

The Use of Online Quizzes in Blended Learning Modality: A Qualitative Approach

Ana M. Pinto-Llorente
Faculty of Education, Pontifical
University of Salamanca
37007 Salamanca, Spain
ampintoll@upsa.es

M. Cruz Sánchez-Gómez
Faculty of Education, University of
Salamanca
37008 Salamanca, Spain
mcsago@usal.es

Francisco J. García-Peñalvo
Faculty of Sciences, University of
Salamanca
37008 Salamanca, Spain
fgarcia@usal.es

ABSTRACT

The present research is integrated within the framework of second language and blended learning modality, developed with the aim of presenting participants' perception about the effectiveness of online quizzes to improve their level of English, as well as the possibilities that they offered to carry out continuous assessment and self-assessment. Based on these goals, a descriptive study with a qualitative approach was developed, following the process of the Grounded Theory for the categorization of dimensions. The research included a total of 91 participants, studying the last year of the Degree in Primary Education (English) at the Pontifical University of Salamanca. An individual guided interview was used as the data collection instrument. The literature review and the finding of this study suggested the possibilities offered by quizzes to support continuous assessment, as well as to allow participants to self-assess their progress in the second language. It was also highlighted the possibilities offered by these e-activities to promote the autonomous learning and facilitate an immediate formative feedback to guide students in the process of acquiring a second language. The findings clearly demonstrated that quizzes granted participants to take an active role in their learning, and also revealed the importance of teachers' role as guides of this process. In conclusion, this research showed participants' positive perceptions of the use of quizzes in the hypermedia modular model implemented in the blended learning modality for the subject English I.

CCS Concepts

• Applied computing → Education → Learning management system engineering • Social and professional topics
→ Professional topics → Computing education → Adult education

KEYWORDS

Qualitative approach, online quizzes, blended learning modality, second language acquisition, continuous assessment, self-assessment.

1 INTRODUCTION

This study reports the main results of a qualitative research carried out in a course of English as a second language in the framework of blended learning modality in higher education. Specifically the research concerns pre-service teachers' perceptions about the effectiveness of a set of online quizzes designed and implemented to improve participants' level of English (reading, listening, grammar and vocabulary), and to carry out continuous assessment and self-assessment in a blended learning course. The development of technology has allowed the convergence of two learning environments, the traditional face-to-face learning and the distributed learning system, thanks to the development of eLearning platforms [7]. The combination of these teaching-learning models has led to the development of the blended learning modality in which a part of the educational process is developed in a technological ecosystem in which all the protagonist of this process interact and share knowledge, contents and experiences [8, 12].

There have been several studies that have investigated the efficacy or participants' perception about the effectiveness of online quizzes in the process of learning.

Blanco & Ginovart [1] presented two projects developed at the Institute of Education Sciences at the Open University of Catalonia whose objectives were the design and implementation of online quizzes for students' formative e-assessment. The participants in those researches were the students enrolled on the compulsory subjects in applied mathematics for all branches of Engineering Bachelor's Degrees. The results emphasized the effectiveness of online quizzes for students' formative assessment in accordance with the European Higher Education Area guidelines. The positive students' ratings of the quizzes reinforced the idea of their suitability for mathematics teaching and learning, results that could be extrapolated to other courses. Moodle quizzes were adequate tools to

inform participants of their performance throughout the learning process. Moreover, the specific use of the quizzes as assessment activities contributed to the promotion of students' self-regulation of the work during the course.

In 2016 [Cohen and Sasson \[3\]](#) carried out a study whose objective was to investigate learning outcomes and students' attitudes towards online quizzes to improve instructional design. The participants were university students who were enrolled on life sciences and participated in a physics course. The results of this research revealed a positive students' attitude towards that technological tool. It was also emphasized how their scores significantly improved and their performance time greatly shortened on the last attempts. Those learning outcomes and participants' attitudes towards online quizzes were taken into account to improve instructional design.

[Caruso et al. \[2\]](#) conducted a study whose aim was to discuss the integration and effectiveness of quizzes in blended learning modality to develop students' listening comprehension of Italian as a second language, and to assess it. A set of online listening quizzes were created and integrated in two Italian courses. They found that the quizzes were a key element in order to improve participants' level in that skill. Moreover, the results revealed that students emphasized the flexibility offered by the online environment which maximised their opportunity for practicing listening and learning. Participants stated their preference for online quizzes than classroom assessment.

