three participants were female and sixteen were male. The level of experience with the use of the technology was very similar and they had no previous experience in computer-supported collaborative learning, although some were familiar with the use of some ICT tools (blogs, skype) and social networks (facebook, whatsapp).

Activities and tools

Over the course of two months, the students worked in a wiki in small groups of four or five where they had to carry out a series of collaborative tasks. These were designed following O'Dowd & Ware's (2009) 'collaborative task' category which requires learners not only to exchange and compare information but also to work together to produce a joint product or conclusion (p. 178). In this study, students were asked

to review articles on virtual collaboration and explore different ICT tools (blogs, wikis, skype, podcasts and google drive) and activities (webquests and treasure hunts). They also had to become familiar with different models of virtual collaboration and finally suggest how they could be integrated in the EFL classroom. These tasks were aimed at fostering information exchange, comparison, discussion and reflection (see questions for reflection in Appendix A) that would result in the creation of a wiki space with six pages that had to be designed and edited jointly by all group members and whose content also had to be agreed upon by them. As a final task, the students had to give a final group presentation in class in which they would present their wikis to the rest of their classmates. A summary of the tasks is provided in Table 2:

Table 2. Description of tasks

	Unit (presented in class)	**Activity (in small groups in a wiki)**
1	Introduction to Computer Supported Collaborative Learning (CSCL or telecollaboration)	Study and discussion of relevant aspects and resources presented in class. Design a wiki space. Upload a summary of what you have learned about CSCL on the wiki and invite your group's members to discuss your contribution.
2	Exploring CSCL	Working in groups: select, read, upload, summarize and review one article about CSCL on your wiki page. Comment upon and discuss the articles with your group members using the wiki discussion facility. Answer questions for reflection in the wiki. Wikipage 1
3	Web 2.0 tools in EFL teaching and learning (1): Blogs & Google Drive	Create a blog and post a comment. Design a questionnaire using Google drive and invite your group's members to answer it. Discuss with your group members in the wiki possible applications of these tools to the EFL classroom. Upload a summary of your ideas on your group's wiki pages. Wikipage 2
4	Web 2.0 tools in EFL teaching and learning (2): Skype, Podcasts (iTunesU)	Explore podcasts of your interest in iTunes U. Use Skype to get in touch with your group's members in order to discuss how to use these ICT tools in the EFL classroom. Upload a summary of your ideas on your group's wiki pages. Wikipage 3
5	ICT-based activities: Webquests & Treasure hunts	Analyze the webquests and treasure hunts provided by the teachers. Discuss with your group members in the wiki how they can be integrated in the EFL classroom. Upload a summary of your ideas on your group's wiki pages. Wikipage 4
6	CSCL Exchanges (1): Models of CSCL exchanges: -eTandem: principles of application -eTwinning: principles of application -Cultura: principles of application	Comparison, analysis and critical evaluation of authentic data and samples taken from projects. Discuss with your group members in the wiki how these exchanges can be integrated in the EFL classroom. Upload a summary of your ideas on your group's wiki pages. Answer questions for reflection in the wiki. Wikipage 5
7	CSCL Exchanges (2): How to organise an exchange for language and culture learning -General guidelines: organisation, tools, chronogram, topics to discuss, peer-feedback (focus on form) -Language learning diary -Tasks	Decide with your group members how to organize your own exchange for language and culture learning. You will need to include guidelines, activities and tools you would use and justify your decisions. Answer questions for reflection in the wiki. Wikipage 6

8	Final oral presentations: present your wiki to your classmates and comment on what you have learned on this course and your experience working collaboratively online	

METHOD

At the end of the semester, after the completion of their respective wiki projects, 39 students responded to an online questionnaire where they were asked to express their opinions about the project (see Appendix B). The questionnaire was designed as a tool to gather information about how much the students felt they had learned in the form of base knowledge and key competences for life-long learning. We elicited responses from 8 Likert-scale questions and 5 open-ended questions. We coded the first part of the questionnaire quantitatively and then we explored their answers to the open-ended questions.

