



Flipped learning as a teaching method in the bilingual university classroom

María-Pilar Molina-Torres

Associate professor, Faculty of Education, University of Cordoba, Spain.

pilar.molina@uco.es

Abstract

Over recent decades, the implementation of active learning methodologies, such as the flipped classroom (FC), has provided an innovative, motivating, and multidisciplinary role in the acquisition of educational competences of university students. Thus, the objective of this research was to analyse the usefulness of the FC versus traditional methodologies. The sample is composed of 155 students in the bilingual itinerary of the Degree in Primary Education at the University of Cordoba (Spain). The research methodology was quantitative based on a Likert-type questionnaire with twelve closed questions. The results show the conceptions that students have about the educational methodologies that they have used in their classroom practices, and those they have learned in their teacher training. As a general conclusion, this study provided an opportunity to reflect on the benefits or the weaknesses of digital education in the face of more theoretical teaching.

Keywords

Active method, bilingual education, flipped classroom (FC), inverted classroom, online learning, teaching university

Background

The situation caused by the COVID-19 outbreak has led to curriculum restructuring and unexpected changes in the way traditional teaching methods are implemented, in favour of virtualizing teaching at all educational stages (Karalis & Raikou, 2020). The need to transform pedagogical models with a mixed model—face-to-face and online—has resulted in an inevitable metamorphosis of learning strategies to provide more autonomy to students and, in most cases, do without rote, uncritical learning. This rapid transition allows for diversifying the implementation of active learning methods, along with the use of digital platforms that bring improved motivation, engagement, and flexibility. In the current context, research has indicated a transformation of the teaching-learning process based on educational theory. For this purpose, this study defends a mixed intervention in order to explain the advantages and disadvantages of a methodological change that combines traditional learning and the FC to improve teacher training in bilingual skills.

Therefore, incorporating a dynamic and innovative methodology such as the Flipped/Inverted Classroom has meant a significant advance in the initial and continuous training of new teachers within the university environment. Currently, the research on active methodologies has been significant growth to work the digital competence, increasing the learning strategies. The implementation of active learning focuses on developing the coordination of

teaching teams and emphasizing motivational projects for students that are involved in the knowledge of a subject (Molina & Ortiz, 2020). In this context, the FC develops, inside and outside of class, the teaching-learning process with the greater autonomy of the students; the students also acquire the contents of the subject with deep thinking and get more feedback from teachers to students, and from students to teachers (Long, Cummins & Waugh, 2017).

However, this situation has led researchers to address this issue with several studies on the use of the FC model in the last decade (Abeysekera & Dawson, 2015; Blasco, Lorenzo & Sarsa, 2016; Gaughan, 2014; Girmen & Kaya, 2019; Martínez-Jiménez & Ruiz-Jiménez, 2020; O’Flaherty & Phillips, 2015; Sawyer, 2017; Van Noy, James & Bedley, 2016). Similarly, the learning and teaching innovation experiences of the Vice-Rectorate for Pedagogical Innovation and New Technologies of the University of Porto were considered (Velooso et al., 2020).

In an educational context, the FC approach favours motivation—nevertheless, the activities must be planned correctly, so that they can be developed at home and worked upon in class in a more practical way. For Bergmann and Sams (2012), the FC model should be complemented with other methodological strategies. On the other hand, Suprayogi, Valcke and Godwin (2017) stress that teaching planning is an essential factor in providing students with teaching materials and organizing the content to be covered in a virtualized assessment format, together with the opportunity to provide students with training feedback. Likewise, the trend among university students is that they prefer problem-solving and inquiry-based learning, as opposed to traditional learning styles where managing digital resources is not essential.

This pedagogical model helps develop good teaching practices and avoids the theoretical reproduction of knowledge. The FC conceives knowledge as a construct based upon real situations (Turan & Akdag-Cimen, 2020). From an interdisciplinary perspective, the FC can motivate the exchange of teaching experiences in a university environment, as it dedicates class time to activities which facilitate meaningful learning. Active learning encourages students to do prior research at home so as to explain, design, correct, and assess together with the teacher and the classroom group (Good & Lavigne, 2017). In this way, the collaborative and individual work is combined, in addition to improving and reinforcing the possibilities of participatory learning in both face-to-face and virtual formats.