Our research seeks to extend the existing research on the use of online quizzes in the process of learning and give a new perspective of their use. We have not only concentrated on their use to improve students' oral comprehension skill of English as a second language and to carry out continuous assessment, but also on the possibilities that this tool offered for students' self-assessment.

In the following sections of this paper we provide an overview of the study. First of all, we present the qualitative search method used, the population and sample of the research (91 pre-service teachers enrolled in the subject English I of Degree in Primary Education in the blended learning modality), the instrument used to collect data (91 individual semi-structured interviews), how and when the data were collected and the analyses carried out (scheme proposed by [Miles & Huberman \[14\]](#) a) data reduction, b) data display, and c) drawing and verifying conclusions). Secondly, we show the main results of our research. The findings emphasize the following global theme: Quizzes and B-learning, and the next six organizing themes emerged from the qualitative data analysis: 1. Continuous assessment; 2. Self-assessment; 3. Autonomous learning; 4. Feedback; 5. Roles; and 6. Second language. In the last section of the paper, we display the main conclusions of our research according to pre-service teachers' perceptions.

2 METHOD

Based on the main goals of our research, a descriptive study with a qualitative approach [[4](#), [5](#), [13](#)] was developed. The process of the Grounded Theory was followed for the categorization of dimensions [[10](#), [11](#)]. As [Glaser & Strauss \[11\]](#) point out that process of analysis is dynamic and creative, and two fundamental strategies are distinguished: the theoretical sampling and the method of constant comparison. The theoretical sampling refers to the process of data collection, and also to the analysis and categorization carried out by researchers until theoretical saturation occurs, that is to say "when no additional data are found that advance, modify, qualify, extend or add to the theory develop" [[10](#)]. On the other hand, the constant comparison method intends to generate theory from a constant comparative analysis of the data collected. Thus, researchers encode and reflect on the type of data they are collecting from the beginning [[22](#)].

2.1 Objective

The aim of this qualitative study was to explore pre-service teachers' perceptions about the use of online quizzes in the subject English I. These questionnaires were designed through the tool provided by the platform Moodle, which was used to implement a hypermedia modular model for a blended learning course. The specific objectives were to know participants' opinions about these quizzes to:

- Practice and improve their level of English as a second language.
- Carry out assessment and self-assessment
- Support autonomous learning.

2.2 Population and Sample

The sample of the study was a sequential, non-probabilistic and cumulative. It was composed of the necessary participants to get enough information for the research and to reach the theoretical saturation in order to meet the aims of the study. It was made up of 91 pre-service teachers who were studying the last year of the Degree in Primary Education (English) in the blended learning modality. That subject was compulsory and had 6 ECTS (European Credit Transfer and Accumulation System); each ECTS was equivalent to 25 h of work for the student.

50.5% (n=46) of the sample were men and 49.5% (n=45) were women ranged in age from 20 to 58. All of them had previously finished at least one university degree. 82,1% (n=75) of the participants worked, and 86.7% (n=65) had a job related to education in infant, primary or high schools.

2.3 Instrument, Data Collection and Analysis

The instrument used to collect the data was an individual interview, specifically the researchers decided to use a guided interview. They had several meetings to prepare a set of open questions related to the aims of the study. Although the researchers prepared that set of questions, they interviews were not structured ones, since researchers were free to vary the order or the questions themselves.

The 91 interviews were conducted along three months at different times agreed with the participants since the majority was working. The interviews were carried out in a classroom at the Faculty of Education of the Pontifical University of Salamanca. The researchers of the study were together during the interviews and had different roles that they were exchanging. One of them introduced the aims of the research and carried out the interview while the other one record it using a video camera in order to facilitate the later transcription. They interviews had different duration; they lasted between thirty-five and fifty-one minutes.

Internal validity of the instrument was achieved since the criteria established by Hernández et al. [13] and Coleman & Unrau [4] were met. On the other hand, referring to the reliability of the coding, researchers had the collaboration of 16 experts in education, technology and English as second language. Researchers provided them with the transcription of several interviews and the tree of categories to carry out the coding. Once they had finished it, researchers compared experts' encodings with theirs to identify the agreements that existed between them, with an agreement of 81%. The level of reliability obtained meant that the encodings were valid, and also determined the categories that were part of the final conceptual map.

3 RESULTS

In this section of our paper, we present the results obtained in the qualitative analyses carried out.



