

# CRITICAL FACTORS INFLUENCING IN SERVICE TEACHERS' SATISFACTION WITH AN E-LEARNING COURSE MEASURED WITH A STRUCTURAL EQUATION MODELING

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## **Abstract**

This research aimed at assessing the perceptions of 168 K 12 teachers about a b-learning course on ICT integration in the curriculum. The teacher trainees were asked to plan some class activities, using Web 2.0 technologies; they have also discussed several issues related to education in the knowledge society, such as new ways and strategies for infusing ICT in the national curricula. A learning environment supported by a communication platform was designed. At the end of the course, a satisfaction survey, which was the basis for this research, was applied to assess the different dimensions of the course. Variables such as ICT skills, course design, collaboration, instructor's feedback, course usefulness and learners' satisfaction were assessed. The majority of the trainees (83.3%) affirmed that, in the future, would easily choose a b-learning modality course. Three face-to-face sessions – at the beginning, in the middle and at the end of the course - have proved to be enough to provide support in technological issues, to organize teamwork, to develop stronger relationships within the community and to keep the trainees on track. The results indicate positive perceptions about the online learning environment and strong relationships with both endogenous and exogenous variables. The trainees pointed out, both in their personal reports and in the survey, that collaboration was one of the most valued components of the course. In fact, the trainees were provided a collaboration board where everyone could ask questions or for some kind of help with the web tools used in the course. The research will develop by using a larger and more diverse students' sample and by surveying the tutors' perspectives on eLearning, in order to provide the most convenient learning methodologies.

Keywords: collaboration; course design; feedback; ICT skills; usefulness.

## **1. INTRODUCTION**

The Internet and information technologies are rapidly expanding as new ways of qualifying human resources and eLearning is becoming very popular for its perceived flexibility, personalization, economy, new dynamic and resourceful learning environments and new ways of career development for adult learners. However, a few disadvantages are pointed out in the literature, concerning issues of access, software, isolation, depersonalization, motivation and organizational skills.

Building an infrastructure for online learning is a complex task, involving the use of multiple components ([7], [11]). In a b-learning modality, some of these components are not as critical as in a fully on-line teaching and learning situation.

The use of b-learning solutions for teachers' training in Portugal is still undeveloped and its potential must be explored to improve teachers' ICT skills, in general, and with web 2.0 tools, in particular. In addition, teachers' training budgets are being limited and teachers are spending more time with their jobs; therefore, issues of time flexibility and training costs have to be considered.

## **2. LITERATURE REVIEW**

Mixed teaching and learning methods, combining, in a reflected and planned manner, both face-to-face and online learning enable numerous varieties of course design and implementation ([9]), thus being a valid alternative for professional development and for improving the learners' ICT skills.

Most studies on e-learning have assumed that constant and persistent collaboration among learners and between them and their tutors contributes to the learners' success ([3]), sense of community ([2]) and satisfaction ([18], [12]).

The tutor's leadership and support to collaboration, reflection and learning can explore the features of asynchronous communication and contributes to a more positive academic experience. The tutor's response timeliness and support encourage the development of an adequate social climate, critical for creating a sense of community and for sustained collaborative learning ( [13], [14], [15]); however it is considered less critical in b-learning environments([8], [10]).

ICT skills such as email experience, group discussions experience, online learning experience, web 2.0 tools experience have been considered to influence the learners' success and satisfaction ([12]); however, their influence has to be assessed, since their importance varies according to the e-environment technological complexity ([17]).

Course design has been consistently identified in the literature as critical factor of e-learning ([4], [5]); in fact, the course quality is the most significant concern, when a student decides on learning on-line ([12]).

Perceived usefulness of e-learning for teaching and learning is currently being scrutinized as one of the critical factors that impacts on learners' satisfaction ([1], [6], [21]), as learners consider that an e-course can enhance their professional effectiveness, productivity and their institutions, parents and students' respect and recognition.