The FC based on cooperative, motivating and interactive learning allows for an easier coordination of individual and group knowledge (Estévez, García-Marín & Ayuso-Muñoz, 2018). In fact, the use of more innovative teaching methods promotes problem-solving by reversing the learning process and increasing the learners’ involvement. These elements consolidate interpersonal relationships, as well as collaboration, interaction, and confidence among students, by directly participating in their decision-making process. Consequently, this pedagogical approach offers a significant opportunity to develop educational competencies not only among students, but also in teacher training (Hao & Lee, 2016).

With regard to this progressive acquisition of didactic, methodological, and professional skills, we have verified in the classroom that university students mainly use new technologies for social and leisure purposes, which challenges their implementation in educational contexts. It is necessary to remark that the benefits of ICTs depend on their use from a didactic point of view, tailored to the skills of university students (Ebron & Mabuan, 2021). One of the keys to promoting a change in this situation is formative education from the educational stages prior to university. To this end, the research allowed the students to catch up in the use of new educational platforms, given the lack of initial training in digital competencies.

Regarding the challenges of this research, the study’s intervention was defined: 1) understanding the didactic strategies used for practical work in and outside the classroom; 2) university students must be able to adapt to different levels of teaching and study the virtual

environment, which allows for the development of digital competencies, and 3) the need to know about the contents acquired through research by multidisciplinary work teams. Thus, we examined the impressions of the participants about the pedagogical skills of the traditional learning and the level of digital competence used in the FC model.

In addition to the above, the digital renovation was carried out on the Moodle learning management system with assessment questionnaires, work forums, videos, and workshops. In a virtual environment, each research group uploaded the results of their work, allowing exchange of views among students and teachers, as well as favouring the collaborative learning process (Gnatyshina & Salamatov, 2017). We must also add the development of digital teaching resources in English and Spanish —these tools enable bilingual learning and content reinforcement in both languages (Szelei, Pinho & Tinoca, 2021). In fact, by working on the contents either in a collaborative or individual way, comprehension difficulties are solved, and students are motivated to combine language learning with an online and/or face-to-face method (Fatani, 2020).

In this regard, the key issue is to help students memorize fewer theoretical aspects and practice both languages (Spanish and English), to consolidate their learning with greater flexibility in the bilingual itinerary of Primary Education. This is where the FC presents itself as an alternative to traditional teaching methods to achieve English language proficiency (Andrei, 2017), and it is also considered an excellent tool for higher education. In order to improve teaching methodologies, the study conducted by Kember and Kwan (2000) shows the classification of teaching models taking into account the perspectives of university students. Indeed, the research carried out by Gibbs and Coffey (2004) reports the positive and negative changes related to the training of teachers and students in their approach to teaching. According to other studies, the teaching abilities and strategies in new educational contexts promote a reflection to improve the demands of students (Cohen, Manion & Morrison, 2017; Zhao, Liu & Su, 2021). From a constructivist approach, by combining face-to-face and online formats, students research and make assumptions which produce the result of their teaching-learning process by means of discussion and teamwork. The aim is for students to solve real problems by developing collaborative work, a sense of autonomy, and a classroom dynamic that leads them to contrast their learning experiences, in addition to responding to different practical questions that will help them adapt to current teaching challenges.

Aims

In the traditional classroom, the students must hear the explanation of the teacher and they do not have the opportunity to build their own knowledge. However, with the active teaching method, the overall objective of this research identified the pros and cons of the FC implementation for achieving meaningful English language learning in university teaching. In this sense, the following specific objectives were established:

1. (SO1) To analyse how participants perceive the implementation of the FC in their teacher training.
2. (SO2) To present the benefits of the Moodle learning management system as a virtual work environment.
3. (SO3) To state the differences between a traditional teaching method and an innovative methodology.
4. (SO4) To test the methodological training and bilingual skills of future teachers with this research.

Methods

Participants

The study population consisted of a sample of 155 students in the third year of the Degree in Primary Education at the University of Cordoba (Spain) who studied the subject named “Didactics of Social Sciences”, from the second semester of the academic year 2019-2020 to December 2021. The three groups investigated consisted of 82 women (53%) and 73 men (47%). Their average age was 21-22. Participants who were selected for the study engaged in active learning in the FC model as a complement to traditional teaching methods. In this way, students can know the possibilities that active methodologies have compared to the traditional classroom where the teacher creates a learning environment based on oral transmission of knowledge, the memorization of concepts and the students take on a passive role. For this reason, various digital resources were made available for implementation through the Moodle learning management system.

