

# The role of the instructor in business games: a comparison of face-to-face and online instruction

Ana Beatriz Hernández, María Tatiana Gorjup and  
Rosalía Cascón

*This study analyses the role of the instructor in the e-learning process fostered by a business game. To achieve this objective, a comparative analysis was conducted with two groups of students regarding their perceptions of the instructor's role in a business game. The first group was composed of 33 participants and facilitated by an instructor in a face-to-face process. The second group was composed of 23 participants and facilitated by the same instructor online. Our results indicate that the students' assessment of the role of the instructor is clearly different in both cases: the face-to-face group valued the relevance of the instructor's role in the learning process more highly than the online group. Our findings also highlight the importance of the instructor's role in improving the students' learning experience and suggest that extra efforts by online instructors are needed to maximize the e-learning process through business games in management training.*

## Introduction

A generic vision of e-learning involves different forms of learning supported by information and communication technologies (ICTs) and the use of the Internet to enhance knowledge and performance (McGill & Klobas, 2009). The spectacular development of ICTs, and especially the Internet, has been changing teaching and learning processes for some years now (Ma *et al.*, 2000). This has led to more widespread access to education by larger groups, new methods and mechanisms of study, rapid growth of

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□ Ana Beatriz Hernández, Lecturer, Department of Business Management, Rovira i Virgili University, Avinguda Universitat, 1 (43204) Reus, Spain. Email: anabeatriz.hernandez@urv.cat. María Tatiana Gorjup, Lecturer, Department of Business Management, Rovira i Virgili University, Avinguda Universitat, 1 (43204) Reus, Spain. Email: mariatiana.gorjup@urv.cat. Rosalía Cascón, Lecturer, Department of Business Management, Rovira i Virgili University, Avinguda Universitat, 1 (43204) Reus, Spain. Email: rosalia.cascon@urv.cat

electronic teaching tools, and online educational materials that release interactions between students and instructors from time and spatial restrictions (Barker, 2002; Benito, 2009; Cabero & Gisbert, 2005; Sun *et al.*, 2008). e-Learning has even been referred to as the 'emerged paradigm of modern education' (Sun *et al.*, 2008).

In this context, business games are considered a feasible e-learning method in management training. They simulate a business environment in which each team manages a virtual company that competes with the virtual companies managed by the other teams. To do so, business games use a software program and the Internet to simulate the business environment, share information, and facilitate competition between groups.

Most research has emphasized the benefits of e-learning methods and business games among them. One of the most relevant benefits is the fact that they provide students with an environment in which their learning autonomy is greater, where they become active constructors of knowledge aided by ICTs (Fu *et al.*, 2009). This is particularly interesting today, with the advent of the European Space of Superior Education, when there is a radical shift from a learning model focused on content acquisition to a model focused on fostering processes and competences (Mulder *et al.*, 2005). In this context of change, online and virtual education are crucial, and the student becomes the focus of the learning process (Benito, 2009; Corpas *et al.*, 2007). Thus, valuable learning tools are required to allow students to develop skills in self-initiated learning and to become active constructors of knowledge rather than just passive receivers.

The arguments highlighted above suggest relevant differences between e-learning and traditional systems of training (Sánchez-Franco *et al.*, 2009), which raise an interesting debate about the role of the instructor in the e-learning process.

The main objective of this study is to analyse the role of the instructor in the learning process fostered by a business game as an e-learning method in management training. Therefore, this study aims to contribute to previous research on the role of the instructor in e-learning, which has basically analysed the learning and teaching processes at virtual campuses and classrooms (Monteith & Smith, 2001; Proserpio & Gioia, 2007; Simon *et al.*, 2003).

To achieve this objective, we performed a comparative analysis of student perceptions regarding the role of the instructor in a business game. This analysis was conducted using two groups of students participating in two different learning experiences of a business game in the Spanish context, where large-scale use and research on business games are still in the early stages (Sánchez-Franco *et al.*, 2009). Both experiments involved fairly homogeneous groups of students and were facilitated by the same instructor, one in a face-to-face process and the other online.

The paper is divided into four sections. First, a review of the literature on business games and the role of the instructor was conducted to highlight the existing gaps that this study aims to fill. The second section describes the methodology, including the data-gathering process, the business game used and the measurement of variables. The third section presents the main results of the comparative analysis of the perceived role of the instructor. Finally, the main findings are discussed, and some theoretical and applied conclusions are derived from this discussion.

