

Article

# Development and Diagnosis of a Teaching Experience Using Participatory Methods: Towards an Ecosystemic Learning in Higher Education

Beatriz Pedrosa <sup>1</sup>, Paz Peña <sup>2</sup> and Violeta Pina <sup>3,\*</sup>

<sup>1</sup> Department of Research and Diagnostic Methods in Education Faculty of Education, Economy and Technology, University of Granada, Ceuta 51001, Spain; beatrizpv@go.ugr.es

<sup>2</sup> Department of Didactics and School Organization, University Center SAFA-Úbeda, University of Jaén, Jaén 23400, Spain; pazpena@fundacionsafa.es

<sup>3</sup> Department of Developmental and Educational Psychology, Faculty of Education, Economy and Technology, University of Granada, Ceuta 51001, Spain

\* Correspondence: violetapina@ugr.es

Received: 23 June 2020; Accepted: 22 July 2020; Published: 25 July 2020



**Abstract:** The redefinition of the objectives of the European Higher Education Area (EHEA) generates novelty in the teaching design developed by universities. The constructivist perspective encourages the use of methods that promote teamwork, an interest for information searching, autonomy and an increased motivation for learning, among others. Currently, the acquisition of the established curricular content receives feedback thanks to information and communication technologies (ICTs). This research describes the implementation of an experience related to the use of teaching/learning participatory methods with first- and second-year students in Early Childhood Education and Primary Education bachelor's degrees. This experience is based on flipped classrooms and role-playing and is supported by ICTs. A questionnaire was delivered to a total of 100 individuals on their perception of participatory methods and their assessment of the methods used for the described experience. After performing the analysis, the conclusions showed that higher education students considered that classroom implementation of emerging methods helped them at a theoretical, practical and professional level as well as motivated them, which allows us to advance towards the goals of the EHEA.

**Keywords:** participatory methods; higher education; ICTs

## 1. Introduction

In order to identify the level of technological competence of a society, it is necessary to qualify individuals in order to establish the level of knowledge [1]. During the last decade, a great technological change has taken place that has had a strong impact on many different aspects of life, such as on individual and social communication or on the work environment, and with important effects on the formative and educational fields.

Currently, higher education is not just a space for knowledge assimilation and academic research, but it is also a space for transformation and sociocommunity participation. As [2] suggests, the teaching/learning model recognized in universities should be defined for providing greater notability to students, beyond normative and academic decisions, and be initiated from different levels with political commitment. This new configuration for understanding teaching and the education process is completely linked to innovation. Innovation is considered to be the process through which actions are designed and undertaken for improving and transforming the teaching/learning process, based mainly on the resolution of practical problems [3].

The present study aims to meet the European Higher Education Area (EHEA) requirements for reaching Horizon 2020's objectives by presenting an innovative experience and identifying its assessment. Horizon 2020 suggests [4]: (a) a transformation of the demand for teaching, qualifications and educational models; (b) to advocate for internalization and collaboration together with the tendency promoted by forms of transnational education; (c) consolidation of new schemes of competencies, with the progressive disappearance of subjects; (d) appearance of the online educational component; (e) changes in the financial and organizational schemes; (f) adapting teaching to social needs; (g) redirecting the accreditation systems and quality guarantee; (h) promoting incentives to teaching and teachers; (i) responding to students' new expectations; (j) valuing research; and (k) responding to the efficiency challenge. Similar expectations to those exposed in the CRES Action Plan 2018–2028 (Regional Conference on Higher Education in Latin America and the Caribbean) [5].

Education, following the constructivist approach together with connectivist perspectives, is experiencing a Copernican shift, bringing us closer to students [6] by means of ICTs (information and communication technologies), LKTs (learning and knowledge technologies) and EPTs (empowerment and participation technologies) and heading towards an ecosystemic paradigm with different educational scenarios. In the second decade of the 21st century, design thinking and maker culture [7,8] have promoted new innovation proposals such as educational robotics, based on the idea of learning by doing [9].

The application of techniques based on innovative teaching promotes pedagogical emancipation, creativity and a greater commitment to students' teaching/learning processes, both at the individual and group level. Following this trend, one of the specific models in emerging methods that has obtained very positive results in a great variety of educational contexts is peer tutoring [10,11]; the educational model known as the flipped classroom [12,13] is a method proposal in which the educational process is shifted so students become the center of their own teaching/learning process. It incorporates active and participatory methods, providing resources for theoretical knowledge and integrating the assessment of their own learning. Findings from different studies [12] and [14] confirm that the flipped classroom improves students' learning outcomes, helping them acquire metacognitive skills such as critical thinking. Therefore, we have empirical data that supports its implementation in the classroom as well as the use of role-playing as an experiential learning process connected to the emotional world, whose basic pillars are empathy and learning to understand [14–17].

The use of the e-portfolio as an "authentic learning" [18] intervention strategy and game-based learning [19] as a positive encouragement proposal for motivating students to learn and perform research are examples of experiences that create tools for the acquisition of transversal competencies, an example of which is digital competence [20].

From the teachers' perspective, as shown in other projects [21–23], ICTs are considered to be stimulating the use of innovation within the teaching practice as well as in classroom organization and classroom dynamics. This is thanks to the development of new methods and instructional strategies such as project-based learning, collaborative learning, the use of ApS projects (Community Service Act), etc. For this reason and from an ethical and professional point of view, it is important to pay attention to new educational resources that may help us reach the goal of improving the teaching practice. Articles [24] and [25] recapitulate elements for effective instruction, which include teachers' leadership skills, promoting interactive teaching, prioritizing an adequate organization and atmosphere in the classroom, managing diversity from a learning-to-learn approach and using continuous assessment.

In spite of the benefits of these new methods that one may observe, few studies have shown if students understand subjects better, if they are more motivated or more involved in their work. These studies generally focus on describing the experience without providing objective data about it. For this reason, our hypotheses are based on giving answers to those questions, which other studies [12,13,15,16] have not clarified.

