Usability Evaluation of Online Learning Programs

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INTRODUCTION

Human activities are social activities, in essence. Evaluating or using a piece of software is a social activity, as well as a learning activity. Nonetheless, these activities are generally considered as relying upon universal and culturally neutral criteria or ways of achieving them. This chapter makes the case for an opposite viewpoint and aims to support the idea that "usability of online learning software" has to be considered as situated.

In its broad sense, "usability" addresses the relationship between tools and their users. From a designer's viewpoint, usability is seen as a relationship between a human being and an artifact that measures the productivity of a user using the artifact (Nielsen, 1994). Some authors consider an extended notion of usability that distinguishes clearly between two usability-related concepts, "ease of use" and "usefulness," but takes them both into account (Notess, 2001). This extended notion of "usability," which is the one supported by this chapter, has a strong dependence on social and cultural aspects, because the use of any object is a social activity, which implicitly implies social relations belonging to different registers (Blandin, 2002).

Therefore, the standpoint presented here is the following: usability evaluation should not be limited to consider "simply ease of use of a tool" criteria, but should also take into account all the conditions that lead a user to actually use a tool. When "learning" is the aim of the activity, underpinned by the use of the said tool, social, cultural, and context-dependent factors are driving forces that shape the action and that need to be taken into account within the evaluation process.

BACKGROUND

Usability, in its first sense in the field of software design and engineering, was synonymous with "ergonomical issues," though the sense of the word can now be broader and encompass "usefulness" or "utility" issues.

In its first, "historical" sense, the word "usability" intended to define rules to design the application to match users' habits, various types of equipments, various languages, etc. The basic principles of a good design for usability, still in use today (Notess, 2001), were, and are, those described in Norman (1988):

1. Provide a good conceptual model
2. Make things visible
3. Map the controls, their movements, and their results in the real world
4. Provide feedback for any action

Such principles apply to "usability engineering" (Notess, 2001) and are considered as good heuristics (Nielsen, n.d.) to design learning software. Their application may, in some conditions, facilitate the use of learning software.

A "good conceptual model" cannot be universal—it is related to a particular culture. If "learning" is concerned, even in a given culture, different "learning styles" and "learning cultures" exist that generate different appreciation of what a "good conceptual model" might be (Blandin, 2003).

It can also be argued that the same tools are used differently within different communities (Brown, Collins, & Duguid, 1989), which reinforces the need to take into account social and cultural aspects belonging to the world of the user.

Sociology of uses, which now relies on a large "corpus" of surveys published on both sides of the Atlantic (Martin, 1997), points out the fact that "usefulness" or "utility" is a precondition to use a tool. Research made to understand why tools or facilities, such as video recorder, a personal computer, or pay-TV, are not used lead to this evidence: "no need" is the main reason given to explain rejection of the tool (Punie, 1997). A recent two-year survey (Rouet, 2003) on the development of uses related to the Internet among a sample population representative of a French provincial area showed that the uses developed after two years are based on the applications that were considered useful at the beginning (e-mail, browser, search engine, etc.), and those not considered useful (chat, Webcam) remain unused. Utility does not spontaneously evolve.

This means that the first criterion of usability evaluation of an online learning program is that it has to be

considered as useful by the user. Again, this is context dependent. As a result, the use of online learning programs appears dependent on what I called "social schemata of uses" (Blandin, 2002), which determine and format conditions for using tools as well as the ways the tools are used.

MAIN THRUST OF THE ARTICLE

For these reasons, factors describing the environment of uses need to be encompassed in any usability assessment. To take this into account, Blandin (2003) proposed the notion of "situated usability" to name a set of heuristics that account for describing how the environment impacts usability factors. These heuristics, as stated in Blandin (2003) are as follows:

1. **Social Schemata of Uses:** to be used within a given community, a tool should embed common Social Schemata of Uses of this community;
2. **Type of Action:** to be used in a given situation, a tool should correspond to user's need and purposes in this situation, and allow him/her to perform a given action;
3. **Culture of the Users:** to be used within a given community, a tool should convey representations and practices which are considered as "common sense knowledge" by the user;
4. **Culture of the Environment:** to be used within a given community, a tool should convey representations and practices which are considered as "common sense knowledge" by the community;
5. **Tool Efficiency in a Given Situation:** to be used in a given situation, a tool should have proved efficiency in such a situation;
6. **Ability of the User to Use the Tool:** to be used in a given situation, a tool must be mastered, to some extent, by the user; which also means that an object does not become a tool at hand;
7. **Motivation of the User to Use the Tool:** to be used in a given situation, a tool should interest enough the user to perform his/her action using this tool rather than in any other manner (pp. 319–320).

These heuristics are general and may apply to any type of tools. They could be refined in the case of online learning programs by identifying the "learning culture" of the user (Brown, Collins, & Duguid, 1989).

Following the principle used by Lakoff and Johnson (1999), four families of "learning cultures" can be considered, based on four different "learning metaphors," or four different "learning paradigms," built upon different learning theories throughout history (Table 1). These learning cultures still correspond to different communities of thinking within the educational world.

Some tools originated in, or better fit, with a particular learning culture. For example, mail and other written communication tools fit better with the Socratic paradigm, because they allow discussion; computer-based training programs originated from the Plato system, based on the work of renowned behaviourists, such B. F. Skinner (Dooijes, n.d.).

A typology of "formal learning systems," as presented in Blandin (2000) or in TTNET Dossier Number 4 (2001), will help to classify online learning programs according to the learning cultures. It is presented in Table 2.

It can be noticed that these four learning cultures do not allow for the implementation of all the "situated usability" heuristics presented above in the same manner, and some of the tools corresponding to Platonism, objectivism, and behaviourism might not always fulfill the requirements stated by heuristics (2), (3), (6), and (7).

One of the reasons why online learning programs are not used is because there is a "trench" (Brown, Collins, & Duguid, 1989) between the learning culture that they implicitly embed and the learning culture of the learner, or of the learning system in which they are inserted. This trench generates learning situations that are ill-formed, and thus inefficient, or that are rejected by one of the actors, either the teacher or the learner.

From current research, it appears that the learning culture might influence the use of online learning programs in the following ways (Blandin, 2003):

*   There could be a mismatch between a teacher's learning culture and off-the-shelf programs, which

Table 1. Four learning cultures

The Learning Paradigm	The metaphor underpinning the learning culture
Platonism (Socratic)	Learning is remembering
Objectivism (Aristotelian)	Learning is recording
Behaviourism	Learning is training
Constructivism	Learning is building

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