Design of the Research

A non-experimental survey-type questionnaire was used in the research design, taking the work of Creswell and Guetterman (2018) as an example. This type of design can provide systematic answers to the variables used, in addition to rigorously analyse the data obtained. From an educational and methodological perspective, these investigations are frequent, as they allow us to respond to the collection of multiple variables, as well as to acquired learning as a whole (Burke & Christensen, 2014). Based on this methodological design and prior to the implementation of the questionnaire—as shown in Figure 1—, the Primary Education Degree students worked in the Moodle to acquire an overall vision of how it works and the tools they could use to recreate a personalized learning environment during the didactic proposal.

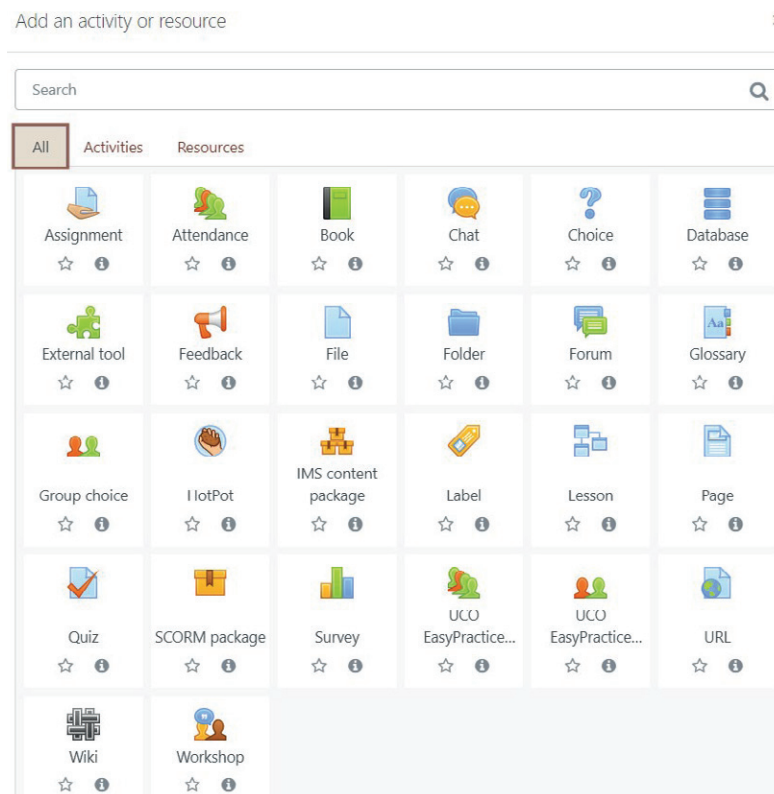


Figure 1

Didactic resources of the Moodle learning management system (Moodle HQ, 2021)

Data Collection and Analysis Instrument

A single questionnaire was used to collect information—it was entitled “Advantages and disadvantages of traditional teaching vs active methodology (FC) in times of COVID-19”, as shown in Table 1. The first part examines the students’ beliefs about the acquisition of knowledge and key competencies through a more traditional didactic methodology. The second one analyses perceptions about the usefulness of the FC as an active learning method.

Both parts make up this quantitative instrument, which is based upon a Likert scale of five values ranging from 1 (strongly disagree) to 5 (strongly agree). The participants of the study received some indications to respond to the twelve items divided into these two categories during a practical session of the subject “Didactics of Social Sciences”. In order to implement and validate the content, we relied on the recommendations provided by five specialists about active learning methodologies training from two Spanish universities. Finally, for the sake of interpreting and analysing the data, an Excel table was used to calculate averages and percentages, as well as graphs to meet each of the objectives of the study.

Table 1 Scale for evaluating students’ opinions.

Students’ beliefs about traditional methodologies					
1. I consider traditional teaching to be practical for us to memorize theoretical content.	1	2	3	4	5
2. I think that learning these contents is monotonous and repetitive.	1	2	3	4	5
3. I believe that the contents I learn this teaching method are conceptual.	1	2	3	4	5
4. I would like to learn the bilingual contents in the subject of Didactics of Social Sciences without memorizing them.	1	2	3	4	5
5. I consider that the teacher’s lectures are only based on master classes. ¹	1	2	3	4	5
6. I think that the exam is the only assessment tool used in this rote approach.	1	2	3	4	5
Students’ perceptions about the usefulness of the FC model					
7. I consider that flipped learning is an appropriate methodology for my curricular training in Didactics of Social Sciences.	1	2	3	4	5
8. I think that my professional skills can be enriched by knowing about active learning methodologies.	1	2	3	4	5
9. I would like to complement active methodologies such as the FC with virtual teaching.	1	2	3	4	5
10. I believe that virtual training has not been enough during my teaching-learning process at the university.	1	2	3	4	5
11. I consider that Moodle facilitates interaction and collaborative work in the bilingual itinerary of Primary Education.	1	2	3	4	5
12. I would like to have more ICTs knowledge to be able to analyse different educational contexts.	1	2	3	4	5