Following this line, for this study, the teaching/learning processes are based on structuring curricular content [24,25] to be taught in the following phases: formulation of the objectives based

on each course's syllabus; organized content research through article readings guided by the teacher; explanations using clear examples through workgroups; formulating questions to students and formulating discussion activities; reinforcement of acquired knowledge; instructional review, checking students' learning and identifying their difficulties; and lastly, reviewing content taught since asking for clarifications.

The objectives of our work emerge from several needs: on the one hand, to meet the EHEA requirements for reaching Horizon 2020's objectives and on the other hand, to better know the impact of the teaching/learning process of some methods, known as active methods, which are increasingly being studied in higher education [26,27], as well as the use of ICT resources in the educational field. To this end, we combine teacher collaboration [9], the flipped classroom [12] and role-playing [9], all bathed in ICTs, but from the approach of LKT and EPT. From these objectives, several research questions arise that guide the empirical part of our work. First, what do students think about participatory methods in university classrooms? Second, do students feel more motivated when the methodology used in the classroom is based on participatory and innovative methods as well as on the use of ICT tools?

Based on the existing literature, our hypothesis is that once the innovative experience has been carried out in the classroom, the assessment of the method will be positive. Students will find the applied method motivating, and we hope that, in their opinion, this method facilitates students' participation in the classroom. This aspect is important due to the extensive and tedious nature of the courses in question. Furthermore, we hope students assess highly the connection between theory and practice and that they are of the opinion that this method has helped them acquire skills for their future profession.

## 2. Materials and Methods

### 2.1. Participants

A total of 100 students (72% female) aged between 18 and 43 ( $M = 20.8$ ,  $SD = 4.3$ ) collaborated in this study. Students were taking three courses: School Organization of the second year of the Early Childhood Education bachelor's degree, School Organization of the second year of the Primary Education bachelor's degree and General Didactics of the first year of the Primary Education bachelor's degree from the University Center Sagrada Familia, associated center to the University of Jaen in Ubeda (Spain) (hereafter SAFA).

The courses School Organization: Time, Space, Means and Resources as well as General Didactics were selected due to the content they include, a great academic load based on thoroughly studying the legal framework, the legislative and political policies that define the educational system, the personal elements of the school, resources, didactic methods, etc. Students already hold preconceptions of the aforementioned courses as being extensive and tedious. Following this line, thanks to the implication of students and to a teaching staff characterized by experimental and up-to-date teaching, it was decided to implement participatory methods and ICT resources as pedagogical alternatives based on innovation. Different options were offered within the applied methods, which made the teaching/learning process more dynamic, and on the other hand, different ways of doing things in the classroom were offered to students as pedagogical examples. The experience and the data collection were developed by two teachers, one teacher for both courses in School Organization and another teacher for the course in General Didactics. All students enrolled in these courses participated in the developed experience. The descriptive analysis is shown in Table 1.

**Table 1.** Descriptive data.

Course	N (% Female)	Years of Age		
		M	SD	Range
School Organization (Early Childhood Education)	23 (95.7)	23.4	6.5	19–43
School Organization (Primary Education)	28 (53.6)	21.0	3.6	19–36
General Didactics (Primary Education)	49 (71.4)	19.6	2.6	18–33
Total	100 (72%)	20.8	4.3	18–43

## 2.2. Procedure

The development of the study was carried out in two consecutive phases: experience development (phase 1) and data collection (phase 2), respectively. Both phases were carried out during the 2018/2019 academic year. The experience and the collection of data were undertaken by two teachers in continuous collaboration for the development of the experience. The students were informed at the beginning of the course of the methodology that would be carried out in class. The total number of students for the three courses involved was 186. The requirement for their participation in phase 2 was class attendance of at least 75% (89% of students reported an attendance rate equal to or higher than 90%). The questionnaire was administered at the end of the subjects to a total of 103 students, 3 of whom did not identify which course they belonged to and therefore were excluded from the analysis. The protocol for this research was approved by SAFA's bioethics committee. All participants gave their consent before the administration of the questionnaire.

## 2.3. Development of the Experience and Measures

### 2.3.1. Experience (Phase 1)

The experience is framed within two basic courses with a large credit load and, therefore, of syllabus material: School Organization in the second year of Early Childhood Education and the second year of Primary Education and General Didactics in the first year of Primary Education. The phases that guided our work focused on those provided by [24,25]:

(1) Formulation of the objectives. In a first encounter, the professors responsible for the three courses reviewed the competencies and the syllabus content in order to specify the way in which the learning results proposed in the course syllabus would be reached. These were then set as the objectives for each course.

(2) Organized content research through article readings guided by the teacher. The adaptation of the syllabus content was based on the search for and selection of different articles by units. Bibliographic references were provided through digital object identifier (DOI) links in the Classroom platform. Afterwards, students had to read and transform the information using what were called worksheets, in which they had to answer several questions formulated by the teachers about the texts.

(3) Explanations using clear examples through workgroups. Once students had read the theory documents and had answered the questions from the worksheets individually, they had to gather in small groups. At that point, activities would be handed out by the teachers. Each question had to be worked on in depth by one or several groups (here, applications such as Sway or Google Drive were used to ease online teamwork). Lastly, each group had to explain a question from the worksheet to their peers in a dynamic, participatory and active way. To be able to carry out this phase, teachers provided ICT tools and methodological strategies (elaboration of a comic, dramatizations, self-made videos, creation of a blog, website, posters, etc.). These materials were always supervised, and explanations were provided by the teachers to ensure the correct execution of activities and the expositions following them.

(4) Formulating questions to students and formulating discussion activities. One of the sections within the expositions, which were already participatory and active, involved generating debate and facilitating their peers' participation. Everyone knew the syllabus content; hence, everyone had to

provide examples, new ideas or clarifications. These new ideas would be included in a document shared by the teacher through Google Drive, which would end up becoming the final notes in the Classroom platform.

(5) Reinforcement of acquired knowledge. To ensure correct learning, following the expositions, a series of questions were made to reinforce knowledge. To this end, apps for mobile devices were used, such as Kahoot and Socrative. Students had to answer short-answer tests within the stipulated time. Their phones became remote controls for answering multiple-choice questions while the digital board showed each question with the percentage of correct answers and the “user” who was winning. We chose to use this mobile learning method because as [28] stated, mobile devices improve the teaching and learning process of university students.