RESULTS AND DISCUSSION

Quantitative data

Figure 1 below illustrates how much participants considered they had learned about base knowledge (knowledge and understanding of the subject area) during the course. Answers to question 1 show that the vast majority of students (37, 95%) thought that they could easily explain what virtual collaboration meant. Similarly for questions 2 and 8, the majority of students (32, 82% and 34, 87% respectively) agreed that they had learned about different models of virtual collaboration and where to find web activities that they could integrate in the EFL classroom. Finally, for questions 4 & 5, the majority of students (28, 72% and 27, 70% respectively) indicated that they knew how to use web pages in order to find partners in other countries and that they could organize a virtual project and negotiate all aspects of the project with their partners.

Figure 1. Students' perceptions of base knowledge

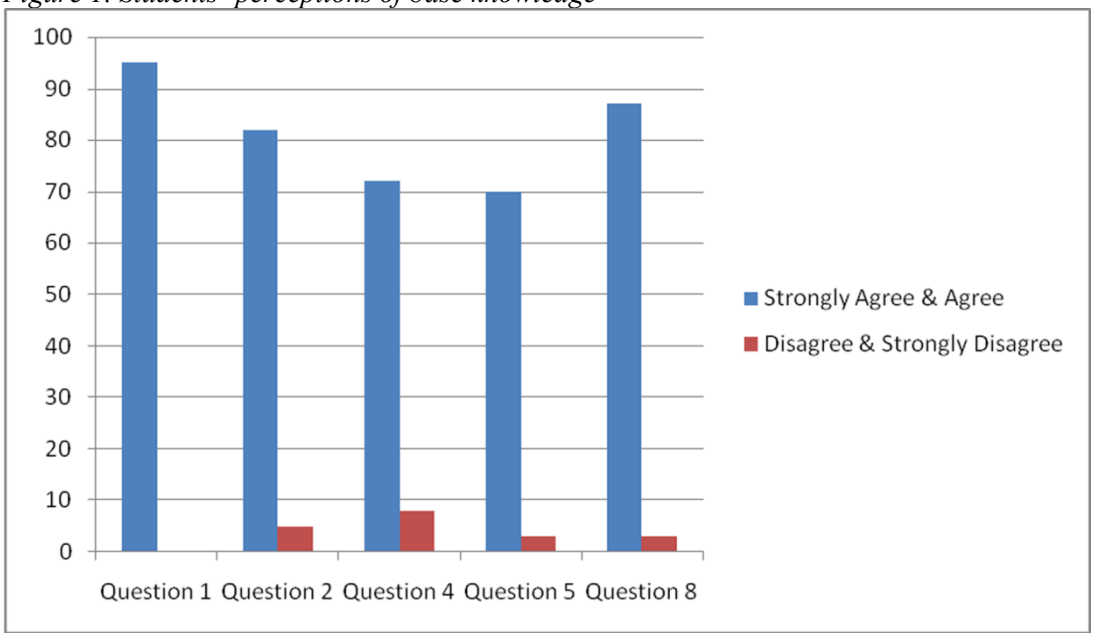
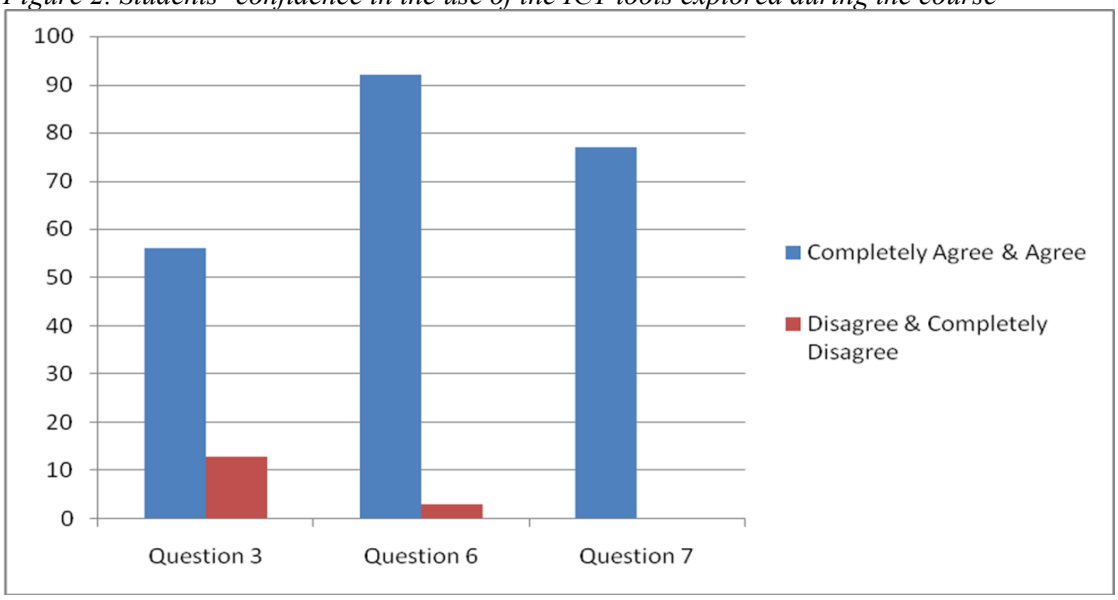