## **Business games and the role of the instructor in e-learning**

As stated in the introduction, e-learning constitutes a new paradigm of modern education (Sun *et al.*, 2008). This new paradigm is characterized by the use of telecommunications technology for education and training and by overcoming the problems of distance (Simon *et al.*, 2003). Moreover, e-learning involves the development of new techniques and tools adapted to different disciplines (Corpas *et al.*, 2007). For instance, business games have been considered as a relevant e-learning method in management training (Ben-Zvi, 2007; Chang *et al.*, 2003; Curry & Moutinho, 1992; Dill *et al.*, 1961; Faria & Dickinson, 1994; Faria *et al.*, 2008; Keys & Wolfe, 1988; Siddiqui *et al.*, 2008; Wolfe & Sautia, 2005).

The first widely recognized business game, 'Top Management Decision Simulation', was created in 1956 by the American Management Association. Since then, a great number of business games have been developed (Carroll, 1958; Faria & Wellington, 2004) and used in management training (Walters *et al.*, 1997) by business schools, faculties, and professional associations around the world (Chang *et al.*, 2003), particularly in the Anglo-Saxon context (Sánchez-Franco *et al.*, 2009). In fact, ICTs have yielded a tremendous rise in the use of simulations and games since 1998 (Faria *et al.*, 2008).

The most frequently reported advantages in the literature on business games are the immediate feedback, active participation of students, learning from the experience, observation of the key factors in an on-the-job situation, preparation for the uncertainty of business and the high motivation to learn created by the competitive environment (Fu *et al.*, 2009; Gilgeous & D'Cruz, 1996; Zantow *et al.*, 2005). This literature has also analysed the skills, knowledge and competences fostered by this e-learning method, such as the use of analytical techniques, teamwork, decision making, and information management, among others (Curry & Moutinho, 1992; Doyle & Brown, 2000; Faria & Dickinson, 1994; Jensen, 2003).

Notwithstanding these advantages, the literature also highlights some relevant problems. Both the advantages and the problems are largely consequences of ICTs. They provide greater student autonomy and active engagement in the learning process. However, the availability of technology does not necessarily result in effective learning by students (Proserpio & Gioia, 2007).

These arguments about the advantages and problems of ICTs in the learning process have placed the instructor in the middle of an interesting debate among researchers. On the one hand, the advocates of student-centred approaches (Boud, 1988; Brandes & Ginnis, 1986; Brookfield, 1986; Knowles, 1990; Tennant, 1997) argue that the extent to which the instructor mediates learning is relatively unimportant. On the other hand, other researchers regard these assumptions as myths of the information society (Cabero, 2007). They argue that the instructor cannot be replaced in an e-learning environment (Ruiz *et al.*, 2006) because his or her roles as professor and tutor are crucial to the quality and effectiveness of the e-learning process (Benito, 2009; Cantoni & McLoughlin, 2004), and guarantee the effectiveness of learning fostered by a business game (Gilgeous & D'Cruz, 1996).

In this debate, there is no doubt about the transformation caused by ICTs in the learning experiences of students (Monteith & Smith, 2001) and in the traditional tenets of learning, now characterized by non-linear, continuous, autonomous, and interactive learning (Proserpio & Gioia, 2007). In line with this consensus, there is also agreement on the fact that the new learning model demands a transformation of the role of the instructor. This role has been traditionally characterized by a one-way teaching position based on authority (Benito, 2009; Vázquez, 2007). Today, new technologies have given way to new roles for the instructor, who is now recognized as a facilitator, collaborator, adviser for achieving competences, moderator and coach in the learning process (Barker, 2002; Benito, 2009; Blázquez & Alonso, 2009; Cantoni & McLoughlin, 2004; Ruiz *et al.*, 2006; Simon *et al.*, 2003). These new roles highlight the relevance of certain functions, such as encouraging the group and eliminating fears of new e-learning tools, serving as a guide in the learning process, solving problems, motivating students, etc. (Hughes & Daykin, 2002; Proserpio & Gioia, 2007).