(6) Instructional review, checking students’ learning and identifying their difficulties. This section was carried out in two parts. On the one hand, worksheets were elaborated. Teachers tended to students in the classroom to help them look for materials and understand basic concepts of the lesson (using databases such as Scopus, ERIC (Education Resources Information Center), Dialnet, TESEO (database with the information of the Doctoral Theses provided by all the universities since 1976) and Web of Science. For ICT, LKT and EPT, websites with digital resources for teaching were provided. On the other hand, once the expositions were finished, teachers provided explanations using examples and highlighting the main concepts.

(7) Reviewing content taught since asking for clarifications. Teachers, together with students, reviewed the content taught in order to clear up possible doubts at different times during the semester. This review was carried out by means of short tests taken on Google Drive at the end of each unit. Basic concepts of previous units would also be included in the expositions. Lastly, the Classroom chat allowed teachers to be available to answer questions online during the whole semester.

### 2.3.2. Questionnaire (Phase 2)

The measure used was the “Questionnaire on the use of participatory methods at university” [29]. Following these authors, with the questionnaire method, it is possible to reach a larger portion of the population, allowing for standardization of the answers and their statistical analysis. The questionnaire allows for greater replicability of the findings in case other authors may want to compare the results of their methods with ours. Furthermore, the questionnaire method in this study allowed us to assess the opinions of students from two different courses in the same way. It included 31 items that assessed two dimensions: the first one addressed students’ perception of the development of participatory methods in teaching at the university, called “general perception of participatory methods”. This more general dimension focused on the perception of these methods, regardless of the context in which they may be applied. It included questions such as if students perceive that they increase motivation and ease learning, if they improve the student–teacher relationship, if activities are complex or if the assessment is clear enough, among others—for example, “Participatory methods improve the relationship between students and teachers” or “Participatory methods generate doubts and insecurity about the assessment”.

The second dimension addressed students’ assessment of the method implemented in the course, called “assessment of the course’s method”. This dimension, focused on the course of reference, included questions related to the attitudinal aspects such as motivation, expressing opinions or the student–teacher relationship in the classroom, but above all, it held an interest in knowing how they had perceived the development of theoretical and practical classes and the acquisition of competencies—for example, “In relation to the methods applied in the classroom, it has helped me clarify theoretical concepts of the course” or “In relation to the methods carried out in the classroom, they have helped me acquire professional competencies” (for further information, see [29]). Respondents rated how often they agreed with each item on a five-point Likert-type scale from 1 (strongly disagree) to 5 (strongly agree). The administration of the questionnaire was carried out individually through Google Questionnaire. In our sample, the instrument showed suitable internal consistency (Cronbach’s  $\alpha = 0.96$ ).

#### 2.4. Analysis Strategy

Each item was considered an isolated variable following the original article; see [29]. Furthermore, a score was calculated for each dimension (“general perception of participatory methods” and “assessment of the course’s method”) to test for differences between groups in the overall assessment.

Possible differences among groups were explored based on sex, age, degree year, course and degree. Given the nonparametric distribution of data (Kolmogorov–Smirnov test  $< 0.05$ ), the Mann–Whitney  $U$  and Kruskal–Wallis  $H$  coefficients were calculated. Effect size was also calculated based on ranges suggested by Cohen [30]— $r = 0.10$ , small;  $r = 0.30$ , medium; and  $r = 0.50$ , large. Finally, possible differences in the proportion of student responses per item for each grade were explored ( $\chi^2$ ). Data were analyzed using the statistical package SPSS, version 21.0.

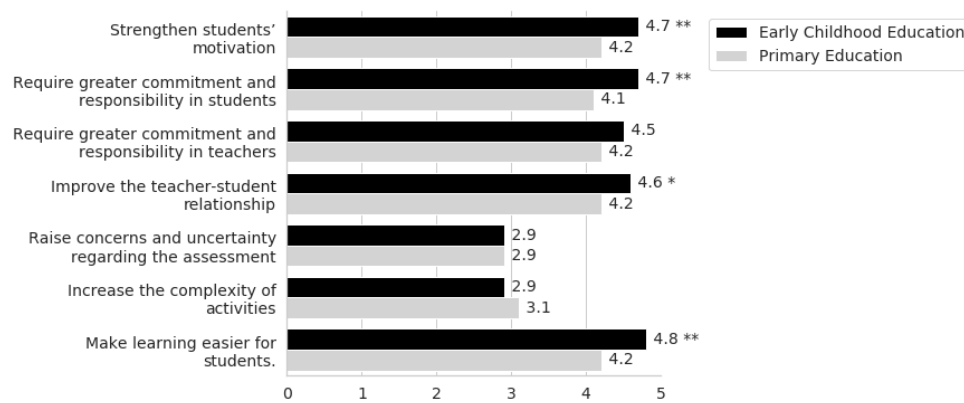
### 3. Results

No significant differences by gender, course, degree year or age were found ( $ps > 0.05$ ). However, general perceptions of participatory methods were more favorable in Early Childhood Education students than in Primary Education students ( $U = 587.5$ ,  $p = 0.04$ ,  $r = 0.031$ ). Regarding the dimension of assessment of the course’s method, again, students of Early Childhood Education showed a more favorable assessment than those of Primary Education ( $U = 325.5$ ,  $p < 0.001$ ,  $r = 0.45$ ). In general, one can observe that even when we take into consideration the differences between degrees, the majority of students scored the items in the questionnaire between 3 and 5, with exceptions.