Figure 1: Word Cloud

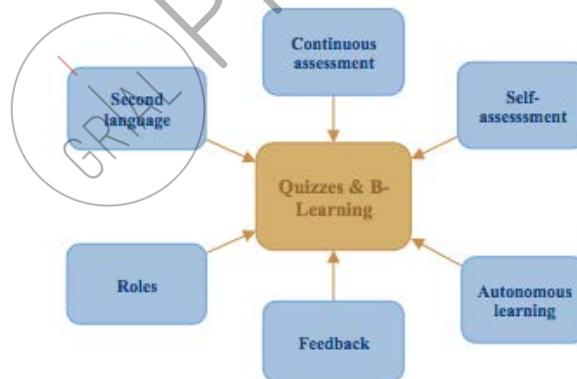


Figure 2: Conceptual Map

First of all, we show the word cloud obtained in the semantic analysis. We used the option offered by the software NVivo11 word frequency query to list the twenty most frequently occurring words in the 91 individual interviews. As we can see in Fig. 1 the words that appear with highest frequency are: learning (500 references), assessment (448 references), self (290 references), continuous (312 references), language (344 references), second (344 reference), blended (398 references) and quizzes (312 references).

The relevant categories and subcategories of the deeper analysis carried out of pre-service teachers' individual interviews are represented in the following conceptual map (Fig. 2).

We applied thematic networks to organize the analysis of the qualitative data. We display the results in two classes of themes. On

the one hand, the global theme: Quizzes and B-learning, and, on the other hand, the six organizing themes emerged from the qualitative data analysis: 1. Continuous assessment; 2. Self-assessment; 3. Autonomous learning; 4. Feedback; 5. Roles; and 6. Second language. Table 1 shows the results obtained of each theme.

Table 1: Results of the categories emerged from qualitative data analysis

Quizzes & B-Learning	A	B	C	D	E	F
Continuous Assessment	5.75 2	82	90%	16.80 2	34 %	30 %
Self-Assessment	5.25 6	79	87%	16.32 2	32 %	27 %
Autonomous Learning	3.24 8	90	99%	18.83 4	17 %	16 %
Feedback	3.12 5	71	78%	14.62 6	21 %	16 %
Roles	2.58 4	62	68%	12.71 4	20 %	13 %
Second Language	4.56 9	91	100%	19.44 3	23 %	23 %

A = total number of text units (lines) coded of each category.

B = number of interviews in which pre-service teachers refer to each category.

C = percentage of the number of interviews in which pre-service teachers refer to each category in relation to the total number of interviews.

D = number of text units (lines) of B.

E = percentage of A in relation to the total text units (lines) of the interviews in which pre-service teachers refer to each category.

F = percentage of A in relation to the total text units (lines) of all individual interviews.

In the following subsections, we present in a more specific way the results of that thematic analysis, including the verbatim quotes from pre-service teachers, labelled in terms of their age and gender.

3.1 Organizing theme: Continuous assessment

The data analysis revealed that pre-service teachers considered that the quizzes available in each modular of the b-learning model implemented were adequate and essential to support continuous assessment. They strongly expressed the necessity of carrying out that continuous evaluation since they considered that it was fairer because it took into account all the work done by them during the whole semester.

I believe that the fact of having online quizzes has allowed teachers to assess our work continuously. I think that continuous assessment is fairer than just a final traditional exam (43-year-old woman, participant 35).

I would like to stress the possibility offered by these activities to carry out continuous assessment. We have done several quizzes during the semester that have been evaluated by teachers (45-year-old man, participant 56).

We have done a lot of work during the course and I think that must be taken into account. The design of this course and the activities done have contributed to this (45-year-old woman, participant 30).

3.2 Organizing theme: Self-assessment

The students also emphasised the possibilities offered in the model to allow them to self-assess their progress in the second language. They considered that the fact of having those opportunities helped them to reflect constantly about what they were learning and about their progress in their level of English. Students added that these tasks let them choose and practice specific skills and contents according to their necessities.

Moreover, the fact of having these tasks facilitated their contact with the subject, something that they considered difficult since there were few face-to-face lessons in this kind of modality.

The way in which some of the quizzes were designed has allowed us to reflect about our learning and self-assess our improvement of our level of the second language (31-year-old woman, participant 4).

We have had the possibilities to self-assess our progress continuously and to choose the activities that better adapt to our necessities (27-year-old woman, participant 69).

3.3 Organizing theme: Autonomous learning

Pre-service teachers highlighted how the use of the e-quizzes, specifically those of self-assessment, promoted the autonomous learning since they did the activities by themselves, they reflected about what they were doing and learning, they chose what they needed regarding these interests or necessities, and they did the activities when they could or wanted. According to their opinions, this reflection helped them to acquire the skill of learning to learn which is essential to learn and improve in the acquisition of a L2 since the learning of any L2 implies a lifelong learning.