The diversity of new functions and roles for the instructor has led some researchers to classify them. Several classifications and types have been considered (Berge, 1995; Blázquez & Alonso, 2009; Gisbert, 2002; Llorente, 2006; Ryan *et al.*, 2000; Vázquez, 2007), which include the social, pedagogical, technical, managerial, academic, organizational, and orientational profile of the instructor. All of these classifications agree on the relevance of the instructor as a facilitator in the learning process, for assisting and supporting students, contributing to their knowledge and motivation, and serving as a guide in their more autonomous learning (Barker, 2002; Corpas *et al.*, 2007; Vázquez, 2007).

Despite the significant progress of the research conducted in recent years regarding the role of the instructor in e-learning, some important gaps still remain.

First of all, most of this research has been conducted in virtual environments and has analysed the online tutor, who has limited face-to-face contact with students, in the context of virtual campuses or classrooms (Barker, 2002; Benito, 2009; Corpas *et al.*, 2007; Llorente, 2006; Vásquez, 2007). In particular, the influence of certain instructor characteristics on e-learner satisfaction has been assessed, such as his or her teaching style (Piccoli *et al.*, 2001) or his or her prior experience (Arbaugh, 2002). On the other hand, research on the role of the instructor has also focused on traditional face-to-face environments (Monteith & Smith, 2001; Simon *et al.*, 2003). The role of the instructor has therefore been conceived as discrete and separate roles depending on whether he or she is in a traditional face-to-face teaching environment or in a remote learning setting. However, there is a lack of studies comparing face-to-face and online roles in e-learning experiences or comparing learning experiences in which the degree of involvement and interaction of the instructors varies.

Second, less attention has been devoted to the role of the instructor using particular e-learning methods, such as business games, in comparison with virtual campuses or classrooms.

Third, there is a lack of empirical evidence on the role of the instructor in business games from the students' perspective (Proserpio & Gioia, 2007).

These gaps are particularly evident in the Spanish educational context, where research on business games is still in the early stages (Sánchez-Franco *et al.*, 2009).

All of these limitations motivate and justify this study, in which our main objective is to compare the role of the instructor as perceived by students in two e-learning experiences fostered by a business game. In doing so, this study conducts a comparative analysis in order to shed light on the following propositions:

*Proposition 1:* Students value the role of the instructor in business games even though the technologies involved in the game could replace some of the instructor's functions.

*Proposition 2:* Students' perceptions regarding the role of the instructor in business games depend on the involvement and interaction of the instructor in the learning process.

The following sections describe how the study was conducted in order to achieve the research objectives.

## Methodology

### Data

In order to achieve the objectives of this study, we gathered information through questionnaires, which are a tool commonly employed in this type of research (Chang *et al.*, 2003; Faria & Wellington, 2004; Jensen, 2003; Rachman-Moore & Kennett, 2006). The questionnaire was used on two groups of postgraduate students participating in a business game during academic years 2008–2010. The assessment of the role of the instructor was made from the students' perspective rather than the instructor's perspective, which is the most popular option used by researchers in this field (Chang *et al.*, 2003). As mentioned above, this study was conducted in the Spanish context, where there is still little research on business games (Sánchez-Franco *et al.*, 2009).

The first group of students was composed of 33 participants and facilitated by an instructor in a face-to-face process. The second group was composed of 23 participants and facilitated by the same instructor online. In both cases, the characteristics of the participants were fairly homogeneous, and the game evolved in a similar way. It was divided into seven rounds and played at weekly intervals.

It is important to highlight that both educational experiences were designed in a way that allowed us to compare two learning situations in which the interaction and involvement of the instructor were different. The first group, facilitated in a face-to-face process, received continuous assistance from the instructor. He or she made relevant

efforts to motivate students, interact with them, answer questions, and perceive and resolve problems, with these issues facilitated by the observation and physical attendance. In the online group, on the other hand, there was a voluntary face-to-face first session to explain the operation of the game. The instructor only contacted students by email or telephone to answer their questions and to inform about the end of each round, so the degree of instructor involvement and interaction was much lower.

The questionnaire was sent by email during the last week in which the game took place, and was returned by email or during the last session. All participants in both groups completed the questionnaire because it was required for the students' evaluation.

The questionnaire on the role of the instructor was constructed using concepts and scales previously used in the literature on business games (Arias-Aranda *et al.*, 2008; Faria & Wellington, 2004; Fu *et al.*, 2009). Moreover, a focus group was organized in order to obtain more information on the role of the instructor in business games. The participants were students who had used this e-learning method. The results of the focus group highlighted some relevant aspects of the role of the instructor that had not been previously considered. Their suggestions and comments were taken into account while drawing up the final version of the questionnaire.