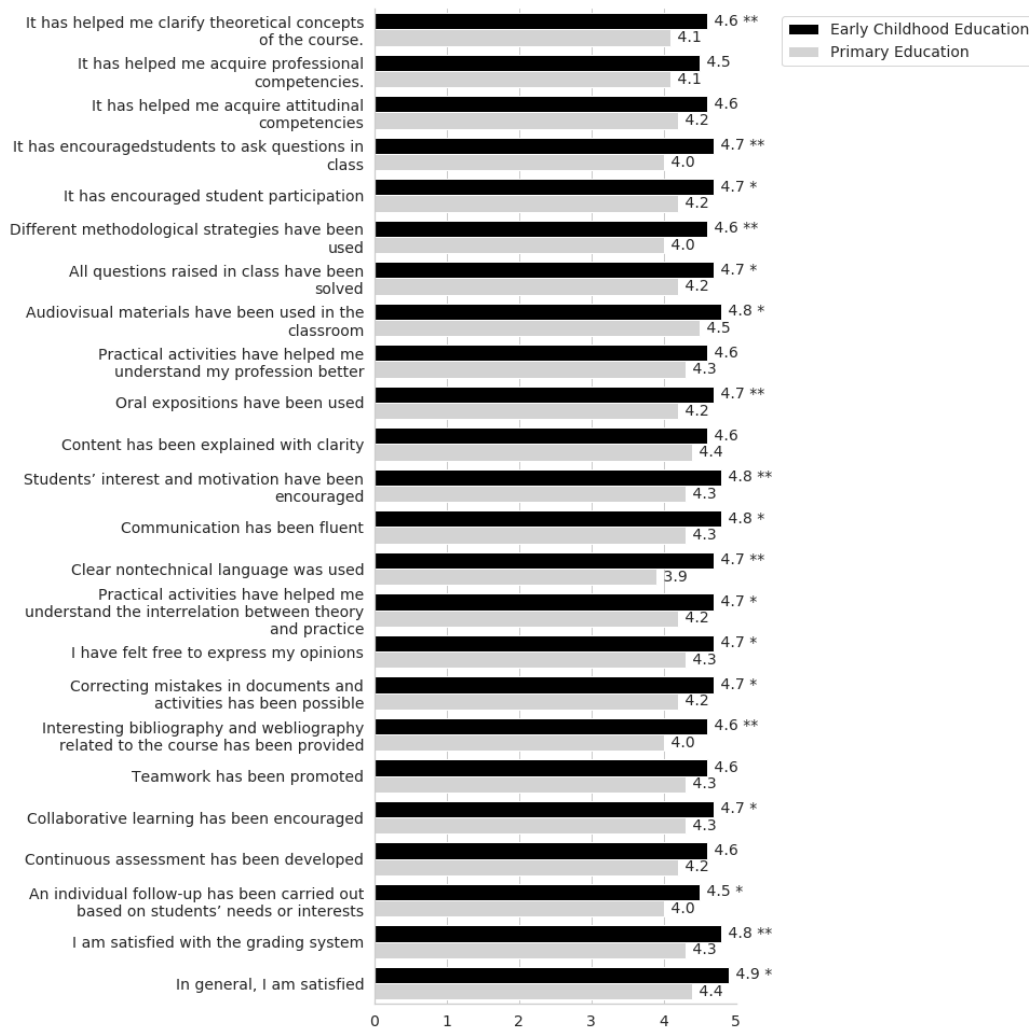
Students’ general perception of participatory methods showed an average score higher than four in the majority of cases, as shown in Figure 1, which reflects students’ good perception. In four of the seven items, Early Childhood Education students showed a more positive attitude than Primary Education students towards participatory methodologies according to the average score ( $ps < 0.05$ ). On the one hand, students considered that participatory methods increase students’ motivation; specifically, 96% of Early Childhood Education students and 83% of Primary Education students scored between 4 and 5 ( $\chi^2 = 6.21$ ,  $p = 0.013$ ). One hundred percent of Early Childhood Education students and 86% of Primary Education students considered that participatory methodologies make learning easier, with answers between 4 and 5 ( $\chi^2 = 9.14$ ,  $p = 0.002$ ). The students scored over 4 the improvement that these methodologies bring to the teacher–student relationship. On the other hand, students were aware that this method requires a greater effort from teachers and students. There were two items with average scores near 3 and with a more considerable variability in opinions compared to the other items. Both items did not show significant differences by mean or percentages between both degrees ( $p > 0.05$ ). We emphasize that 56% of Early Childhood Education students and 65% of Primary Education students considered participatory methods to raise concerns and uncertainty regarding the assessment (score range 3–5). Sixty-five percent of Early Childhood Education students and 75% of Primary Education students considered participatory methods to increase the complexity of the activities (score range 3–5). These questions, according to students, may indicate possible difficulties in the participatory methods. These results are in line with prior research [29].

The assessment of the participatory method carried out in the classroom during the experience was very favorable, with results near 4 in all items, as is shown in Figure 2. It is noticeable that Early Childhood Education students gave significantly higher scores than those from Primary Education in the majority of items ( $p < 0.05$  in 18 items within the “assessment of the course’s method” dimension). Despite the uncertainty regarding the assessment system addressed in the “general perception of participatory methods” dimension, it is noticeable that the average satisfaction with the assessment system in both degrees was higher than 4. Although in the “general perception of participatory methods” dimension, students considered that it increased the complexity of the tasks, the items regarding “It has helped me clarify theoretical concepts of the course”, “It has helped me acquire professional competencies”, “It has helped me acquire attitudinal competencies”, “Practical activities have helped me understand my profession better” and “Practical activities have helped me understand the interrelation between theory and practice” showed values over 4 in both degrees. We therefore

conclude that despite the difficulties we may encounter when using participatory methods, students consider them helpful at a theoretical, practical and professional level.



**Figure 1.** Average score of each item for each degree in the “general perception of participatory methods” dimension (significant differences by degree are shown as \*\* =  $p < 0.1$  and \* =  $p < 0.05$ ).



**Figure 2.** Average score of each item for each degree in the “assessment of the course’s method” dimension (significant differences by degree are shown as \*\* =  $p < 0.1$  and \* =  $p < 0.05$ ).

We highlight other findings considered important for assessing participatory methods. More than 80% of the students in both degrees stated that this experience had facilitated student participation, had encouraged motivation, had facilitated group work and had encouraged collaborative learning, scoring between 4 and 5. All of them are essential aspects within the teaching/learning process. The answers regarding the use of audiovisual material, with scores higher than 4.5 in both degrees, showed that the method applied in the classroom was compatible with the use of ICTs. Students have felt free to express their opinions and have felt that communication was fluent, without significant differences in their percentages between degrees ( $p > 0.05$ ). Lastly, we highlight the fact that this experience has been carried out through continuous assessment and has managed to clarify students' questions according to students' opinions, with scores over 4.