Results

In order to meet the objectives of this research, a description of the percentages is presented in Figure 2. Regarding the first objective—related to the analysis of students’ perceptions of how the FC model is implemented in their teacher training— items 7 and 9 were

1. A lesson given to students of a particular discipline by an expert of that discipline. Students are expected to attend the teacher’s explanation without the opportunity to build their own knowledge.

selected. The results in Figure 2 show that, for item 7, more than 82% of the students agree that using the FC approach in their teaching-learning process has been an adequate educational method for their curricular training within the subject since the COVID-19 pandemic started. For item 9, 88% of students—quite a high percentage—recognized that the FC should be combined with a distance-learning teaching context. This situation, which still exists in most Spanish universities, will foreseeably continue to increase, according to the students’ and teachers’ needs. However, the usefulness of the FC does not necessarily involve the use of digital media, because the students can handle printed texts such as textbooks, monographs, and notes. In addition, the working groups could be face-to-face and not virtual.

Table 2 First objective. Considerations of the students about the items 7 and 9.

		Strongly disagree	Disagree	Neither agree nor disagree	Agree	Totally agree
7.- I consider that flipped learning is an appropriate methodology for my curricular training in Didactics of Social Sciences.						
%	100	3.5	2	1.4	11.1	82
Frq	155	5	3	2	18	127
9.- I would like to complement active methodologies such as the FC with virtual teaching.						
%	100	1	5.2	2.8	3	88
Frq	155	2	8	4	5	136

Next, items 11 and 12 have been chosen to meet the second objective, which focuses on whether the students find positive to rely on Moodle as a collaborative and virtual workspace, where they share the researched information. For item 11, around 53% of the students think that access to Moodle and teamwork facilitates interaction among classmates and teachers for their training in the bilingual itinerary. This result is related to their previous educational stages in English, such as primary or secondary school, and provides us with data on the level of competence in a foreign language. At the same time, regarding item 12, we found that 75% of the students agree in acquiring a better knowledge of ICT resources to implement them in other educational contexts outside their university training—for instance, they can implement this knowledge in extracurricular activities during their teaching practicum.

Table 3 Second objective. Considerations of the students about the items 11 and 12.

		Strongly disagree	Disagree	Neither agree nor disagree	Agree	Totally agree
11.- I consider that Moodle facilitates interaction and collaborative work in the bilingual itinerary of Primary Education.						
%	100	8.5	6	10.2	22.3	53
Frq	155	13	9	16	35	82
12.- I would like to have more ICTs knowledge to be able to analyse different educational contexts.						
%	100	3.8	1.1	5.1	15	75
Frq	155	6	2	8	23	116

So as to meet the third objective related to the differences that students perceive between the implementation of a traditional methodology versus an innovative methodology, we selected items 1, 3 and 8. The results in Figure 2 show that, for items 1 and 3—around 92% and 81%, respectively— the students agree that conceptual teaching is useful for memorizing and reproducing theoretical content. At the same time, item 8—with a percentage of 94%—indicates that students agree that their academic and professional profile can be improved by knowing about and implementing active learning methodologies. These opinions show that the participants have always studied with traditional teaching that gives them a sense of security in their learning. However, during the COVID-19 pandemic, other active methods have been favoured by the necessary use of virtual sessions at the university.

Table 4 Third objective. Considerations of the students about the items 1, 3 and 8.

		Strongly disagree	Disagree	Neither agree nor disagree	Agree	Totally agree
1.- I consider traditional teaching to be practical for us to memorize theoretical content.						
%	100	0	1	2.8	4.2	92
Frq	155	0	2	4	7	142
3.- I believe that the contents I learn this teaching method are conceptual.						
%	100	0.5	2.6	3.4	12.5	81
Frq	155	1	4	5	19	126
8.- I think that my professional skills can be enriched by knowing about active learning methodologies.						
%	100	3	0	1.2	1.8	94
Frq	155	5	0	2	3	145