Figure 2 shows the students' perceptions regarding their level of confidence in the use of the ICT tools introduced during the course. As can be seen, for question 6 the majority of students (36, 92%) agreed that they had learned how to choose the most adequate ICT tools (email, blogs, wikis, skype and podcasts) to suit potential students' learning objectives and the main objectives of a virtual collaborative

project. In question 7, most students (30, 77%) said that they felt confident using the ICT tools that they had explored in class. However, 9 (23%) students chose 'neutral' to answer this question. Similarly, the answers to question 3 show that only 22 (56%) students agreed that they were familiar with the use of synchronous and asynchronous tools, with 12 (31%) students choosing 'neutral' and 5 (13%) disagreeing. We believe that these results may be due to the fact that some students did not manage to use blogs and podcasts successfully. The difficulties encountered when accessing and using these tools together with time constraints caused frustration amongst the participants. They explained this in their answers to the open-ended question 9 as we shall see below.

Figure 2. Students' confidence in the use of the ICT tools explored during the course

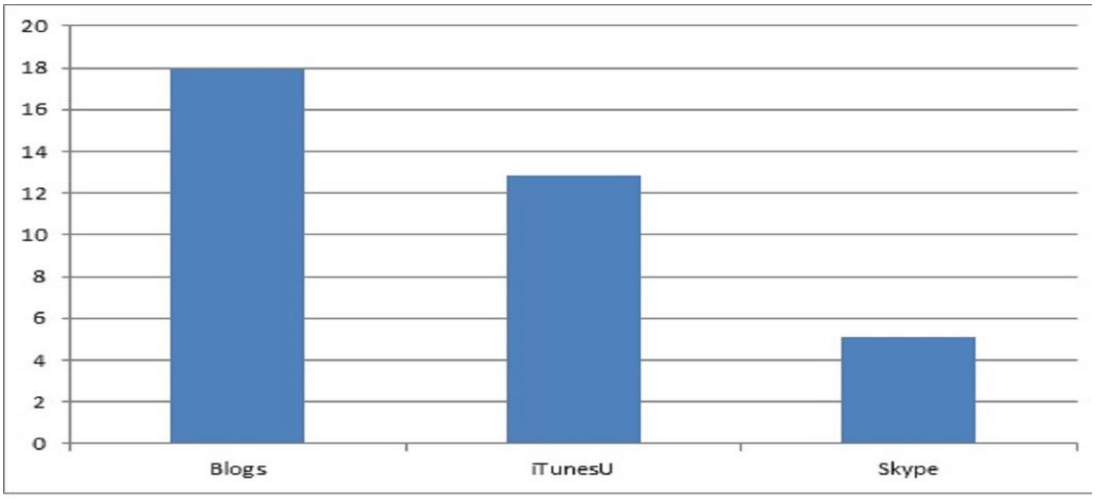


Qualitative data

The questionnaire included five open-ended items. Below is a summary of participants' comments to the three questions that are relevant for this study. We used their answers to question 9 ('If there is a tool that you didn't feel confident using please specify which and why') to corroborate and triangulate the information obtained in those closed questions that elicited information about the students' perceived knowledge and familiarity with the use of the ICT tools introduced during the course (questions 3, 6 and 7). Then, we analyzed their answers to questions 10 ('What competences have you developed while working collaboratively online') and 11 ('What competences are required in order to work collaboratively online in a successful manner') to elicit information about which key competences they perceived they had developed and were relevant for this mode of learning. The students were not prompted in their answers in any way and they were not familiar with the list of key competences introduced in Table 1.