The resulting questionnaire consists of two parts. The first, regarding the student profiles, included questions about gender, previous experience with business games, occupation and educational background. The second part contained 12 questions on the role of the instructor in a 5-point Likert scale ranging from 1 (not at all/not applicable) to 5 (a great deal):

1. facilitates students' work process;
2. facilitates students' learning process;
3. acts as a mediator in intra-group conflicts;
4. helps overcome problems in the course of the business game;
5. acts as an academic role model;
6. acts as a personal role model;
7. acts as a professional role model;
8. applies the evaluation system objectively;
9. motivates students;
10. orients and guides students in their work;
11. encourages interaction within groups; and
12. trains students in teamwork.

In order to improve reliability, the questionnaire was revised by two expert instructors. Finally, it was tested on 16 students who were participating in a business game for a different subject, unrelated to the experience described here.

### **The business game**

The business game evaluated in this study was Global Challenge. The main objective of this game is to develop an understanding of international business management in a competitive and dynamic environment. For this purpose, Global Challenge simulates a business context where players develop and execute strategies for an international mobile telecommunications company operating in the United States, Asia, and Europe and allows players to practise decision making by integrating different functional areas such as production, marketing, logistics, R&D, finance, investments, etc.

The game seeks to contribute to a better understanding of the complexity of each of the functional areas individually and also collectively through their relationship to each other. In addition, it tries to boost experience in teamwork and problem solving (see Figure 1), which are major aspects of the business management learning process.

### **Measurement of variables**

**The role of the instructor** was measured through the 12 items listed above.

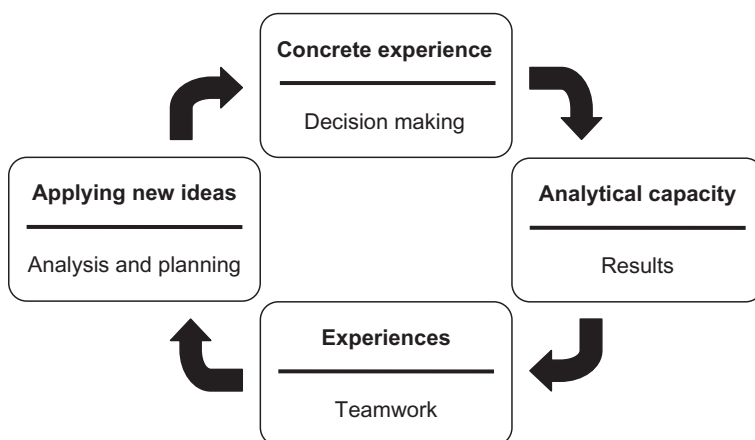


Figure 1: Objectives of the Global Challenge business game.

Source: <http://www.cesim.com>.

Taking into account the classifications proposed in the literature concerning the role of the instructor (Blázquez & Alonso, 2009; Llorente, 2006; Vázquez, 2007), we considered it appropriate to cluster the 12 items into several groups. We observed a clear relationship between some of these items, so grouping them provided us with a more robust measure of the students' assessment of the instructor's role. To achieve this, we applied *k*-means clustering (MacQueen, 1967), which is commonly used to automatically partition a data set into *k* groups. Because the content of the 12 questions is related to three different types of subjects, we considered it appropriate to select *k* = 3. The first group contained items 1, 2, 4, 8, 9 and 10, which capture the role of the instructor as a facilitator in the learning process. The second group contained items 3, 11 and 12, which are related to the instructor's role as a mediator in teamwork. Finally, the last group contained items 5, 6 and 7, which capture the role of the instructor as a model for students.

In order to measure scale reliability, we used Cronbach's alpha (Cronbach, 1951). This coefficient indicates how a set of items measures a single unidimensional latent construct. The Cronbach's alpha coefficient was 0.886 for the instructor's role as a facilitator, 0.809 for the instructor's role as a mediator in teamwork and 0.881 for the instructor's role as a model in the learning process.

For each group of items, we averaged the scores given by students in order to obtain a measure of the three roles of the instructor.