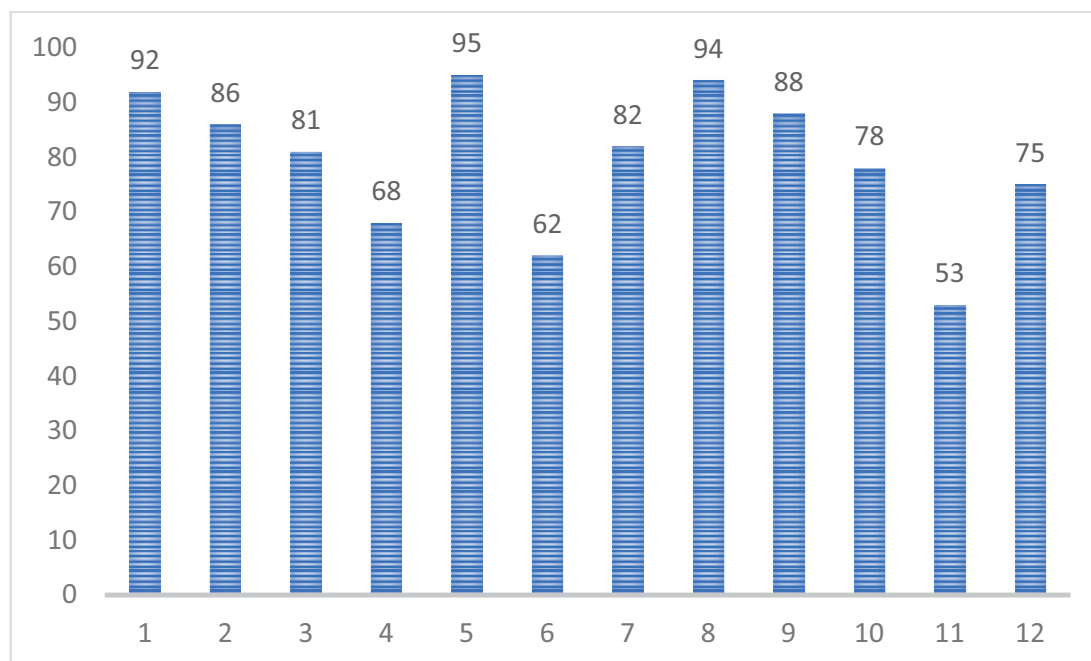


Figure 2 Major percentages of the achievement of the study objectives.

Table 5 Fourth objective. Considerations of the students about the items 4 and 10.

		Strongly disagree	Disagree	Neither agree nor disagree	Agree	Totally agree
4.- I would like to learn the bilingual contents in the subject of Didactics of Social Sciences without memorizing them.						
%	100	1.2	2.3	6.8	21.7	68
Frq	155	2	4	11	33	105
10.- I believe that virtual training has not been enough during my teaching-learning process at the university.						
%	100	0.9	1.6	10	9.5	78
Frq	155	1	2	16	15	121

About the last objective—that is, to test the bilingual skills of new teachers and their methodological training— items 4 and 10 have been chosen. As shown in Figure 2, for item 4, 68% of the students totally agree with the use of a different methodology—perhaps more innovative—that does not force them to learn by heart the contents of the subject “Didactics of Social Sciences” in the bilingual itinerary and to evaluate the knowledge, through an exam. While for item 10, 78% of students think that their virtual training has not been updated with sufficient digital resources and access to online educational platforms that would be very useful to reinforce both their linguistic and methodological profile. In general terms, the results show that virtual teaching and the use of the FC have an impact on their ICT training as an educational strategy in higher education. In fact, current teaching methods are not the most suitable for implementing digital competencies in a classroom and training new university teachers in bilingual education.

Discussion

As evidenced by the results obtained, the students adopted a dynamic and positive attitude to meet their learning needs through digital educational content, because they used to work the traditional teaching, based on evaluation of conceptual contents. This approach embodies a different view of the implementation of master classes in the university context and the students’ preference for active learning methods such as the FC (He, Holton, Farkas & Warschauer, 2016). In these circumstances, the development of digital resources and skills related to digital competence in teaching is particularly significant. Active learning methodologies promote interdisciplinarity and transversality in teaching and knowledge management. At this point, it is necessary to mention that teachers’ continuous training is currently not adequate for acquiring the digital and professional skills to be used in an educational context. Moreover, the current conditions for teaching improvement do not meet the need to motivate and encourage university students to embrace an innovative educational approach to face real teaching situations at school.