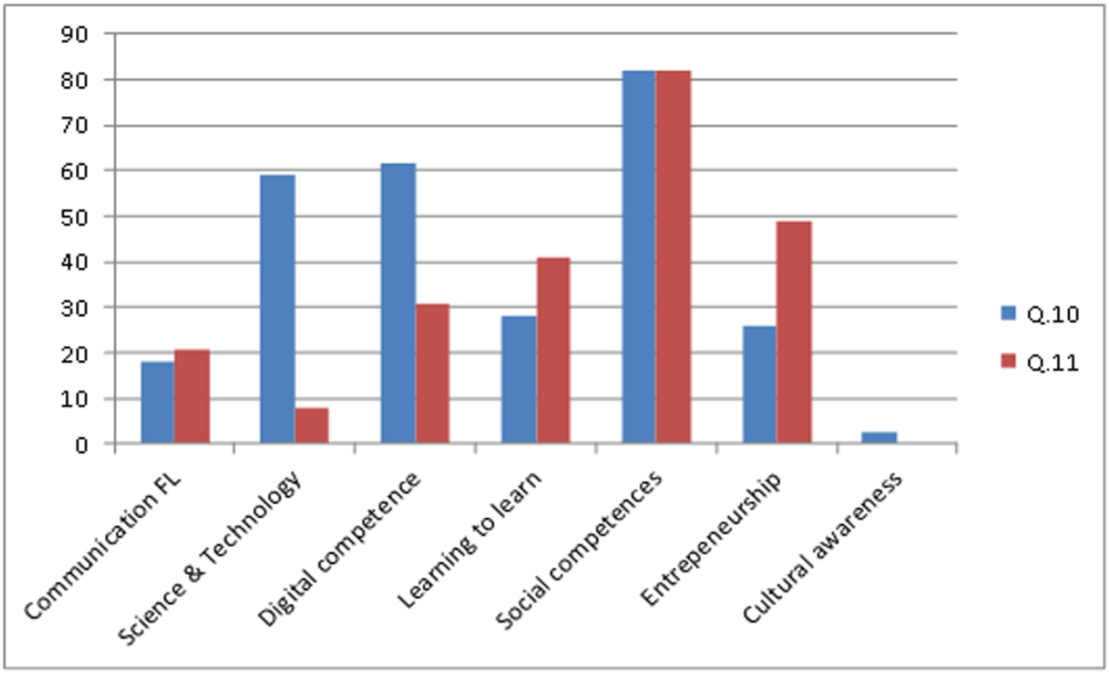
As can be seen in Figure 3, answers to question 9 revealed that some students (7, 18% and 5, 13% respectively) thought that blogs (blogger) and podcasts (iTunesU) were not user-friendly and that they had difficulty accessing them. Finally, 2 students (5%) mentioned that Skype is a tool that they would use for personal purposes but did not feel comfortable using in an EFL context.

Figure 3. Students' perceptions of the ICT tools they found most difficult to use



As regards the participants' answers to the open questions 10 and 11, we have categorized key competences according to the European Reference Framework (see Figure 4).

Figure 4. Key competences developed and required in virtual collaboration



As noted in Figure 4, 32 (82%) students mentioned that they had developed social competences in the form of team work abilities and interpersonal skills. Another 24 (61.5%) students mentioned that they had developed digital competences and information management skills and 23 (59%) students mentioned that they had developed basic competences in science and technology in the form of base knowledge of the subject, research skills, capacity for analysis and synthesis and decision-making abilities. Other students (11, 28%) mentioned that they had developed learning to learn competences in the form of organization

and planning, problem-solving, critical and self-critical skills and autonomous work. Fewer students (10, 26%) students also mentioned that they had developed entrepreneurial skills in the form of adapting to new situations, creativity, leadership, project management, initiative and will to succeed and 7 (18%) mentioned that they had developed linguistic skills and appreciation of diversity during the course. The fact that linguistic skills were mentioned is interesting since the foreign language was not explicitly taught during the course. Finally, the capacity to work in an international context was mentioned by 1 member of the team composed of international students. It is interesting that the student was aware of having developed specific intercultural competences as a result of collaborating successfully in an international team.