**The involvement and interaction of the instructor** was considered through a proxy dichotomous variable. The value was 1 for the face-to-face learning experience and 0 for the online experience.

**The student profile** was determined using four items indicating gender (1 for women and 0 for men), previous experience with business games (1 for previous experience and 0 for none), occupation (1 if the respondents had or had previously had a management-related job, 0 if not) and educational background (1 if they had a business education, 0 if not). To determine the students' managerial profile, the last two questions were considered. If the value of one was 1, a managerial profile was assumed.

## Results

The analysis of this study is divided into two parts. First, we computed descriptive statistics in order to check for set homogeneity with regard to the student's profile. Second, a statistical significance test was applied in order to check for differences between the means of the two groups of students. All statistical analysis was carried out using *R*, version 2.9.0 (*R* Development Core Team, 2009).



Table 1 shows descriptive data on the students. In order to determine whether or not both groups had a similar profile, we analysed the following characteristics: gender, previous experience with business games and managerial profile. The last variable was measured based on occupation and educational background.

As we can see in Table 1, the student profiles in terms of gender, previous experience with business games and managerial profile are fairly homogeneous. In both groups, there is a slight majority of women, and around 69 percent of the players had previously participated in other business games. Similarly, around 47–48 percent of the students in both groups had occupations or an educational background in business.

Table 2 shows descriptive statistics and a t-Student analysis to check for differences between the face-to-face group and the online group. This statistical significance test compares the means of variables in two independent groups.

Figure 2 shows the distribution of responses regarding the three roles of the instructor in both groups. As we can see, the face-to-face group gave higher marks for the three roles of the instructor, as facilitator, mediator and model in the learning process. Moreover, this group valued the three roles above the average in the range of possible

Table 1: Descriptive statistics on the students

| Profile of the students                    | % group 1<br>face-to-face | % group 2<br>online |
|--------------------------------------------|---------------------------|---------------------|
| Women                                      | 57.6                      | 56.5                |
| Men                                        | 42.4                      | 43.5                |
| Previous experience with business games    | 69.7                      | 69.6                |
| No previous experience with business games | 30.3                      | 30.4                |
| Managerial profile                         | 48.5                      | 47.8                |
| No managerial profile                      | 51.5                      | 52.2                |

Table 2: Descriptive statistics on the role of the instructor and t-Student analysis

| Dimensions of the<br>role of the instructor | Group 1:<br>face-to-face |      |      | Group 2:<br>online |      |      | t-Student |
|---------------------------------------------|--------------------------|------|------|--------------------|------|------|-----------|
|                                             | <i>n</i>                 | Mean | SD   | <i>n</i>           | Mean | SD   |           |
| (1) Facilitator in the learning process     | 33                       | 4.24 | 0.55 | 23                 | 3.43 | 0.74 | -4.48***  |
| (2) Mediator in teamwork                    | 33                       | 3.96 | 0.67 | 23                 | 2.78 | 0.95 | -5.11***  |
| (3) Model for students                      | 33                       | 3.81 | 0.72 | 23                 | 2.83 | 0.94 | -4.21***  |

\*\*\* Statistically significant differences ( $p < 0.001$ ).

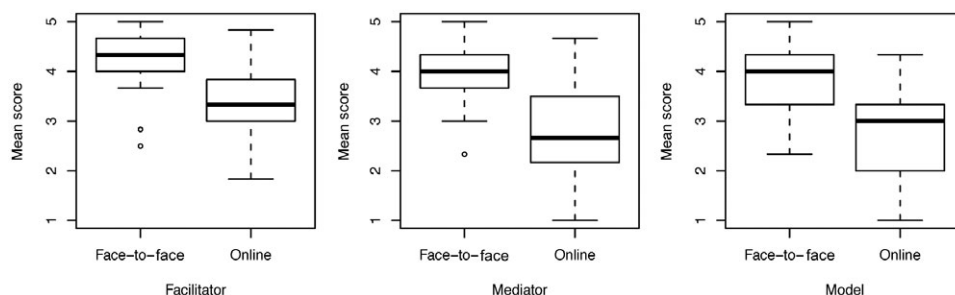


Figure 2: Box plots of the three roles of the instructor: facilitator, mediator and model (left, middle and right, respectively).

scores (from 1 to 5). The online group, on the other hand, only gave above-average marks for the role of the instructor as a facilitator in the learning process. In fact, this role was the most valued in both groups.