We have participated in an experience in which we could work individually acquiring the responsibility in a task. It was a more effective learning and essential to acquire a second language (43-year-old man, participant 71).

We were actively involved in the development of the activities; we took decisions and assumed individual responsibilities (32-year-old man, participant 80).

3.4 Organizing theme: Feedback

Participants emphasized the relevance of the immediate formative feedback available in all incorrect answers of the self-assessment and assessment questionnaires to guide them in the process of learning a second language and solve their doubts. They emphasized how feedback provided them a realistic impression of their level of written skills, grammar and vocabulary, and their progress in the subject what encouraged them to reflect about it. Moreover, they saw the feedback as an inducement to make other attempts and to really know if they had actually made a progress in their knowledge of English. Feedback was seen as an essential characteristic of the e-activities done through quizzes to promote and support their learning.

We have not received feedback in isolation from other aspects of our learning. It is the first time that I consider it effective to increase our engagement in the subject and to know progress in it (43-year-old woman, participant 35).

The feedback provided in all the assignments was necessary and essential to advance in the contents of the subject and feel confident of our success (49-year-old woman, participant 79).

3.5 Organizing theme: Roles

The findings clearly demonstrated that quizzes granted participants to take an active role in their learning of a second language and to stay focused on the subject. They pointed out that they felt free to decide what to practice and when to practice it.

The results also revealed the importance of teachers' role as guides or counsellors of the teaching-learning process. Participants emphasized that teachers' work was essential and necessary to be successful in this subject in blended learning modality in which these technological tools acquire an important relevance in the subject and in students' final grade. Learners pointed out the necessary involvement of teachers in the process, since they had to master technology, to structure and plan adequate e-activities, and to anticipate students' difficulties, designing a platform that did not lead to any error that prevented student learning.

We were actively involved in the development of the activities; we took decisions and assumed individual responsibilities (24-year-old woman, participant 39).

Teachers' work is essential. I think they have made a great effort because it is not easy to design all these activities. Their work is essential and necessary to be successful in blended learning modality, to help us and guide us very important because they have helped and guided us (34-year-old woman, participant 24).

3.6 Organizing theme: Second language

Pre-service teachers showed their satisfaction towards the e-activities developed through quizzes describing them as very useful to improve their level of English, specifically their level of reading, listening, grammar and vocabulary. They considered that these e-tasks had provided the necessary practice during the semester to appreciate a change in their initial level of English and to feel more confidence to pass the final exams of the subject.

I had some doubts about the possibilities that these tasks could offer us to improve our skills in the L2. However, after the experience I can really say that we have had many opportunities to improve, especially listening and reading (27-year-old woman, participant 69).

Quizzes have been very useful to practice grammar and vocabulary, to improve our level of English and feel more confidence (28-year-old man, participant 77).

3.7 Gender Differences

In our research on *The Use of Online Quizzes in Blended Learning Modality: A Qualitative Approach*, we found gender differences in the organizing themes emerged from the qualitative data analysis that referred to feedback, roles and autonomous learning (Fig. 3). These differences were not significant, but they highlighted that women put more emphasis in the importance of the immediate formative feedback provided to guide their learning and solve their doubts. Moreover, they also stressed the relevance of students' and teachers' roles to be successful in the blended learning modality and to use quizzes as an appropriate asynchronous learning tool. On the other hand, men emphasized more the theme that referred to autonomous learning. Something that they considered that it was essential in the acquisition of a second language since it was necessary to reflect by themselves about what they were learning, their necessities and their progress in their level of English.

Women Men

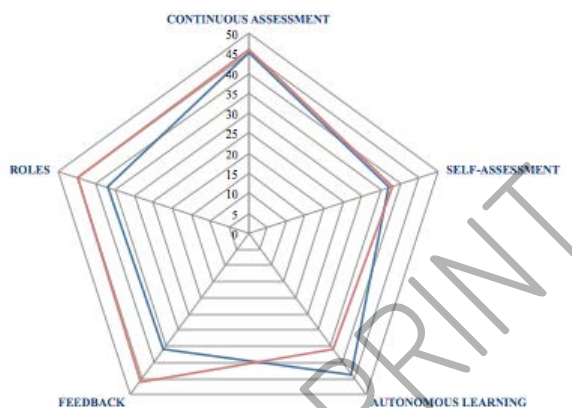


Figure 3: Gender differences

4 CONCLUSIONS

The findings of this study illustrated pre-service teachers' positive perceptions of the use of quizzes in the hypermedia modular model of the subject English I. There was a special focus on the themes emerged from the qualitative data analysis that referred to Continuous assessment; Self-assessment; Autonomous learning; Feedback; Roles; and Second language.

