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PERSONA-BASED EXPERT REVIEW OF AN E-LEARNING SYSTEM FOR ADULTS

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ABSTRACT

In the last decade, e-learning has witnessed an unprecedented expansion at all levels and modes of education at a global level. Once the barriers of the internet access are overcome and the basic digital literacy of learners is achieved, e-learning has the obvious potential to make adult learning more effective, efficient and pervasive. In order to entirely exploit the potential of e-learning systems, besides content and technical feasibility, some additional aspects, such as acceptance and usability issues, have to be taken into account. One of the possible ways to provide for good usability and acceptance of an e-learning system is to involve the target users of the e-learning services throughout the entire design and development processes. However, this can be both time- and cost-consuming. Therefore, in this paper, we present how persona- and scenario-based usability expert reviews can be used to test and improve the usability of an e-learning system on the case example of the E-CHO e-learning system.

Index Terms— e-learning, adults, participatory design, usability, expert review, persona, use-case scenario, persona-based review, scenario-based review, E-CHO.

1. INTRODUCTION

Theme 7 of the Hamburg Declaration on Adult Learning [1] was promoting adult learning through the development of media learning. Fostering the use of new technologies in the form of distance or online learning was recognized as one of the main factors that will help in widening access to adult education throughout the world. Hamburg declaration [1] also called for the revising copyright and patenting regulations to promote the distribution and access to the learning resources.

The use of new information and communication technologies (ICT) in learning and teaching is generally known as “e-learning”. This is the umbrella term that deals with technological, organizational and didactical aspect of the ICT use in learning. In the last decade, e-learning has witnessed an unprecedented expansion at all levels and modes of education in most developed countries in the world. It has created new didactical concepts and new opportunities to easily access the knowledge. The ICT support has resulted also in more effective organization of the learning processes.

2. THE POTENTIAL OF NEW LEARNING TECHNOLOGIES TO ENHANCE ADULT LEARNING

Once the barriers of the internet access are overcome and the basic digital literacy of learners is achieved, e-learning has the obvious potential to make adult learning more effective, efficient and pervasive. Its major strength for adult education is greater flexibility regarding time space, pace, content and learning methods. The basic mode of content delivery in e-learning is accessing the learning objects (being in a variety of media formats) in virtual learning environments (VLE). VLE offer tools for teachers to give online lectures and for learners to follow courses using the electronic learning material and doing experiments in virtual laboratories. Learning objects provide the opportunity for teachers and learners to (re)use and (re)arrange learning materials in different orders – thereby creating different courses or course units. This is very suitable for adult learners, since it can provide the appropriate content to the students with different levels of background knowledge.

The quality of e-learning for adults depends not only on products, such as learning content, or services, but also on the interactions of the learner with the contents, tasks, tutors and other learners. The recent wide use of the Web 2.0 technologies (internet as a platform for information sharing, interoperability, user-centered design and collaboration) in learning has resulted in some major changes in these interactions - which provided the development of didactic concepts characterized in the term “collaborative learning”.

Collaborative learning is one of the major didactical opportunities of adult learners, because it explicitly supports creation, collaboration and communication. It was presented as such by Beckman [3], but was researched even before. Collier [4] used the term "peer-group learning" while Cooper [5] called it "cooperative learning". Fiechtner and Davis [6] used the term "learning groups". Common to all these studies was a framework of methodically planned and engaged organizing of groups (the formation of groups, with a small number of up to five participants in each group), supporting the groups in the planning and proceeding of group work, the preparation of instructions for group work, performing check-ups of group work, and providing help with uncooperative members, etc.

Collaboration in a social media environment is not limited to a certain space, a particular time and a small number of participants. Collaboration is considered as any process of working with others and having a common objective. The collaboration tools that are available for supporting and promoting participative behavior are not sufficient for the group to learn. In a search for the concept of collaborative learning in the social media environment Garrison et al. [7], Freire [8] and Wells [9] argued that within collaborative learning environments a critical discourse is of great importance. Rosen [10] in his book on the culture of collaboration proposes ten cultural elements that support value creation: trust, sharing, goals, innovation, environment, collaborative chaos, constructive confrontation, communication, community, and value. Since the collaboration culture requires a developed personality, capable of critical reflection, with wide-ranging social and communication skills, the collaborative learning concept is particularly suitable for adult education [11]. In different forms of collaborative learning the special emphasis should be put to the user interface and also acceptance and usability issues of the virtual learning environments.

The very same technologies that are used for e-learning can also distract concentration and cognitive attention that is crucial for learning to take place. Even more, digital technologies can pose a serious threat to the user when used without limits. Today people in the developed countries are constantly online and they are using numerous computer and mobile devices channels for multitasking. Being online, we can text, chat, browse, share, post, tweet, shop and prepare a presentation literally at the same time. We have multiple virtual selves, sometimes fully formed avatars, residing in the internet. This does not only change what we do, but it changes how we relate to ourselves, and it deeply changes our relations to others. Psychologist Sherry Turkle, in her recent book [12] said that we are getting used to a new way of being alone together – people want to be with each other, but also elsewhere, connected to all the different places they want to be. Pervasive use of internet and the emergence of constant mobile connectivity in has resulted in alienation, lack of reflective communication, user's inability to focus, demand for quick and simplified answers, incapacity to grasp deeper concepts and more and more also in addictive behavior, explains Sherry Turkle.