So, in accordance with Proposition 1, the results of this study suggest that the students in both groups valued the role of the instructor in business games, especially their role as a facilitator in the learning process. Consistent with Proposition 2, there seem to be substantial differences in the perception of the roles of the instructor in both groups. Therefore, our findings suggest that a different kind of instructor involvement and interaction affected the students' perception of the role of the instructor.

## Discussion and conclusions

The main objective of this paper was to analyse students' perception of the instructor's role in a business game used as an e-learning method for management training. Two groups composed of individuals with similar profiles were compared after playing the Global Challenge business game. The first group was facilitated in a face-to-face process by the instructor, and the second group was facilitated online by the same instructor. The study sought to compare students' assessments of the instructor's role in two educational experiences in which the type and degree of instructor interaction and involvement varied. Some theoretical contributions and practical implications can be derived from this study.

First, the study highlights the relevance of the instructor's role in e-learning. This conclusion is in line with previous studies that highlighted the relevance of this role to the quality and effectiveness of the learning process in virtual environments and business games (Hong, 2002; Hughes & Daykin, 2002; Proserpio & Gioia, 2007; Simon *et al.*, 2003; Sun *et al.*, 2008). Even in the online group, where the involvement and interaction of the instructor was lower, students appreciated his or her role, especially as a facilitator in the learning process. This result suggests that the instructor's functions relating to facilitating the students' work and learning, helping to overcome problems, providing an objective evaluation, and motivating, orienting, and guiding students seem to be especially relevant in business games.

A second theoretical contribution of this study shows that instructor involvement and interaction significantly affect the students' perception of the role of the instructor in the learning process. Our findings indicate significant differences between the online and face-to-face groups regarding students' opinions on this matter. This finding sheds light on the theoretical debate about the usefulness of the instructor in e-learning and is in line with researchers who defend the instructor's usefulness in e-learning and the positive influence of the instructor for promoting the training benefits provided by new technologies (Barker, 2002; Benito, 2009; Cantoni & McLoughlin, 2004; Simon *et al.*, 2003).

Finally, this study makes a relevant contribution to the literature on the role of the instructor in e-learning which has basically analysed the effects of instructors' attitudes towards ICTs, their prior experiences, and the resources used at virtual campuses and classrooms on e-learner satisfaction (Sun *et al.*, 2008). This study has moved forward in examining not only the role of the online instructor but also the influence of face-to-face interaction from a comparative perspective. Moreover, this study provided insight into the effects of the greater instructor involvement and interaction afforded by physical attendance in business games. In this case, our results do not differ from other educational contexts, where the benefits of face-to-face contact have been confirmed because of the higher communication potential of body language, the opportunity to pick up on other people's feelings (Monteith & Smith, 2001) and the higher degree of control exerted by the instructor (Simon *et al.*, 2003).

Some practical recommendations for management training using business games emerge from this research. The results are useful in terms of how to employ this e-learning tool to maximize participants' learning. This is important given the limitations of time and resources that instructors face when planning their teaching. For



example, this study recommends integrating some face-to-face sessions during the course of the business game in order to foster the learning process.

Moreover, many of the instructor's functions arise naturally in the dynamics of class time. This work may serve to raise awareness of this situation and to highlight the training and attitudes required of the instructor to ensure the effectiveness of online learning.

Finally, the online instructor must play a more proactive role. New technologies allow for independent learning by students, but this does not mean that learning outcomes are as expected. Despite the existence of online instructors, students sometimes have serious doubts about what is expected of them. In a face-to-face teaching situation, questions arise spontaneously, whereas there are major communication barriers in a virtual learning setting. This could be because students are afraid to ask questions, doubt the appropriateness of their questions or are worried about bothering the instructor. The online instructor must therefore be the one who understands these problems and takes steps to resolve them, motivating the students through greater interaction.

The main limitation of our research is the small number of participants. In this regard, a greater number of players from different academic and professional backgrounds, or from other countries, would allow us to continue this research and to compare the situations or contexts in which the learning fostered by business games is better. Moreover, it would be interesting to supplement the data from our questionnaires with other qualitative data that could lead to more in-depth research on this issue and could help justify the results obtained. These are interesting lines for further research, especially in the Spanish educational context, where studies on e-learning are scarce.

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