From a methodological point of view, in the subject called “Didactics of Social Sciences” of the Primary Education Degree, there is no specific place given to the FC-based teaching, as opposed to more traditional methodologies (Orlanda-Ventayen, 2021). In fact, during this research, students expressed the need to try a less conceptual, more enjoyable, and participatory method during their lessons to improve their training process as teachers (Kosnik, Beck & Goodwin, 2016). For this reason, the use of the FC supposes an opportunity to support

the teaching-learning process like future teachers. This methodology proposes that students prepare their research outside the classroom with the help of digital didactic resources, to be followed by brainstorming and more participatory activities in which they assimilate and share new ideas.

According to the results from this study, university students shared their Prezi slides, concept maps, interactive tutorials, and collaborative murals both through Moodle and as tools for flipped teaching. During the analysis, selection, and creation of these resources to work with the information, the students contributed their impressions in small working groups. If this planning was not carefully detailed, it could create confusion among the students due to their lack of knowledge about the FC model. Notwithstanding, as suggested by Molina (2021), when they knew about the pedagogical advantages of this method, they approached their own teaching by following up their own progress, as well as they were aware of the acquisition of educational competencies.

Another significant factor in this proposal has been interactive narratives. This experience led to greater student involvement through direct feedback between students and teachers. As other studies show (Mayordomo & Onrubia, 2015; Chen, 2021), both groups can collaborate by sharing doubts, new hypotheses, and results that consolidate learning. Here the roles of teacher/student are exchanged to improve the training of the latter and to base their learning on research (Kong, 2014). These alternatives to transmissive teaching increase teacher involvement in their subjects, but also add additional effort in the early days of the FC implementation.

Conclusions

By way of conclusion, thanks to the use of the FC model, we were able to involve bilingual students, promote a theoretical and practical interaction that materializes in their continuing education, and use more dynamic methodological strategies (Herrera & Casado-Rodrigo, 2015). This active learning method allows students to transfer their knowledge to different educational settings. Indeed, throughout this process, the combination of images and text through the implementation of visual thinking made easier to acquire different digital competencies, which has been a challenge to promote critical thinking in the face of problematic situations that arise during their learning process. Thus, by developing their own resources, students work on concepts and problem-solving in a clearer way—something that does not arise in a master class (Albert & Beatty, 2015).

The strengths of study show the positive impressions of participants with the implementation of the FC. The students find the interactive learning environments in their teacher training useful. In this sense, the use of online resources promotes interactions between teachers and students. Furthermore, the collaborative work allowed the participants more autonomy and motivation for valuing the frequent feedback on Moodle. The students were receptive to understand the educational resources of the Moodle learning management system. With the same purpose, we also confirm the active collaboration of future teachers to improve the professional skills and the opportunity to learn how to participate in a virtual space.

Last but not least, it should be noted that the limitations of this study focused on training teachers in active learning methodologies—particularly, teachers who follow a bilingual itinerary (Karimi, Zangani & Fallah, 2019). The findings of this study provide a useful didactic starting by researchers and teachers in other similar circumstances. In addition, it could be necessary to increase the size of the sample with the number of participants. Another limitation is that not all the students are prepared to implement an experiential learning

with the FC. To do this, future research can be oriented towards practical teaching. That is to say, we believe that it is necessary to strengthen the training of teachers in digital skills.

Finally, this proposal has posed a challenge to value both the experiences and linguistic thinking skills of the students, as they have been able to manage their training needs and their own teaching-learning process. The information collected from their digital research complements all the documentation used in other formats, such as dossiers or paper assignments. Therefore, according to the analysis of the items referring to knowledge about the FC, students recognize their further need of training and curricular support to achieve the professional skills allowing them to use this innovative teaching method (Meschede, Fiebranz, Möller & Steffensky, 2017). Anyway, it is a fact that digital work dynamics are not a repeated or shared experience in relation to competence-based training in university environments.

Acknowledgements: This article has been carried out thanks to a mobility stay abroad financed by the “Research Plan of the University of Córdoba (Spain)” and enjoyed at the Faculty of Letters of the University of Porto (Portugal). I would also like to thank João Veloso, vice-rector in Pedagogical Innovation and New Technologies at the University of Porto.