The results obtained clearly showed the possibilities that the e-tasks, designed through the asynchronous tool of Moodle, provided to teachers and students. On the one hand, teachers had the possibility to carry out continuous assessment taking into account the different activities done by the participants along the whole semester. On the other hand, students could self-assess their progress continuously through the self-assessment questionnaires and reflect about their progress in their level of the second language, choosing the adequate practices according to their necessities what allowed them to be prepare for the assessment quizzes and the final exam.

This study provides further evidences of how the autonomous learning was fostered through the use of quizzes [1, 6]. The availability of self-assessment quizzes helped students to be in contact with the subject [9] and more engagement with their learning [21]. They were actively involved and took individual decisions according to their necessities or preferences focused on the goals of the second language acquisition that they needed to achieve [19].

As the results pointed out, the feedback provided in the quizzes acquired a great relevance to guide learners in the process of learning a second language, especially in a blended learning course where there were less face-to-face lessons in which teachers could clear up any queries. Feedback was seen as an essential element of the quizzes since it provided pre-service teachers a realistic impression of their level of English and induced them to go on practicing to appreciate if there was a progress along the different attempts [20].

Participants' opinions emphasized the effectiveness of quizzes, especially the self-assessment quizzes, to provide them with the activities that let them practice reading, listening, grammar and vocabulary [2, 16, 17] They perceived the efficacy of technology in the acquisition of a second language, emphasizing the relationship that they appreciated that there was between the improvement of their level of different aspects of English and the effectiveness of the quizzes available in the hypermedia modular model used [2, 15, 17].

Finally, the results of the study revealed the relevance of the roles that students and teachers performed. On the one hand, pre-service teachers had an active role, being aware of their necessity and taking responsibility for their learning [16, 18]. On the other

hand, teacher carried out a perfect role of counsellors and guides, helping students when they needed, providing them the tools to achieve the goals of the subject [16, 18].

As for the worth of the findings, we are convinced that they provided evidence of the usefulness of quizzes to provide the necessary practice to learn a second language in blended learning modality, to facilitate participants' self-assessment and to carry out continuous assessment.

