

The joy of e-learning: redesigning the e-learning experience

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ABSTRACT

Not only there is a gap that we are trying to reduce between human computer interaction (HCI) and e-learning systems, but most of the work in HCI has focused on the “CI” more than the “H”, the human aspects, so relevant in the study of the e-learning experience. This paper focuses on the work that needs to be done to reduce this gap and redefine the e-learning experience. We propose a methodology in which we also take into account the affective dimension of the user, as this can be critical to the overall experience, even more so than aspects such as effectiveness and efficiency, often measured. Integrating the affective dimension will help provide a set of guidelines for designing a virtual learning environment that engages and motivates students to learn and enjoy their e-learning experience.

Categories and Subject Descriptors

H.5.2 [Information interfaces and presentation]: User Interfaces.

J.4 [Social and behavioral sciences]: Psychology.

K.3.1 [Computer and education]: Computer Uses in Education – *distance learning*.

General Terms

Measurement, Documentation, Design, Experimentation, Human Factors.

Keywords

E-Learning, human-computer interaction, user-centered design usability, interaction design, evaluation, emotions, affective computing, human factors.

1. INTRODUCTION

Very little has been written about the impact of interface development and design on the e-learners' learning process and experience; how it affects their motivation to learn, ability to find, absorb and understand what they are learning, as well as their overall expectations and perceptions as members of a virtual university environment. As Spillers [12] writes, “emotions govern the quality of interactions with a product in the user's environment and relate directly to appraisal of the user experience. Users generate emotion as a way to minimize errors, interpret functionality, or obtain relief from the complexity of a task”. This project examines the design of e-learning environments as an affective medium capable of motivating e-learners, with the objective to contribute increasing e-learners' abilities, motivation and overall satisfaction.

As pedagogues work toward the pedagogical aspects of e-learning and learning technology's professionals work toward delivering an obstacle-free educational environment in which the e-learning objectives take place, this project aims at exploring the gap between these two efforts and understand how the design of the e-learning systems impacts the learning process, and more importantly, the student's motivation to learn. Our overall objective is to go beyond a satisfactory e-learning experience and achieve an enjoyable and motivating e-learning experience. It is not sufficient to deliver an efficient and effective e-learning environment; it needs to empower the students to learn.

2. SPECIFIC OBJECTIVES

The project described in this paper aims at identifying methodologies [4] to help redefine the e-learning experience. Our work aims at providing guidelines to help design a suitable and enriching e-learning environment.

Some of the questions we would like to answer are:

- Can the e-learning environment motivate people to learn?
- Can its design contribute to increasing students' optimism, and therefore, desire to learn?
- Can the e-learning technology help the student excel and do better in his or her studies?
- Which design elements cause the learner's frustrations?
- How can a change in interface design impact satisfaction levels?
- What are the interface design elements that will prepare the user for a positive experience?
- What are the elements of joy that will influence the way a user feels at the time he or she has to absorb the knowledge?
- At what points during the learning experience should be found and used?
- Which ones are to be used? When and How, in the learning process?

There is a need to evaluate the critical aspects that may be correlated between interface development and design, and the user experience and motivation to learn, to contribute to their overall e-learning experience.

3. RELEVANCE

E-learning contributes to the effective integration of ICT in education and training [9]. Therefore, it seeks to mobilise the educational and cultural communities, as well as the economic and social players worldwide, in order to speed up changes in the education and training systems for a move to a knowledge-

based society. In this context, instructional design and technology enhanced learning are currently driving this change, with an identified need for user-centered design processes and methodologies.

New and improved technologies will allow for the implementation of new types of relationships between students and teachers, between students and the content, etc. If information technologies are to be successful in education and training, developing and designing technologies that motivate users, are obstacle-free and contribute to the users' satisfaction, is an integral part for achieving e-learning's overall objectives. Therefore, user-centered factors are key factors in e-learning.

4. METHODOLOGY

This project aims at defining a new user centered methodology, the Global User Experience (GUX) methodology, one that enforces User Centered Design (UCD) [8, 3], Learner Centered Design (LCD) [11, 7] methodologies and also includes other research methodologies that help identify and analyze the users' profile beyond their interactions with the system. Some of the elements that GUX will account for are user expectations, feelings, desires, aspirations, aesthetic preferences, interests, social behavior, etc.

5. THE JOY OF E-LEARNING

Our project aims to use several research methods to obtain basic knowledge about how e-learners may use the virtual environment and to analyze and understand their affective dimension in different scenarios. Understanding e-learners, their lives, the technology they use and the e-learning process will help us identify the elements of interaction and interface design that are related to affect, providing us with a set of guidelines to develop an online educational environment that motivates students during their e-learning experience. The project is divided in two main phases: the theoretical and information gathering phase and the prototype development and evaluation phase.

The initial phase includes identifying the user profiles, their learning objectives, their interactions, expectations, needs and preferences. It also includes analyzing the elements of joy or positive affect that occur in a traditional university setting, as well as case studies and other information that helps us build the current e-learner's experience map. It would also involve the execution of several quantitative and qualitative studies, including diary studies [1] to create a solid relationship between affect and technology. Some of the questions we would like answered in this phase are:

- What motivates a student to learn?
- What motivates him or her to do well at school?
- How can they be motivated to continue studying?
- How do professors convey affect or emotion in an offline classroom setting?
- Can we identify where and how to implement elements of joy in the development of e-learning technologies?

During the second phase, which aims at identifying a methodology for virtual universities to guarantee the satisfaction and motivation of the student during the e-learning process, we will design a prototype of a learning environment

or modules designed specifically to motivate e-learners and increase their overall satisfaction and results. This prototype will be assessed implementing several validation methodologies, which also includes the use of a portable usability laboratory, specific to help evaluate technological applications, as it is a more controlled environment. The portable usability laboratory consists of a PC with TechSmith's [10] usability software and a video camera. This software records the user speech and face, along with the computer screen and the user interactions with the tested application. Observers can follow the evaluation in real-time from other computers. Other methodologies such as the 10-emotional-heuristics [6] will be utilized to assess the participant's interaction with the prototype. With the use of the AMUSE [2] tool we will also be able to conduct interface evaluations by collecting and aggregating different sources of data including psychological and navigation data. With the use of some of these evaluation methodologies we will not need to solely rely on user's subjective data to understand their affective dimension, as in a user questionnaire users generally try to remember what the experience felt or was like, as opposed to providing objective information [5]. Some of the questions we will answer in this second phase are:

- How do we define the GUX methodology?
- Are all human aspects taken into account in the design process?
- Which methodologies will help us measure and assess the e-learner's positive state and motivation?
- Is our e-learning environment motivating the user? When and how?
- What elements of design are influencing the student's affective state? Which are not?
- What design process will ensure knowledge acquisition?

This project will allow us to obtain a theoretical basis to advance in the development of affective learning technologies and it will also contribute to the development of new methodologies to help design these new e-learning experiences.

Some work has been done with interesting results [7]. UCD methods and techniques have been successfully applied in the design and development of a new virtual classroom for the UOC virtual campus¹.

In summary, we wish for the future learning technologies to not only facilitate the learning process, but to become a system that enforces students to learn, a motivating and enjoyable environment in which to grow and learn.

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¹ www.uoc.edu

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