Never-the-less, new technology can be used to provide many learning programs to adults that could not participate in education. It can also be an important basis for providing information, guidance and counseling.

3. PARTICIPATORY DESIGN FOR E-LEARNING SYSTEMS

Despite all the strengths and opportunities of e-learning, many e-learning projects eventually fail. Usually, research activities during e-learning projects are focused on aspects such as technical feasibility and content. However, in order to entirely exploit the potential of e-learning systems some additional aspects, such as acceptance and usability issues, have to be taken into account.

Numerous guidelines exist for supporting the user-interface designs of e-learning systems for all the different types of users. However, relying solely on user interface design guidelines is not enough [13]. One of the possible ways to provide for good usability and acceptance of an e-learning system is to involve the target users of the e-learning services throughout the entire design and development processes [14]. The approach of design which actively involves users in the design and development process is known as a participatory or cooperative design [15]. Participatory design is more effective when users are continuously involved throughout the development process – from the conceptualization phases until the very end i.e. testing the new technology together with the users. However, this can be both time- and cost-consuming. In the situations where price and fast delivery are critical, researchers suggest using expert reviews [16] and [17].

4. EXPERT REVIEWS

Expert usability reviews are based solely on the usability expert's extensive experience, mainly form usability testing. They are based on well-known and recognized usability guidelines and not on expert's self-invented ones. During the CUE-studies, Molich found out that one expert is enough for an expert review. Even though, additional experts might found more usability problems, they are not worth the added expense [18]. Expert reviews do not involve end-users. In order to make experts think like end users, Molich suggests persona- and scenario-based expert reviews.

But, before we explain these types of expert reviews, in the next chapter we will explain what personas and use-case scenarios are.

5. PERSONAS AND USE-CASE SCENARIOS

A persona is a fictional individual created to describe a real end-user. Personas are designed to give real users life and help project team members feel connected to them. When talking about experts and expert reviews, personas are useful to make experts see the possible problems with the product through the eyes of the persona, which is a representation of a real user. A persona, which was created for the e-learning study is shown in Table 1.

Table 1: A persona representing a real user

Name:	Ana Arsova
Age:	51
Education:	College in economic sciences.
Languages:	Her mother tongue is Macedonian and she is fluent in Russian.
Location:	Small town in the central part of the country.
Computer technology:	She regularly uses a PC, both at work and at home. She has some basic computer knowledge and uses e-mail, Skype and Facebook, mostly for communication. Additionally, she uses the Internet to search for various types of information.
Mobile technology:	She owns a smart-phone, but uses it only for calling, texting and sending MMS.
Disabilities:	Wears glasses.
Family:	Married with two grown-up children. Lives alone with her husband. Her daughters live in another country.

On the other side, use-case scenarios provide examples of usage and specify how real users carry out their tasks in a specified context. An example of a use-case scenario that was created for the e-learning study is:

"*Recently, Ana's company was bought from a Slovenian telecommunication company. For better communication, Ana and her co-workers need to understand Slovene. Since there are no language courses organized in her town, she decided to take the Slovene lessons on the Internet.*"

6. PERSONA- AND SCENARIO-BASED EXPERT REVIEWS FOR E-CHO E-LEARNING SYSTEM

Persona- and scenario-based expert reviews help experts see the product or system from the perspective of the real users and the context of usage. Persona-based usability expert review takes into consideration the type of the end-user who is interacting with the system or the product, in this case the E-CHO (Figure 1) e-learning system. This type of usability expert reviews consider end-users familiarity of the terminology, information architecture, navigation system and the graphical user interface design of the system end-users interact with.

Figure 1: E-CHO learning system (Source: http://www.e-slovenscina.si/learner/)

In order to evaluate the usability of the E-CHO e-learning system, we have created three different personas:

- Ana Arsova (shown in Table 1)
- Pablo Villa and
- Aleksandar Ilic.

For each persona we additionally created use case scenarios:

- Ana Arsova, works in a Slovene company and needs to learn the language to easily communicate with the headquater.
- Pablo Villa, an exchange student, studying electrical engineering in Maribor. He wants to learn Slovene to easily communicate with his Slovene friends.
- Aleksandar Ilic, a Serbian software developer, who moved to Slovenia, because he lost his job in his home country.

After we have completed the personas and use-case scenarios for the E-CHO e-learning system, we identified a

set of critical tasks that should be conducted during the evaluation study.

7. FUTURE WORK

In our future work, already defined critical tasks will be conducted in order to identify the specific task issues and the general usability issues of the E-CHO system. In order to evaluate the E-CHO's usability, we will use the well-known and widely-recognized Nilsen and Molich usability heuristics [19]. All usability issues found during the review will be gathered in a report. The report will provide detailed information about the usability issue found and a screen shot which captures the usability issue. Additionally, the report will include suggestions and/or recommendations to improve the usability issues found in the E-CHO system.

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