REFERENCES

- [1] Mónica Blanco and Marta Ginovart. 2009. Creating Moodle Quizzes for the Subjects of Mathematics and Statistics Corresponding to the First Years in Engineering Studies. In *Proceedings of the 1st International Conference on Education and New Learning Technologies* (Barcelona, Spain2009). IATED, 1984-1993.
- [2] Marinella Caruso, Anna Gadd and Simon Tebbit. 2017. Teaching how to Listen. Blended Learning for the Development and Assessment of Listening Skills in a Second Language. *Journal of University Teaching & Learning Practice* 14, 1, 1-19.
- [3] Donita Cohen and Irit Sasson. 2016. Online quizzes in a virtual learning environment as a tool for formative assessment, *Journal of Technology and Science Education* 6, 3, 188-208 DOI:<http://dx.doi.org/10.3926/jotse.217>.
- [4] Heather Coleman and Yvonne A. Unrau. 2005. Qualitative Data Analysis. In *Social Work: Research and Evaluation. Quantitative and Qualitative Approaches*, Richard. M. Grinnell and Yvonne. A. Unrau, (Eds.). Oxford University Press, New York, 403-420.
- [5] John W. Creswell. 2005. *Educational Research: Planning, Conducting, and Evaluating Quantitative and Qualitative Research*. Pearson Education, Upper Saddle River.
- [6] Sofia M. Dopfer and Ellen Sjoer. 2004. Implementing Formative Assessment in Engineering Education: The Use of the Online Assessment System Etude. *European Journal of Engineering Education* 29, 2, 259-266. DOI:<http://dx.doi.org/10.1080/0304379032000157187>.
- [7] Francisco J. García-Peñalvo. 2015. Cómo entender el concepto de presencialidad en los procesos educativos en el siglo XXI. *Education in the Knowledge Society (EKS)* 16, 2, 6-12. DOI:<http://dx.doi.org/10.14201/eks2015162612>.
- [8] Francisco J. García-Peñalvo and Seoane-Pardo, A.M., 2015. Una revisión actualizada del concepto de eLearning. *Décimo Aniversario. Education in the Knowledge Society* 16, 1, 119-144. DOI:<http://dx.doi.org/10.14201/eks2015161119144>.
- [9] Valeh Gholami and Mostafa Morady. 2013. The Effect of Weekly Quizzes on Students' Final Achievement Score. *I. J. Modern Education and Computer Science* 1, 36-41. DOI:<http://dx.doi.org/10.5815/ijmecs.2013.01.05>.
- [10] Barney G. Glaser and Anselm L. Strauss. 1967. *The Discovery Of Grounded Theory: Strategies for Qualitative Research*. Aldine Publishing Company, Nueva York.
- [11] Barney G. Glaser and Anselm L. Strauss. 2009. *The Discovery of Grounded Theory: Strategies for Qualitative Research*. Aldine Publishing Company, Nueva York.
- [12] Begoña Gros and Francisco J. García-Peñalvo. 2016. Future trends in the design strategies and technological affordances of e-learning. In *Learning, Design, and Technology. An International Compendium of Theory, Research, Practice, and Policy*, Michael Spector, Barbara B. Lockee and Marcus D. Childress Eds. Springer International Publishing, Switzerland, 1-23. DOI:http://dx.doi.org/10.1007/978-3-319-17727-4_67-1.
- [13] Roberto Hernández, Carlos Fernández and M. Pilar Baptista. 2010. *Metodología de la investigación*. McGraw Hill, México.
- [14] Matthew B. Miles and A. Michael Huberman. 1994. *Qualitative Data Analysis: An Expanded Sourcebook*. SAGE, Newbury Park, CA.
- [15] Ana M. Pinto-Llorente, M. Cruz Sánchez-Gómez and Francisco J. García-Peñalvo. 2014. Assessing the effectiveness of a technological model to improve written skills in English in higher education. In *Proceedings of the 2nd International Conference on Technological Ecosystems for Enhancing Multiculturality* (Salamanca, Spain2014). ACM, New York, NY, 69-74.
- [16] Ana M. Pinto-Llorente, M. Cruz Sánchez-Gómez and Francisco J. García-Peñalvo. 2015. Student Perception of the Use of a Blended-Learning Model to Improve Grammatical Competence. In *Proceedings of the 3rd International Conference on Technological Ecosystems for Enhancing Multiculturality* (Oporto, Portugal2015). ACM, New York, NY, 91-98.
- [17] Ana M. Pinto-Llorente, M. Cruz Sánchez-Gómez and Francisco J. García-Peñalvo. 2016. Assessing the Effectiveness of Interactive and Collaborative Resources to Improve Reading and Writing in English. *International Journal of Human Capital and Information Technology Professionals* 7, 1, 66-85. DOI:<http://dx.doi.org/10.4018/IJHCITP.2016010105>.
- [18] Ana M. Pinto-Llorente, M. Cruz Sánchez-Gómez, Francisco J. García-Peñalvo and Sonia Casillas. 2017. Students' Perceptions and Attitudes Towards Asynchronous Technological Tools in Blended-Learning Training to Improve Grammatical Competence in English as a Second Language. *Computers in Human Behavior* 72, 632-643. DOI:<http://dx.doi.org/10.1016/j.chb.2016.05.071>.
- [19] Ana M. Pinto-Llorente, M. Cruz Sánchez-Gómez and Francisco J. García-Peñalvo. 2017. A Mixed Methods Research of Pre-service Teachers' Perceptions about the Benefits of Wiki-Based Tasks and Discussion Boards. In *Computer Supported Qualitative Research, Advances in Intelligent Systems and Computing*, Antonio P. Costa et al, Eds. Springer International Publishing, Switzerland, 260-276.
- [20] Lorenzo Salas-Moreira, Antonio Arauzo-Azifra and Laura García-Hernández. 2012. Analysis of Online Quizzes as a Teaching and Assessment Tool. *Journal of Technology and Science Education* 2, 1, 39-45. DOI:<http://dx.doi.org/10.3926/jotse.30>.
- [21] Gary Smith. 2007. How does student performance on formative assessments relate to learning assessed by exams? *Journal of College Science Teaching* 36, 7, 28-34.

[22] Antonio Trinidad, Virginia Carrero and Rosa M. Soriano. 2006. *Teoría fundamentada "Grounded Theory" La construcción de la teoría a través del análisis interpretacional*. CIS, Madrid.