### **3. RESEARCH GOALS AND HYPOTHESES**

This study aimed at identifying factors explaining the learners' satisfaction in a b-learning course; Satisfaction was considered the endogenous variable; all the other variables were considered to be independent. Thus, six hypotheses were formulated:

H1: The learners' ICT skills are a predictor of their satisfaction with the course.

H2: Course design is a predictor of learners' satisfaction.

H3: Collaboration among learners is a predictor of learners' satisfaction.

H4: The instructor's feedback is a predictor of learners' satisfaction.

H5: Perceived course usefulness is a predictor of learners' satisfaction.

### **4. PARTICIPANTS, INSTRUMENTS AND PROCEDURES**

168 K 12 teachers enrolled in an e-learning course on Web 2.0 tools for teaching and learning and on ICT integration in the curriculum answered a paper and pencil survey intended to assess their satisfaction at the end of the course, at the last face-to-face meeting.

The survey had a first section of six items on demographic information. The second section was designed to measure the trainees' experiences with computers and the Internet (six items). The third section measured the trainees' perceptions about the course design, such as goals, content, resources and technological environment (12 items), online collaboration (six items) and instructor's monitoring and feedback (six items); the fourth section measured the learners' perceived course usefulness (three items) and overall satisfaction with the b-learning experience (three items). Each item of the second and third sections was measured with a 4 points scale of agreement. The fourth section items were measured on a 4 points scale of intensity.

## **5. RESULTS**

### **5.1 Reliability analysis**

Reliability analysis was calculated for each dimension of the survey: ICT skills = 0.682; course design = 0.922; collaboration = 0.832; monitoring and feedback from the instructor =0.841; course usefulness = 0.898; overall satisfaction with the b-learning experience =0.835.

### **5.2 Variables' relationships measured with a structural equation model**

The standard procedures of structural equation model were carried out; the relationships among the variables were all significant. The path coefficients for SATISFACTION, and ICT SKILLS ( $\beta = 0.265$ ,  $p < 0.01$ ); for SATISFACTION and COURSE DESIGN ( $\beta = 0.651$ ,  $p < 0.01$ ); for SATISFACTION and

COLLABORATION ( $\beta = 0.628$ ,  $p < 0.01$ ); for SATISFACTION and MONITORING AND FEEDBACK FROM THE INSTRUCTOR ( $\beta = 0.406$ ,  $p < 0.01$ ); SATISFACTION and COURSE USEFULNESS ( $\beta = 0.576$ ,  $p < 0.01$ ). Variables such as course design, collaboration, tutor's feedback and course usefulness proved to have critical relationships with the learners' satisfaction. Course usefulness was predicted by course design ( $\beta = 0.573$ ,  $p < 0.01$ ) and collaboration ( $\beta = 0.358$ ,  $p < 0.01$ ). An adjusted  $R^2 = 0.781$ ,  $p < .001$ , suggest that the learners' satisfaction variance can be explained by these variables.

Both convergent and discriminant validity were verified. All factor loadings were higher than 0.80. Correlations examination among the five dimensions were measured and all the correlations were lower than 0.85, suggesting an adequate discriminant validity.

## 6. DISCUSSION

The purpose of the research was to explore the factors of the trainees' satisfaction with an b-learning environment. All the endogenous dimensions, proved to have a significant effect on the trainees' satisfaction. The structural equation modelling tested the research model and the results proved a good fit to the data. The results demonstrate that the learners' satisfaction can be influenced by all the variables included in the model and that both course design and collaboration are influential on the learner's perceptions of usefulness.

The results also show that teachers have positive perceptions about online learning. The vast majority of teachers (82.9%) expressed an intention of repeating a b-learning experience. Though a percentage of 3,7% of the teacher trainees declared they still preferred face-to-face training, they still recognized the potential of a b-learning modality, particularly for learning how to use web 2.0 in the classroom, for using them as learners improves their skills, confidence and self-efficacy, as teachers, as stated by the trainees in their individual reports .

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