As regards those key competences that participants thought they needed in order to work successfully in virtual collaboration (question 11), the vast majority of students (32, 82%) mentioned that they had needed social competences in the form of team work abilities and interpersonal skills. Nineteen (48.7%) students also mentioned that effective virtual collaboration required entrepreneurial skills in the form of adapting to new situations, creativity, leadership, project management, initiative and will to succeed whilst 16 (41%) mentioned that learning to learn competences were required in the form of organization and planning, problem-solving, critical and self-critical skills, autonomous work and capacity to learn. Twelve (30.7%) students mentioned digital competences and information management skills and 8 (20.5%) students mentioned linguistic skills and appreciation of diversity. Finally, 3 (8%) students mentioned basic competences in science and technology in the form of capacity for synthesis and analysis and research skills.

In summary, for research question 1, the vast majority of students perceived social competences (team work abilities and interpersonal skills) as the competences they had developed the most during the course followed by digital competence (information management skills) and base knowledge of the subject area together with research skills, capacity for analysis and synthesis and decision-making abilities (basic competences in science and technology). As regards research question 2, social competences were also perceived as the most necessary to succeed in virtual collaboration by the vast majority of students. However, many students emphasized the need for entrepreneurial (in the form of adapting to new situations, creativity, leadership, project management, initiative and will to succeed) and learning to learn competences (in the form of organization and planning, problem-solving, critical and self-critical skills, and autonomous work) in order to succeed in virtual collaboration.

According to these findings, social competences were the competences most developed by participants and most necessary to succeed at virtual collaboration. This would be consistent with the nature of collaborative tasks. These require not only information exchange, discussion and comparison but also working together in a team in order to achieve a consensus and produce a joint product or conclusion. These competences refer to managing personal relationships with partners in different contexts and they require an understanding of the ideas and feelings of other group members based on a sense of tolerance and flexibility. For successful collaboration one needs to be responsible for one's own performance and that of other members, making relevant contributions to the group and following procedures in order to achieve a joint goal. However, individual members should also be capable of presenting and defending their ideas, negotiating and proposing alternatives after considering the arguments offered by other team members.

As regards the rest of the competences, there is a difference between those competences students thought they had developed during virtual collaboration and those they thought were necessary to succeed at virtual collaboration. Whereas students thought that they had developed mostly digital and basic science and technology competences, it was those competences related to entrepreneurship and learning to learn skills that were most necessary for its success. These competences, also known as systemic competences (Villa & Poblete, 2008), are leadership abilities and skills that concern whole systems (combination of understanding, sensibility and knowledge) and help to understand complex relations. They require prior acquisition of instrumental and interpersonal competences and they are more difficult to acquire since they are usually developed through professional practice and critical reflection on this practice. The

findings in this study suggest that experiencing and reflecting on virtual collaboration can have similar effects in the development of systemic competences to those achieved though professional practice.

CONCLUSION

This study presents some limitations that need to be considered. A questionnaire is a subjective assessment tool and since findings rely on the participants' perceptions, it is not possible to categorically state that any competence development actually took place. Moreover, cross-program and cross-institutional studies with larger sample sizes are required in order to ensure that results are significant. Despite these limitations, we were able to gain some insight from the students' perspectives based on their own experience which is essential in more flexible ICT based learning environments. The findings in this study indicate that virtual collaboration, when integrated in a classroom where content is taught through EMI, has the potential to foster the acquisition not only of base knowledge of the subject, but also of a variety of key competences for life-long learning. These included mostly social and digital competences, entrepreneurial and learning to learn skills, which also happen to be among the lesser assessed competences according to the European Commission (2010). Many of these competences are usually developed through work experience and, in this respect, virtual collaboration can equip students with the competences that they will need when they enter the labour market whilst still in education and training. Students also mentioned that they had developed linguistic skills in the foreign language although this was a non-language subject. These findings seem to support research in EMI and Content and Language Integrated Learning (CLIL) which suggests that implementing these approaches in the classroom can offer significant gains in the foreign language (Admiraal, Westhoff & de Boot, 2006). Therefore in future research projects it would be worth exploring the impact that engaging students in virtual collaboration in either of these two environments has for foreign language development. Another aspect worth exploring in future studies is whether participants who experience virtual collaboration with peers from diverse cultural backgrounds develop certain specific interpersonal competences that those working in same-culture groups do not develop. In this respect, in future editions of this course we intend to connect students who are geographically distant from each other and are native speakers of the foreign language being used as a medium of instruction. Finally, experiential learning that engages students fully in the collaborative process with all that it entails (i.e. information exchange, discussion, negotiation, solving problems, providing feedback and reaching a consensus) can facilitate more collaboration in return and increase the participants' awareness of the benefits it offers.