#### 4. Discussion

This study aimed to describe, by means of an accomplished teaching experience, the main elements of the new pedagogical approach linked to the use of active teaching/learning methods and student follow-up by teachers using ICT resources from the approach of LKT and EPT. With this aim, an experience was carried out following the phases provided by Murillo [24,25] and a questionnaire [29] that included two dimensions of study.

The main findings in both dimensions, answering the first research question, confirmed that students showed a positive attitude in the general assessment on participatory methods as well as in the assessment of the methods implemented in the courses. Furthermore, our findings showed that the methods used in the classroom were compatible with the use of ICTs, coinciding with the objectives of the university framed within the EHEA [30–32]. According to the previous literature [33–37], university students show a positive perception towards the use of active methods and the introduction of ICTs in the classroom as well as towards the management and organization of office hours, considering them motivating and that they stimulate participation in the classroom.

Our findings also indicated that students considered that these kinds of methods required greater effort from teachers and students, considering active methods to increase the complexity of activities, as stated in other studies [29,33]. However, we emphasize that previous studies already contemplated the fact that these methods encourage the creation of a succession of learning challenges, but, once they overcome them, they stimulate proactive actions and a critical attitude towards learning [34,35].

Regarding the second research question, we can state that students found that participatory methods increased their motivation, a relation that has been previously exposed in several studies [18,35,38–41]. Furthermore, students thought this experience favored collaborative learning and allowed them to express their opinions freely thanks to fluent communication. With the support of data [13], the use of participatory methods and in particular of the flipped classroom promoted affectivity and the interpersonal aspects even more than the cognitive ones. For this reason, we must focus part of our attention on how motivation, active commitment and positive interpersonal relationships between peers and between students and teachers can be part of the success of the experience.

However, the strength of these methods resides not only in the collaborative work they develop but in students' perception that these kinds of activities help them understand theory and help them understand the interrelation between theory and practice [33,39,42,43], which has been very disconnected in traditional methods. The potential of this point resides in the relation between technology and activities, creating more learning opportunities, promotion and academic performance [11] and helping improve students' participation, understood as time spent on assignments, effort or participation quality [44], within motivation and active participation.

Furthermore, it is important to highlight that students perceive that these methods help them acquire attitudinal and professional competencies, promoting motivation [34,35]. As the previous literature shows, active methods allow university students to acquire general competencies (instrumental, systemic and personal) as well as specific, critical and self-regulated competencies. This new approach to building knowledge is focused on pedagogical aspects and has a vision of



academic organization linked to a culture based on both assessment and the improvement of methods and, therefore, on teaching/learning processes [45,46].

Regarding the limitations of this study and as a recommendation to other authors who may be tackling similar content or methods in their research, we add that this study did not have a control group because teachers did not have two groups of students in those courses. Moreover, a pretest to know students' opinions about the method applied in the classroom before the experience was equally not carried out. However, comparing different methods was not among the goals of this study, which focused on showing the potential of the active method used in the classroom. On the other hand, another limitation is that teachers have not individually assessed the activities, and it is therefore not possible to analyze if any of these activities did not work in the classroom or did not increase students' knowledge. This point should be analyzed in future studies.

From the point of view of practicality, the main contributions of this study are based on the belief that there is a preference for those methods in which students are at the center of their own teaching/learning process, where the use of ICTs becomes more relevant [33,47]. Consequently, a good comprehension, application and awareness of emerging pedagogical methods and of didactic resources adapted to formative and contextual needs encourages the development and improvement of students' abilities and competencies [48,49]. Thus, we highlight the importance of the role of universities, as contributors to the EHEA's competencies and as research centers, in advocating for teacher training committed to quality education approaches [50]. We do not consider any method to be ecumenical and ideal for all teaching/learning processes, for each and every one of them is legitimate for a specific educational context [51,52]. Likewise, the use of only one method does not favor reaching the diversity of goals and actions that teachers and students pursue in their quest for a quality and practical education.

This kind of research provides a vision of opportunity in relation to the use of active methods in these fields of action within the university since they significantly improve performance as well as motivational aspects of the teaching/learning process of students and teachers. These kinds of pedagogical didactics promote an atmosphere of trust and collaborative work, which benefits the acquisition and/or strengthening of the basic competencies of the individual towards a more collaborative citizenry aware of its surroundings [53]. For this reason, universities must be aware of their strength as a space that creates emerging teaching/learning environments, as an active agent of teaching strategies and as a source of constructive interaction, aspects that lead the way to academic quality. Universities also need to advance towards curriculum proposals with higher use of ICTs without forgetting to combine them with collaborative learning and emerging new pedagogies. After completing our research, we can state that the wide range of possibilities in the teaching/learning process supports achieving the goals of the EHEA and, above all, improves the performance and motivation of both teachers and students.

## 5. Conclusions

The OECD Skills Strategy report [54] stresses that an appropriate use of technology saves time for "new horizontal tasks that technology cannot substitute for, such as creativity, critical thinking and teamwork" (p. 33).

The recent introduction of ICTs into the classroom over the past few years has promoted different pedagogical innovations [55–58], connected by the denomination of emerging pedagogies [59] or 21st-century pedagogies [60].

ICTs are linked to the change of teacher–student roles, collaborative learning, critical analysis of information and the empowerment of students as transmitters of previously analyzed information [61].

Within this line, we can state that these methods do not just benefit collaborative learning and improve academic achievement, but they also increase students' motivation regarding curricular content in higher education [35–37].

This study shares an innovative method carried out in two courses of significant difficulty for students with the objective of helping them with the theoretical and practical comprehension of the subject, keeping students motivated and participating in class and aiming to provide them with competencies that are useful for their professional futures. Although during the past years, the number of studies that include innovative methods and show positive results has increased, universities are struggling to replace traditional methods, perhaps because it is necessary to provide teachers with the needed techniques and tools. It is important to continue to share new methods that may give ideas to teachers since there is no ideal method for the teaching/learning process. It is equally necessary that these methods are taken into consideration in such a way that findings may be compared in a more objective manner.

