Abstract. User experience, usability and HCI experts around the globe have been developing and implementing user centered design (UCD) methodologies to help designers and developers design more user friendly interfaces. The results are tremendous and impacting, people without technological backgrounds are able to purchase plane tickets online, carry their online shopping, videoconference with their loved ones and even publish their own blogs, amongst other achievements. However, there is still great room for improvement, and our best practice case will demonstrate how going beyond designing interactions and into designing relations (HCR), will help fill in the other gaps related to user experience, not covered in current UCD methods. Designing relations brings in, integrates, the emotional dimension of the user, one that often proves to be more valuable than the traditional effectiveness, efficiency or satisfaction dimensions of used brought by UCD methods.

Introduction

Industries like videogames, cinema or marketing are good examples of what we call ‘emotional designers’. Traditionally, these sectors have intentionally used emotions to create engaging experiences in users and have achieved great success, as we can see from the fact that videogames or movies are essential products for most of the population.

Unfortunately, most of the educational designers, in many cases technologists with few notions about learning, may not have been so conscious of the potential and the power of emotions. The field of education in general has lacked the work of professionals like visual artists, psychologists or the users’ researchers who usually work with ‘affective design’. Thus, the cognitive or functional focus has traditionally been the main key for instructional and technology designers, who have given lower importance to the affective dimension. This point collides with the idea supported by multiple research studies (Axelrod et al. 2005) (Baylor, 2005) (De Lera et al. 2005) (O’Regan 2003), that state that the cognitive and affective layers can not be separated and consequently, in order to enhance learning, we have to promote appropriate affective states.
In fact, designers tend to unconsciously propose a particular emotional scenario when they design virtual learning environments, but these decisions are not generally based on affective learning theories or insight. For example, specific decisions like the use of colours and media in the interfaces have a direct impact on students’ affective states, though designers may not be aware of it. In this sense, our proposal is to show designers the emotional effect of their decisions and persuade them to be supported by the corpus or experts in affective design. The field of Human-Computer Interaction (HCI) reflects a similar paradigm. To date, most studies have been centred on the analysis of the interaction under functional variables aimed to achieve efficiency in the tasks we usually do with computers. In this sense, Timo Partala (Partala 2005) as many other authors, have highlighted that we humans do not interact with machines as if they were a set of technological components but we do it by seeing them as social and emotional agents. We deal with machines as if they were some kind of beings with conscience and emotions. Ideally, as Picard suggested (Picard 2004) we should design interaction as if we were designing a ‘human-human’ relationship.

Our proposal is to be part of this shift in paradigm, and bring up the concept of ‘Human-computer relationships’ (HCR) instead of Human-Computer Interaction (HCI). In a few words, it is about designing applications that develop conversations and talk to us as humans that listen and help us, give us surprises, try to make us happy, take advantage of our senses and any of our natural movements to improve our communication and performance, understand our needs, roles and capabilities to support our tasks, etc. To sum up, is about realizing that users are not mainly concerned with functionalities or whether applications work perfectly or not, but on how these global experiences improve or make their lives better. Is about changing the focus: from technology as in HCI to human needs and expectations in our proposed HCR.

The so-called ‘meaningful learning’, understood as a personal reusable knowledge that makes sense in our lives, is only possible if we are able to generate emotional experiences through the design of appropriate technologies. Our objective in this paper is to share our findings and best practices in the identification of elements and methodologies for the design of authentic emotional experiences that support meaningful learning.

**Defining best practices and moving to learning as a global experience**

The work of many researchers in the discipline of Affective Computing has contributed to the new know-how on the affective attributes that computers can incorporate. Affective computing can be defined as "computing that relates to, arises from, or deliberately influences emotion" (Picard 1997). Online learning can be benefited from these advancements, since most of higher education institutions and technologic departments still have not integrated this affective dimension for a number of reasons.

If we seriously analyze what universities are offering in their e-learning systems we will realize that learning situations are mainly based on providing four things: content (mainly textual), classic tools for communication like forums, evaluation systems based on traditional face to face education and a few innovations mostly based on web 2.0 tools. But we are using the same scheme we already used many years ago when computer capabilities were much more limited. We have translated the scheme of face to face learning to online education but now we do not have physical teachers that can improve their classes by creating emotional engaging experiences as they did in the classroom. Now, through computer-mediated learning, we are designing environments as if computers were simple machines that are only able to provide content. That way, the learning experience becomes just a cognitive experience and can not benefit from the power of emotions.