References

- Abeyssekera, L., & Dawson, P. (2015). Motivation and cognitive load in the Flipped classroom: definition, rationale and a call for research. *Higher Education Research & Development*, 34, 1-14. <https://doi.org/10.1080/07294360.2014.934336>
- Albert, M., & Beatty, B. J. (2015). Flipping the classroom applications to curriculum redesign for an introduction to management course: Impact on grades. *Journal of Education for Business*, 89, 419-424. <https://doi.org/10.1080/08832323.2014.929559>
- Andrei, E. (2017). Technology in Teaching English Language Learners: The Case of Three Middle School Teachers. *TESOL Journal*, 8(2), 409-431. <https://doi.org/10.1002/tesj.280>
- Bergmann, J., & Sams, A. (2012). *Flip Your Classroom: Talk to Every Student in Every Class Every Day*. International Society for Technology in Education.
- Blasco, A. C., Lorenzo, J., & Sarsa, J. (2016). The flipped classroom and the use of educational software videos in initial teaching education. Qualitative study. *@tic Revista d'innovació educativa*, 17, 12-20. <https://doi.org/10.7203/attic.17.9027>
- Burke, R., & Christensen, L. (2014). *Educational Research: Quantitative, Qualitative, and Mixed Approaches*. Sage.
- Chen, C. C. (2021). Effects of Flipped Classroom on Learning Outcomes and Satisfaction: An Experiential Learning Perspective. *Sustainability*, 13(16), 9298. <https://doi.org/10.3390/su13169298>
- Cohen, L., Manion, L., & Morrison, K. (2017). *Research methods in education*. New York.
- Creswell, J. W., & Guetterman, T. C. (2018). *Educational Research: Planning, Conducting, and Evaluating Quantitative and Qualitative Research*. Pearson Education.
- Ebron, G. P., & Mabuan, R. A. (2021). Flipped Learning Approach in Teaching Writing in a University Setting: Students' Experiences, Preferences, and Perspectives. *TESOL International Journal*, 16(4.4), 161-183.
- Estévez, J., García-Marín, A. P., & Ayuso-Muñoz, J. L. (2018). Self-Perceived Benefits of Cooperative and Project Based Learning Strategies in the Acquisition of Project Management Skills. *International Journal of Engineering Education*, 34, 1-11.
- Fatani, T. H. (2020). Student satisfaction with videoconferencing teaching quality during the COVID-19 pandemic. *BMC Med Educ* 20(1), 1-8. <https://doi.org/10.1186/s12909-020-02310-2>

- Gaughan, J. E. (2014). The Flipped Classroom in World History. *History Teacher*, 47(2), 221-244.
- Gibbs, G., & Coffey, M. (2004). The Impact of Training of University Teachers on Their Teaching Skills, Their Approach to Teaching and the Approach to Learning of Their Students. *Active Learn. Higher Edu.* 5, 87-100. <https://doi.org/10.1177/1469787404040463>
- Girmen, P., & Kaya, M. F. (2019). Using the Flipped Classroom Model in the Development of Basic Language Skills and Enriching Activities: Digital Stories and Games. *International Journal of Instruction*, 12(1), 555-572. <https://doi.org/10.29333/iji.2019.12136a>
- Gnatyshina, E. V., & Salamatov, A. A. (2017). Digitalization and Formation of Digital Culture: Social and Educational Aspects. *Bulletin of the Chelyabinsk State Pedagogical University*, 8, 19-24. <https://doi.org/10.15405/epsbs.2019.12.04.146>
- Good, T. L., & Lavigne, A. L. (2017). *Looking in classroom*. Routledge.
- Hao, Y., & Lee, K. S. (2016). Teaching in flipped classrooms: Exploring pre-service teachers' concerns. *Computers in Human Behaviour*, 57, 250-260. <https://doi.org/10.1016/j.chb.2015.12.022>
- He, W., Holton, A., Farkas, G., & Warschauer, M. (2016). The effects of flipped instruction on out-of-class study time, exam performance, and student perceptions. *Learning and Instruction*, 45, 61-71. <https://doi.org/10.1016/j.learninstruc.2016.07.001>
- Herrera, M. A., & Casado-Rodrigo, J. (2015). Interaction analysis of a blog/journal of teaching practice. *The Internet and Higher Education*, 27, 32-43. <https://doi.org/10.1016/j.iheduc.2015.05.003>
- Karalis, T., & Raikou, N. (2020). Teaching at the times of Covid-19: inferences and implications for higher education pedagogy. *International Journal of Academic Research in Business and Social Sciences*, 10(5), 479-493. <http://dx.doi.org/10.6007/IJARBS/v10-i5/7219>
- Karimi, M. N., Zangani, E., & Fallah, N. (2019). Differential Allocation of Attention to Meaning and Form in Reading Comprehension for Monolingual and Bilingual Learners of English. *TESOL International Journal*, 14(1), 79-90.
- Kember, D., & Kwan, K.P. (2000). Lecturers' approaches to teaching and their relationship to conceptions of good teaching. *Instructional Science*, 28, 469-490. <https://doi.org/10.1023/A:1026569608656>
- Kong, S. C. (2014). Developing information literacy and critical thinking skills through domain knowledge learning in digital classrooms: An experience of practicing flipped classroom strategy. *Computers & Education*, 78, 160-173. <http://doi.org/10.1016/j.compedu.2014.05.009>
- Kosnik, C., Beck, C., & Goodwin, A. L. (2016). Reform efforts in teacher education. In J. Loughran, & M. L. Hamilton (Eds.), *International Handbook of Teacher Education* (pp. 267-308). Springer.
- Long, T., Cummins, J., & Waugh, M. (2017). Use of the flipped classroom instructional model in higher education: instructors' perspectives. *Journal of computing in higher education*, 29(2), 179-200. <https://doi.org/10.1007/s12528-016-9119-8>
- Martínez-Jiménez, R., & Ruiz-Jiménez, M. (2020). Improving students' satisfaction and learning performance using flipped classroom. *The International Journal of Management Education*, 18(3), 1-8. <https://doi.org/10.1016/j.ijme.2020.100422>
- Mayordomo, R. M., & Onrubia, J. (2015). Work coordination and collaborative knowledge construction in a small group collaborative virtual task. *The Internet and Higher Education*, 25, 96-104. <https://doi.org/10.1016/j.iheduc.2015.02.003>
- Meschede, N., Fiebranz, A., Möller, K., & Steffensky, M. (2017). Teachers' professional vision, pedagogical content knowledge and beliefs: On its relation and differences between pre-service and in-service teacher. *Teaching and Teacher Education*, 66, 158-170. <https://doi.org/10.1016/j.tate.2017.04.010>