**Author Contributions:** Conceptualization, B.P. and P.P.; methodology, V.P. and B.P.; formal analysis, V.P.; investigation, B.P. and P.P.; writing—original draft preparation, B.P., P.P. and V.P. All authors have read and agreed to the published version of the manuscript.

**Funding:** This research received no external funding.

**Conflicts of Interest:** The authors declare no conflict of interest.

## Abbreviations

EHEA	European Higher Education Area
ICTs	Information and communication technologies
LKTs	Learning and knowledge technologies
EPTs	Empowerment and participation technologies
SAFA	University Center Sagrada Familia
DOI	Digital object identifier

## References

- Yerdelen-Damar, S.; Boz, Y.; Aydın-Günbatır, S. Mediated Effects of Technology Competencies and Experiences on Relations among Attitudes towards Technology Use, Technology Ownership, and Self Efficacy about Technological Pedagogical Content Knowledge. *J. Sci. Educ. Technol.* **2017**, *27*, 134–405. [CrossRef]
- Pedrosa, B.; Peña, P. Metodologías activas en EESS: TIC, TAC Y TEP a través de Google Site. In *Innovaciones Metodológicas en Los Procesos de Enseñanza-Aprendizaje del Siglo XXI*; Octaedro, Ed.; in press.
- Bujosa, M.C.; Donet, F.B. La evaluación formativa como innovación. Experiencias en una Facultad de Formación del Profesorado. *Psychol. Soc. Educ.* **2017**, *4*, 45–58. [CrossRef]
- García, J.A.V. Nuevos escenarios y tendencias universitarias. *Revista de Investigación Educativa* **2015**, *33*, 13. [CrossRef]
- UNESCO. Conferencia Regional de Educación Superior para América Latina y el Caribe. Available online: <http://www.iesalc.unesco.org/2019/07/17/coleccion-cres-2018-conferencia-regional-de-educacion-superior-de-america-latina-y-el-caribe-cordoba-2018-resumenes-ejecutivos/2-07-2020> (accessed on 25 May 2020).
- Reig-Hernández, D. El futuro de la educación superior, algunas claves. REIRE. *Revista d'Innovació i Recerca en Educació* **2010**, *3*, 98–113. Available online: <https://www.raco.cat/index.php/reire/article/view/196168/> (accessed on 25 May 2020).
- Brown, T.; Huppatz, D.J. Design Thinking. *Design Crit. Prim. Sour.* **2016**, *86*, 84–92. [CrossRef]
- Pinto-Menache, L. Educación y tecnología: Pasado, presente y futuro de una relación compleja. *Economía Creativa* **2017**, *7*, 169–193. Available online: <http://ciecpress.centro.edu.mx/ojs/index.php/CentroTI/article/view/328> (accessed on 28 May 2020).
- Dewey, J. Experience and Education. *Educ. Forum* **1986**, *50*, 241–252. [CrossRef]
- Blanch, S.; Corcelles, M. Reciprocidades. Sistemas de formación basados en la cooperación entre docentes. In *Enseñando a Enseñar en la Universidad: La Formación Del Profesorado Basada en Incidentes Críticos*; C. Monereo (coord.); Octaedro Magazine: Barcelona, Spain, 2014; pp. 156–187.