APPENDIX A

Questions for reflection, Unit 2

a) Why are we interested in using technologies within the paradigm known as computer supported collaborative learning?
b) What are the main theoretical principles underlying its application?
c) What are the objectives that can be achieved via virtual collaborative projects that are difficult to achieve in a face-to-face setting?
d) How can we justify the integration of collaborative virtual exchanges in the foreign language classroom?

Questions for reflection, Unit 6

a) What are the main differences between the different models of virtual collaboration?
b) What are the positive and negative aspects of each model?
c) How would you summarize the main differences between the Cultura, e-Tandem and eTwinning models of virtual collaboration? Which one is most suitable for your students' needs and your pedagogical objectives?

Web pages provided for analysis:
http://www.slf.ruhr-uni-bochum.de/etandem/etindex-es.html
http://cultura.mit.edu/archives-2/
http://www.etwinning.net/es/pub/index.htm
http://interculture.wikispaces.com
http://schoolsonline.britishcouncil.org/
http://esleflstudents.edublogs.org/
http://isabelperez.com/students.htm#Projects

Questions for reflection, Unit 7

a) How can we find classes-partners in other countries?
b) How can we integrate these initiatives in the foreign language classroom?
c) How long should a virtual collaborative project last?
d) What are the pedagogical objectives that need to be considered when implementing a project of this kind?
e) What topics should be discussed by the participants?
f) What types of tasks are most appropriate for virtual collaboration?
g) Should there be a focus on form? Why and how should it be integrated into the project?
h) What aspects should be included in the project's guidelines?
i) How can a project be evaluated? What aspects should be assessed?
j) What ICT tools (synchronous and/or asynchronous) should be used and why?
k) What criteria should be considered when making this decision?

APPENDIX B

End- of-course questionnaire

		Completely disagree	Disagree	Neither agree nor disagree	Agree	Completely agree
1.	I can easily explain what CSCL or virtual collaboration means					
2.	I know the different models of online collaboration and the differences between them					
3.	I am familiar with the use of asynchronous and synchronous ICT tools					
4.	I know how to use web pages in order to find partners in other countries					
5.	I can organize a collaborative project of this kind and negotiate all aspects of the exchange					
6.	I know how to use the most adequate ICT tools (blogs, wikis, skype, etc.) to achieve the students' learning objectives					
7.	I feel confident using the ICT					

	tools that we have explored in class					
8.	I know where to find web activities that I could integrate in the EFL classroom					
9.	If there is a tool that you don't feel confident using please specify which and why					
10.	What competences have you developed while working collaboratively online?					
11.	What competences are needed in order to work collaboratively online in a successful manner?					
12.	I would like to know about your experience on this course					
13.	I would like to hear any comments, ideas or opinions that might help improve this experience					

ACKNOWLEDGEMENTS

I would like to thank the book editors and the two anonymous reviewers for their insightful comments. This research was funded by the Spanish Ministry of Economy and Competitiveness (EDU2014-54673-R).

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KEY TERMS AND DEFINITIONS

Asynchronous tools: These web-based tools allow users to communicate at their own convenience and based on their own schedule. Users do not communicate in real time, rather, they send or post messages to each other and check them when it is convenient to them. E-mail, wikis, blogs and discussion boards are all asynchronous online tools.

Collaborative Learning: A way of learning in which students at various performance levels work together in small groups towards a common goal. Reaching this goal is a joint endeavour and all group members are responsible for their own performance and that of others.

Key competences for life-long learning: These competences, also known as core or transversal competences, are a combination of knowledge, skills and attitudes particularly necessary for personal fulfillment and development, social inclusion, active citizenship and employment. They provide added value for the labour market.

Systemic competences: Complex competences (knowledge, skills and attitudes) concerning whole systems. They are a combination of understanding, sensibility and knowledge and require prior acquisition of instrumental and interpersonal competences.

Virtual collaboration: An approach to collaboration that integrates online tools as mediators in the interaction among group members (see collaborative learning).

Wikis: A web 2.0 asynchronous tool that can facilitate collaborative writing. It allows for multiple users to edit the same document, offers great flexibility in the management of information and can enhance social interaction.