- Molina, M. P., & Ortiz, R. (2020). Active learning methodologies in teacher training for cultural sustainability. *Sustainability* 12(21), 1-12, 9043. <https://doi.org/10.3390/su12219043>
- Molina, M. P. (2021). Methodological Training and Virtual Skills Of University Students. *Astra Salvensis*, IX, 17, 191-199.
- Moodle HQ. (2021). Moodle open-source learning management system. <https://moodle.org/>
- O’Flaherty, J., & Phillips, C. (2015). The use of flipped classrooms in higher education: A scoping review. *The internet and higher education*, 25, 85-95. <https://doi.org/10.1016/j.iheduc.2015.02.002>
- Orlanda-Ventayen, C. C. (2021). Technology Integration in Teaching Language Subjects by Primary Education Teachers. *TESOL International Journal*, 16(8), 91-102.
- Sawyer, R. K. (2017). Teaching creativity in art and design studio classes: A systematic literature review. *Educational Research Review*, 22, 99-113. <https://doi.org/10.1016/j.edurev.2017.07.002>
- Suprayogi, M. N., Valcke, M., & Godwin R. (2017). Teachers and their implementation of differentiated instruction in the classroom. *Teaching and Teacher Education*, 67, 291-301. <https://doi.org/10.1016/j.tate.2017.06.020>
- Szelei, N., Pinho, A. S., & Tinoca, L. (2021). Teaching In Multilingual Classrooms: Strategies From A Case Study In Portugal. *Revista Brasileira de Educação*, vol. 26, e260038. <https://doi.org/10.1590/S1413-24782021260038>
- Turan, Z., & Akdag-Cimen, B. (2020). Flipped classroom in English language teaching: a systematic review. *Computer Assisted Language Learning*, 33(9), 590-606. <https://doi.org/10.1080/09588221.2019.1584117>
- Van Noy, M., James, M., & Bedley, C. (2016). *Reconceptualizing Learning: A Review of the Literature on Informal Learning*. Rutgers Education.
- Veloso, J., et al (2020). *Cadernos de Inovação Pedagógica. Workshop de Partilha e Inovação Pedagógica*, vol. I. Universidade do Porto.
- Zhao, L., Liu, X., & Su, Y. (2021). The Differentiate Effect of Self-Efficacy, Motivation, and Satisfaction on Pre-Service Teacher Students’ Learning Achievement in a Flipped Classroom: A Case of a Modern Educational Technology Course. *Sustainability*, 13(5), 2888. <https://doi.org/10.3390/su13052888>