Emotions are the fuel for learning (Zaharias 2009). Creating an emotional experience is essential if we want our users, our students, to use most of their capabilities, to enjoy their studies and to really satisfy their expectations. Nowadays, we are using marketing to make students believe that through online learning they will receive a very innovative and powerful learning experience, that they will use innovative and very friendly technologies, etc., but most of the virtual learning environments and learning initiatives are a bit discouraging in these aspects: simple text is the main media on many sites, students can only use computers but not mobile phones or other devices for learning, the use of images, video and music does not take advantage of its natural possibilities for assimilation and engagement, just a few environments offer options to personalize learning and learn from students particular
interests, technologies are rarely based on human features like touch and other senses are misused, etc. In conclusion, the fact that students live a different experience from what they were expecting based on marketing, generates disappointment. No matter that we have the best teachers, the newer learning tools, good quality content… if the global experience is disappointing many students will not come back to the e-learning circuit.

In fact, the consideration of online learning as a global experience is a crucial aspect for success. In the line of traditional cognitive assumptions, it has been considered that the learning experience is only related to the specific courses or the training situations we offer students. As such, most of the quality control in e-learning is based only on the evaluation of content, learning materials, teachers, technology for learning… But while in traditional face to face education no one doubts that the best teacher would fail in a cold 0ºC classroom, or that the best books do not guarantee success if learners for example do not have the opportunity to talk or to play with their peers, it seems we do not pay the same attention to additional student services in online learning. Much of the effort we make to create engaging environments has to do with these additional services that support training. Some examples: to support the community of learners by motivating them and creating a sense of belonging, to provide options for students to show their identity and know others’ identities, to empower their brand feeling in order to make learners feel comfortable with their universities and campuses, to continuously integrate innovations to promote the sense of being in a leading institution...

More specifically: what kind of best practices are we promoting?

- Introduce affect as a transversal area of design. Create a methodology to integrate an affective design that can be applied by all the teams or departments that are involved in design.
- Reflect on the principles that are related to emotional experiences and how they may be reflected in your e-learning system: expectations, promises, enjoyment, personalization, innovation, aesthetics, community, etc.
- Support designers (instructional, graphic, technological) in the emotional design of environments. A possibility is to provide them with guidelines aimed to design affective e-learning environments, as the Universitat Oberta de Catalunya is currently doing (De Lera et al 2008).
- Think of computers as human-social agents that can support us. Create a personality for them. See how we build conversations with them as a Human-Computer Relationship instead of a machine interaction.
- Introduce interfaces that are based on natural movements and expressions. Look at the market and discover how technologies like eye-tracking, hands and body movement, multi-touch screens, videogame consoles like Nintendo Wii or PlayStation, etc. are dealing with natural movements and how engaging they are for users.
- Focus on human senses. Why shouldn’t we use music, sounds, tactile experiences or even flavour and smell to invent new experiences? Especially think of augmented reality as a direct and new enriched way to have a relationship with reality. Put the digital information in the same place where reality is happening!
- Use the power of multimedia to provide a richer experience. Think of music, sounds, right speech and videos as a way to have more engaging experiences.
- Offer students the possibility to learn from several devices: computers, netbooks, ebooks, mobile phones, TV, videogames, etc. Playing is essential to learning. E-learning is about learning every time, everywhere, and now, everyday.
- The internet is moving to objects; this is being called ‘the internet of the things’. Objects are also emotional agents for humans. Use them to complete the emotional experience and especially use them to improve the brand feeling of learners.
- Focus on the whole learning experience; go beyond the concept of course. Understand that success in learning goes beyond success in training situations.
- As with other products, in online learning users buy ‘experiences’ with certain values like open source, collaboration or innovation rather than a specific product. If users really buy values it will be essential to know which of these values are our students requesting and design a global emotional experience based on them.
- Use an interdisciplinary team to build engaging emotional experiences. Technologists, educators, psychologists, experts in pedagogy, designers, marketing experts, etc., all of them can contribute with a different view on design in order to create an holistic experience. Pay special attention to visual artists as a new profile that may strongly contribute to design such emotional layer in a more creative way.
• Experiment and innovate. As an example, the field of artificial intelligence is going to change the way computers interact with us. Computers are becoming more and more intelligent, and these capabilities could be used for them to learn what we need, what we expect, how we feel and they could respond us according to that.

• Assess the learning experiences from an emotional point of view. There are many methodologies that can provide affective data: simple surveys, physiological data, visual data based on facial or gestural expressions (De Lera et al 2007), biometrics and brain-wave data, multimodality as a combination of these methodologies, etc. To start with, do not focus too much on the high reliability of the results; focus on improving your way to gather affective data.

Conclusions

The Open University of Catalonia has just started to introduce the idea of ‘Affective Design’ within its online learning design. The aim is to integrate a wider idea of what the global experience of learning is, and here emotions are a key issue because they are related to the main indicators of impact in any learning experience: expectations, values, engagement, etc. To transform our traditional cognitive-oriented designs into an emotional experience requires working from different points of view as our best practices propose, and opening-up our minds to art and creativity as the new added-value for online learning.

References