11. Blanch, S.; Duran, D.; Valdebenito, V.; Flores, M. The effects and characteristics of family involvement on a peer tutoring programme to improve the reading comprehension competence. *Eur. J. Psychol. Educ.* **2012**, *28*, 101–119. [[CrossRef](#)]
12. Lucena, F.J.; Díaz, I.A.; Rodríguez, J.M.; Marín, J.A. Influencia del aula invertida en el rendimiento académico. Una revisión sistemática. *Campus Virtuales* **2019**, *8*, 9–18.
13. Badia, J.; Carnicero, P.; González, J.J.; Iborra, M.; Imbernón, F.; Icart, T.; Lasta, C.; Mariño, E.; Mediana, J.L. (coord.); Mentado, T.; et al. *La Docencia Universitaria Mediante el Enfoque de Aula Invertida*; Octaedro: Barcelona, Spain, 2017; pp. 15–30.
14. Jang, H.Y.; Kim, H.J. A Meta-Analysis of the Cognitive, Affective, and Interpersonal Outcomes of Flipped Classrooms in Higher Education. *Educ. Sci.* **2020**, *10*, 115. [[CrossRef](#)]
15. Irving, B.A.; Liévano, B.M. Ecojustice, equity and ethics: Challenges for educational and career guidance. *Rev. Fuentes* **2019**, *21*, 253–263. [[CrossRef](#)]
16. Carbonell Hernández, J. Cambio de actitudes y valores ante la energía tras el uso de un juego de rol. *Educ. Knowl. Soc. (EKS)* **2010**, *11*, 135–148, (Dedicated copy: Perspectiva educativa y cultural de “juegos de rol”).
17. Fernández, N.G.; García-Ruiz, R.; García, A.R. Aprendizaje cooperativo y tutoría entre iguales en entornos virtuales universitarios. *Estudios Pedagógicos (Valdivia)* **2015**, *41*, 111–124. [[CrossRef](#)]
18. Anta, E.Z.; De Barrón, I.C.O.; Isasti, L.M.Z.; Escudero, I.E. Juego de rol para el desarrollo del pensamiento crítico en la formación inicial del profesorado. *Revista Complutense de Educación* **2019**, *30*, 729–745. [[CrossRef](#)]
19. Winberg, C.; Pallitt, N. “I am trying to practice good teaching”: Reconceptualizing eportfolios for professional development in vocational higher education. *Br. J. Educ. Technol.* **2016**, *47*, 543–553. [[CrossRef](#)]
20. Rodríguez, D.V.; Mezquita, J.M.M.; Vallecillo, A.I.G. Metodología Innovadora basada en la Gamificación Educativa: Evaluación Tipo Test con la Herramienta QUIZZZ. *Profesorado, Revista de Currículum y Formación del Profesorado* **2019**, *23*, 363–387. [[CrossRef](#)]
21. Daza, M.C.S.; Fernández-Sánchez, M.R. Gamificando el aula universitaria. Análisis de una experiencia de Escape Room en educación superior. *Revista de Estudios y Experiencias en Educación* **2019**, *18*, 105–115. [[CrossRef](#)]
22. Rojas, I.B.; Larrea, V.A.; Olariaga, L.M.J. Metodología de enseñanza en centros eficaces de la Comunidad Autónoma del País Vasco. *Revista de Investigación Educativa* **2016**, *35*, 93–112. [[CrossRef](#)]
23. Dirckinck-Holmfeld, L.; Ipsen, B.J.; Tamborg, A.L.; Dreyøe, J.; Allsopp, B.B.; Misfeldt, M. Modes of Teacher Participation in the Digitalization of School. *Design. Learn.* **2019**, *11*, 63–71. [[CrossRef](#)]
24. Lukas, J.F.; Santiago, K.; Etxeberria, J.; Lizasoain, L. Adaptación al espacio europeo de educación superior de un cuestionario de opinión del alumnado sobre la docencia de su profesorado. *RELIEVE—Revista Electrónica de Investigación y Evaluación Educativa* **2014**, *20*, 3. [[CrossRef](#)]
25. Murillo, F.J. Un marco comprensivo de mejora de la eficacia escolar. *Revista Mexicana de Investigación Educativa* **2004**, *21*, 319–360.
26. Murillo, F.J.; Carrasco, M.R. School infrastructure and resources do matter: Analysis of the incidence of school resources on the performance of Latin American students. *Sch. Eff. Sch. Improv.* **2011**, *22*, 29–50. [[CrossRef](#)]
27. Cáceres Reche, P.; Rodríguez García, A.M.; Gómez García, G.; Rodríguez Jiménez, C. Analíticas de aprendizaje en educación superior: Una revisión de la literatura científica de impacto. *Int. J. Educ. Res. Innovat.* **2020**, *13*, 32–46.
28. Díaz, I.A.; Cáceres-Reche, M.-P.; Rodríguez, J.M.R. Efecto de la metodología mobile learning en la enseñanza universitaria: Meta-análisis de las investigaciones publicadas en WOS y Scopus. *RISTI - Revista Ibérica de Sistemas e Tecnologías de Informação* **2018**, *30*, 1–16. [[CrossRef](#)]
29. Rodríguez-Casado, M.R.; Rebolledo-Gámez, T. Evaluación de metodologías participativas: Una experiencia en el ámbito universitario = Evaluation of participative methodologies: An experience in the university area. *Rev. de Humanidades* **2017**, *31*, 99. [[CrossRef](#)]
30. Cohen, J. *Statistical Power Analysis for the Behavioral Sciences*; Erlbaum Associates: New York, NY, USA; Lawrence, KS, USA, 1988; p. 596.
31. Chocrón Giráldez, A.M.; García San José, D.; Igartua Miró, M.T.; Agudo-Martínez, M.J. *Tres Claves para el EEES: Evaluación por Competencias, Tecnologías de la Información y la Comunicación (tic) e Internacionalización de la Enseñanza Superior*; Calidad de la docencia universitaria y encuestas Balance del Plan Bolonia: II Congreso Nacional: Sevilla, España, 2014; pp. 79–84.

