Usability in the Context of e-Learning: A Framework Augmenting ‘Traditional’ Usability Constructs with Instructional Design and Motivation to Learn

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ABSTRACT

The issue of e-learning quality remains prominent on end users’ (the learners’) agenda. It is no surprise that many non-motivated adult learners abandon prematurely their e-learning experiences. This is attributed in a great extent to the poor design and usability of e-learning applications. This paper proposes a usability framework that addresses the user as a learner and extends the current e-learning usability practice by focusing on the affective dimension of learning, a frequently neglected issue in e-learning developments. Motivation to learn, a dominant affective factor related with learning effectiveness, has been similarly neglected. Usability and instructional design constructs as well as Keller’s ARCS Model are being employed within the framework proposed in this work upon which new usability evaluation methods can be based. This framework integrates web usability and instructional design parameters and proposes motivation to learn as a new type of usability dimension in designing and evaluating e-learning applications.

Keywords: Affective Learning, E-Learning Applications, Instructional Design, Motivation To Learn, Usability Design and Evaluation,

INTRODUCTION

E-Learning technology and applications provide exciting possibilities for supporting adult learners, professionals, employees in organizational settings seeking new training and learning innovations. However, dropout rates are high and this is a very serious concern for e-learning practitioners (Levy, 2007; Diaz, 2002). Between 30-75% of learners fail to complete e-learning courses (Ganzel, 2001). Thus far, techno-centric approaches (Lohr, 2000) still dominate the design of e-learning applications, systems and courses, i.e. the focus is being placed more on technology issues and not on quality of learning, (focus on the “e” part and not on “learning”). In addition there are a lot of concerns regarding the use of e-learning technologies in higher educational institutions. Selwyn (2007) argues that most of the students and teachers make only limited use of these technologies and applications during
their teaching and learning and further analyzes the respective concerns across several levels: economic concerns of government, the commercial concerns of IT vendors, the managerial concerns of university administrations and the strategic concerns of students.

Another main reason behind high dropout rates is the poor design of e-learning applications. Poor usability compounds this attrition problem by causing frustration or by creating unnecessary barriers to completing e-learning courses (Notess, 2001). Lack of control, navigational disorientation, content, instructional assessment, interactivity and feedback are the most commonly reported nuisances in several studies (ASTD, 2001; Bonk, 2002; Massy, 2002). Amongst other factors, learners’ motivation is one important determinant for the dropouts in e-learning (Levy, 2007). It seems that there is a lack of frameworks that integrate usability and instructional parameters so as to address the users of e-learning as real learners. Most of the current usability design and evaluation methods neglect the intricacies and specificities of e-learning and do not address the user as a learner. Traditional usability practice proposes generic usability parameters and measurement constructs having in mind the user as a typical software user. Learner-centered approaches are needed to inform the usability practice in the e-learning context. Hence, pedagogical aspects need to be embedded in e-learning usability design and evaluation methods. In this paper a learner-centered perspective is adopted taking into account new dimensions in human computer interaction with emphasis on users’ affect; thus, a new usability framework for e-learning applications is proposed integrating usability and instructional design parameters under the light of one of the most prominent affective learning dimension which is motivation to learn.

NEW DEVELOPMENTS IN HUMAN COMPUTER INTERACTION: THE ROLE OF AFFECT

New developments in Human-Computer Interaction are characterized by the increased focus on design approaches driven by the increasing heterogeneity of the user population, the decreasing tolerance of user frustration, the diversification of their needs and tasks, their idiosyncratic characteristics and reactions and their changing needs (Hudlicka, 2003). The user is in the center of the process and his/her needs drive the nature of the interface and the function allocation of tasks between the user and the machine. In addition, regarding the web and its applications, the need for more usable systems is becoming a necessity since an increasingly large proportion of the population with less computer expertise is using the web (Nielsen, 2000). These concerns are also valid for the widespread use and adoption of e-learning (in this work the focus is on web-based learning).

As Hudlicka (2003) points out, a major component of these emerging requirements and of effective HCI in general is the ability of these emerging systems to address user affect. It is critical that systems designers assess the range of possible affective states that users may experience while interacting with the system. This summarizes the main broad aim of the affective HCI. Some important research questions that researchers should be addressing in the affective HCI field include the following (Hudlicka, 2003):

- The importance of affect, that refers to identification of HCI contexts where affect is critical and must be addressed particularly, when affective considerations interfere with performance.
- The selection of emotions, i.e. which emotions should be considered in which context and for which types of users.
- The measurement of effectiveness that focuses on how can “typical” usability
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