32. Tilve, M.D.F.; Roca, M.D.M.S. Están preparados los estudiantes para el aprendizaje en entornos virtuales en el contexto del EEES? *REDU. Rev. de Docencia Univ.* **2013**, *11*, 313. [CrossRef]
33. Mirete, A.B. El profesorado universitario y las TIC. Análisis de su competencia digital. *ENSAYOS Revista de la Facultad de Educación de Albacete* **2016**, *31*, 133–147. [CrossRef]
34. Vallejo Ruiz, M.; Molina Saorín, J. Análisis de las metodologías activas en el grado de maestro en educación infantil: La perspectiva del alumnado. *REIFOP* **2011**, *14*, 207–217. Available online: <https://redined.meecd.gob.es/xmlui/bitstream/handle/11162/81396/00820113012656.pdf?sequence=1&isAllowed=y> (accessed on 25 May 2020).
35. Jiménez, A.A. ¿Cómo valoran los estudiantes de magisterio la docencia que reciben? *Rev. Fuentes* **2018**, *19*, 57–75. [CrossRef]
36. Alcalá, D.H.; Pueyo, Á.P. Uso de las redes sociales como elemento formativo en el aula: Análisis de la motivación del alumnado universitario. *Revista ICONO14 Revista Científica de Comunicación y Tecnologías Emergentes* **2015**, *13*, 95–115. [CrossRef]
37. Roig-Vila, R. *Investigación e Innovación en la Enseñanza Superior. Nuevos Contextos, Nuevas Ideas*; Octaedro: Barcelona, Spain, 2019.
38. Jiménez, C.R.; Navas-Parejo, M.R.; Villalba, M.J.S.; Campoy, J.M.F. El uso de la gamificación para el fomento de la educación inclusiva. *Int. J. New Educ.* **2019**, *2*, 125–143. [CrossRef]
39. Aznar, I.; Romero, J.M.; Marín, J.A. Aprendiendo a través del juego: Experiencias de gamificación con dispositivos digitales móviles en la Universidad. In *Innovagogía. IV Congreso Internacional sobre Innovación Pedagógica y Praxis Educativa*; López, E.E., Cobos, D., Martín, A.H., Molina, L., Jaén, A., Eds.; Octaedro: Sevilla, Spain, 2018; pp. 2814–2822.
40. Contreras, R.S.; Eguía, J.L. *Gamificación en Aulas Universitarias*; Bellaterra, Institut de la Comunicació, Universitat Autònoma de Barcelona: Barcelona, Spain, 2016; pp. 7–111. Available online: <https://www.researchgate.net/publication/319629646> (accessed on 28 May 2020).
41. Rodríguez, C.A.C. Gamificación en educación superior: Experiencia innovadora para motivar estudiantes y dinamizar contenidos en el aula. *Edutec. Revista Electrónica de Tecnología Educativa* **2018**, *63*, 29–41. [CrossRef]
42. Cortizo, J.C.; Carrero, F.M.; Monsalve, B.; Velasco, A.; Díaz, L.I.; Pérez, J. *Gamificación y Docencia: Lo que la Universidad Tiene que Aprender de los Videojuegos*. *Abacus*; Universidad Europea de Madrid: Madrid, Spain, 2011; pp. 39–59.
43. Carrillo García, M.E.; Cascales Martínez, A. Flipped classroom en el espacio de educación superior. De la teoría a la práctica. In *Proceedings of the Edunovatic. I Congreso Virtual internacional de Educación, Innovación y TIC*, Madrid, España, 14–16 December 2016; pp. 60–68. Available online: <https://www.researchgate.net/publication/323416872> (accessed on 25 May 2020).
44. McNally, B.; Chipperfield, J.; Dorsett, P.; Del Fabbro, L.; Frommolt, V.; Goetz, S.; Lewohl, J.; Molineux, M.; Pearson, A.G.; Reddan, G.; et al. Flipped classroom experiences: Student preferences and flip strategy in a higher education context. *High. Educ.* **2016**, *73*, 281–298. [CrossRef]
45. Shah, R.K.; Barkas, L.A. Analysing the impact of e-learning technology on students' engagement, attendance and performance. *Res. Learn. Technol.* **2018**, *26*, 1–18. [CrossRef]
46. Elmore, R.F. *Mejorando la Escuela Desde la Sala de Clases*; Fundación Chile: Santiago, Chile; Área de educación Fundación Chile: Santiago, Chile, 2010; pp. 17–115. Available online: [http://www.fch.cl/wp-content/uploads/2012/08/Libro\\_Elmore.pdf](http://www.fch.cl/wp-content/uploads/2012/08/Libro_Elmore.pdf) (accessed on 28 May 2020).
47. Hargreaves, A.; Fullan, M. *Capital Profesional*; Ediciones Morata: Madrid, Spain, 2014; pp. 106–133.
48. Gros, B. La caída de los muros del conocimiento en la sociedad digital y las pedagogías emergentes. *Educ. Knowl. Soc. (EKS)* **2015**, *16*, 58. [CrossRef]
49. Aguilera Morales, D.; Perales Palacios, F.J. Metodología participativa en Ciencias Naturales: Implicación en el rendimiento académico y la actitud hacia la Ciencia del alumnado de Educación Primaria. *ReiDoCrea* **2016**, *5*, 119–129. Available online: <https://www.researchgate.net/publication/336170391> (accessed on 25 May 2020).
50. Ballestas Pagan, F.J.; Izquierdo Rus, T.; Romero Sánchez, B.E. Percepción del alumnado de Pedagogía ante el uso de metodologías activas. *Educatio Siglo XXI* **2011**, *29*, 353–368. Available online: <https://revistas.um.es/educatio/article/view/133101> (accessed on 25 May 2020).
51. Prats, E.; Núñez, L.; Villamor, P.; Longueira, S. Pedagogías Emergentes: Una Mirada Crítica Para Una Formación Democrática del Profesorado. In *Pensar la Formación de Maestras y Maestros en Clave de Calidad Democrática*; Universitat Central de Catalunya: Barcelona, Spain, 2016; pp. 21–48.

52. Olaya, J.E.B.; Gualdrón, L.V.M.; Umaña, E.M.B. Modelo pedagógico para el aprendizaje en red basado en el constructivismo sociocultural: Una alternativa para la apropiación de conocimiento en América Latina. *Equidad y Desarrollo* **2014**, *21*, 163. [[CrossRef](#)]
53. Gutiérrez Esteban, P.; Castro Robles, M.P. El aprendizaje entre iguales como metodología de trabajo para la inclusión educativa. Experiencia docente en una escuela de Extremadura. *Revista de Investigación en Educación [S.l.]* **2018**, *16*, 78–92. Available online: <http://reined.webs.uvigo.es/index.php/reined/article/view/318> (accessed on 29 May 2020).
54. OCDE. Competencias para construir un futuro mejor. *Fundación Santilla* **2019**. [[CrossRef](#)]
55. Andújar-Vaca, A.; Cruz-Martínez, M.-S.; And, A.; Cruz-Mart, M.-S. Mobile instant messaging: Whatsapp and its potential to develop oral skills. *Communication* **2017**, *25*, 43–52. [[CrossRef](#)]
56. Díaz, I.A.; Reche, M.P.C.; Romero-Rodríguez, J.-M. Indicadores de calidad para evaluar buenas prácticas docentes de «mobile learning» en Educación Superior. *Educ. Knowl. Soc. (EKS)* **2018**, *19*, 53–68. [[CrossRef](#)]
57. Díaz, I.A.; Rodríguez, J.M.R.; García, A.M.R. La tecnología móvil de Realidad Virtual en educación: Una revisión del estado de la literatura científica en España. *EDMETIC* **2018**, *7*, 256–274. [[CrossRef](#)]
58. Fernández, M.M. Métodos pedagógicos emergentes para un nuevo siglo Qué hay realmente de innovación? *Teoría de la Educación Revista Interuniversitaria* **2019**, *31*, 5–34. [[CrossRef](#)]
59. Adell, J.; Castañeda, L. Tecnologías emergentes. In *Tendencias Emergentes en Educación con TIC*; Hernández, J., Pennesi, M., Vázquez, D.S.Y.A., Eds.; Asociación Espiral, Educación y Tecnología: Barcelona, Spain, 2012; pp. 13–32.
60. Carbonell, J. *Pedagogías del siglo XXI. Alternativas Para la Innovación Educativa*; Octaedro: Barcelona, Spain, 2015.
61. Herrada-Valverde, R.I.; Baños Navarro, R. Revisión de experiencias de aprendizaje cooperativo en ciencias experimentales. Universidad de Murcia. *Campo Abierto Revista de Educación* **2018**, *37*, 157–170. Available online: <https://mascvux.unex.es/revistas/index.php/campoabierto/article/view/2987> (accessed on 28 May 2020).



© 2020 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<http://creativecommons.org/licenses/by/4.0/>).