

The Importance of Emotional Design to Create Engaging Digital HCI Learning Experiences

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ABSTRACT

This paper explores the theory of applying emotional design via Technology Enhanced Learning (TEL) tools within an educational environment for positive HCI student engagement. It aims to explore how emotionally designed interfaces can engage the learner on a positive level. The past decade has seen major advancements in technology acceptance; the current generation of learners are technology active within the stream of virtual communication (social networking, texting, messaging etc.) but fail to transfer these skills into an academic environment when learning. This paper explores how emotional design can be used to improve the learning experience for digitally engaged students.

CCS Concepts

Human-centered computing; Interaction Design

Keywords

Emotional Design; Affective Design; Technology Enhanced Learning; Multimedia Learning

1. INTRODUCTION

Engaging technically proficient learners can be a serious challenge. According to Prensky learners apply a narrow range of technologies when approaching academic learning as opposed to outside the classroom [17,18]. Kivunja [7] calls for educators to implant digital technologies in their pedagogical practices in order to engage, motivate and boost the benefits drivable from interaction and learning with digital technologies. This paper explores the application of emotional design to Technology Enhanced Learning (TEL) tools within an educational environment for positive student engagement with HCI material.

2. EMOTIONAL DESIGN

Although some would say that design has always been emotional [24] the concept and theory of emotion in design products has been a central issue in design since the 1990's [4]. Design and emotion research have branched out from product design to become multidisciplinary, being adopted in human computer interaction, visual design, and user design. McCullough [11] outlines a wave of research that has grown from these foundations and begun to examine the emotional path taken by the user, exploring the theory of emotional design interactions for interactive experiences and the moment gratification or pleasure takes place [16]. Gratification and/or pleasure can be clearly seen in the use of rapid communication technology by modern learners, whereby the experience created by the person is almost more important than the interface itself [2,19]. Interaction designers are

strongly embracing the need for considering the emotional experiences of the user [12,13,22]. This approach could be modified to create engaging TEL tools that connect the learner with the experience. Recent studies looking at emotional design in multimedia learning indicate that this may be a fruitful research and design direction [20,15].

Human emotions are derived from our inner representations and interactions with external factors, such as people, places, objects and things [22], they adapt and change as we interact with them throughout our lives. The majority of research conducted into emotional response toward products is focused around the stream of affect (feelings) and cognition (thoughts). Findings [6, 13, 5] suggest that affect and cognition have an enormous effect on how we interact with products and the emotions that they elicit can change the experience dramatically. A number of frameworks and models have been developed to try understand behavioural processes in order to trigger and record an emotional response in relation to design [6, 12, 3, 22, 15]. This conceptualisation of emotional design has been embraced by the HCI community. It is now also the time for it to be explored in the design of technology enhanced learning experiences.

3. TECHNOLOGY ENHANCED LEARNING (TEL)

Educational practitioners are always evolving, adapting to new experiences, technologies and reflecting on their role as educators in order to engage digital literate learners [23]. They are entwined in researching, supporting and facilitating new forms of education through the use of technology at the heart of their pedagogy [1]. Recently research has begun to merge both Technology Enhanced Learning (TEL) and emotional design, in an attempt to explore the benefits of emotional design in developing multimedia learning experiences [21, 10, 8, 15]. The use of emotional design in multimedia learning is in constructing the interface in a more attractive way by enhancing the graphics to be more visually appealing and engaging. This can be achieved through the use of colour, pleasing interface design and the use of anthropomorphism [10]. Positive emotions can enhance the learning experience by the learner perceiving the task to be less difficult [12,14] while increasing both motivation and learning outcome [20]. The Intergraded Cognitive Affective Model of Learning with Multimedia (ICALM) by Plass and Kaplan [15] echoes this. The focus of this model is that both affective processing and cognitive processing are interwoven and conjoined, suggesting that successful multimedia learning must arouse and take into consideration both affect and cognition, while

also being careful not to overload working memory [9]. Taken together this suggests that emotional design in TEL is an important concept to take into consideration when designing interfaces for multimedia learning.

4. CONCLUSION

As the field of HCI diversifies and develops, HCI education has the potential to become complex and overwhelming for learners. The adaptation of emotional design when approaching the development of TEL tools for HCI education can increase not only the learners positive engagement but facilitate both comprehension and transfer of knowledge. Technology is becoming more entwined and personalised in learner's daily lives, with the majority of these interfaces being designed using advanced principles of user experience, therefore it is necessary for emotional design to be considered as a change agent in the development of technology enhanced learning tools for HCI education.

5. REFERENCES

- [1] ALT, 2010. What is learning technology? Available at: <https://www.alt.ac.uk/about-alt/what-learning-technology> [Accessed April 11, 2015].
- [2] Coates, T., 2006. Greater than the sum of its parts. In San Francisco: The Future of Web Apps, San Francisco.
- [3] Desmet, P. & Hekkert, P., 2007. Framework of product experience. *International Journal of Design*, 1(1).
- [4] Desmet, P. & Hekkert, P., 2009. Special Issue Editorial: Design & Emotion What Inspired the Interest in User. , 3(2), pp.1–6.
- [5] Van Gorp, T. & Adams, E., 2012. *Design for Emotion*, Elsevier.
- [6] Jordan, P.W., 1999. Pleasure with products: Human factors for body, mind and soul. *Human factors in product design: Current practice and future trends*, pp.206–217.
- [7] Kivunja, C., 2014. Theoretical Perspectives of How Digital Natives Learn. *International Journal of Higher Education*, 3(1), pp.94–109.
- [8] Kumar, J.A., 2014. The Emotional Effect of Multimedia Induced Emotions on e-learning among Polytechnic Students. In pp. 47–57.
- [9] Mayer, R.E., 2009. *Multimedia Learning*, Cambridge university press.
- [10] Mayer, R.E. & Estrella, G., 2014. Benefits of emotional design in multimedia instruction. *Learning and Instruction*, 33, pp.12–18.
- [11] McCullough, M., 2005. *Digital ground: Architecture, pervasive computing, and environmental knowing*, The MIT Press.
- [12] Norman, D.A., 2004. *Emotional Design: Why We Love (or Hate) Everyday Things*,
- [13] Norman, D.A., 2007. *Emotional design: Why we love (or hate) everyday things*, Basic books.
- [14] Plass, J.L. et al., 2014. Emotional design in multimedia learning: Effects of shape and color on affect and learning. *Learning and Instruction*, 29, pp.128–140.
- [15] Plass, J.L. & Kaplan, U., 2016. Emotional Design in Digital Media for learning. In *Emotions, Technology, Design, and Learning*. Elsevier Inc., pp. 131–162.
- [16] Polaine, A., 2010. *Developing a language of interactivity through the theory of play*.
- [17] Prensky, M., 2008. Digital game-based learning.
- [18] Prensky, M., 2001. Digital Natives, Digital Immigrants Part 1. *On the Horizon*, 9(5), pp.1–6.
- [19] Reilly, T.O., 2005. what is Web 2.0? , pp.0–48. Available at: <http://oreilly.com/web2/archive/what-is-web-20.html>.
- [20] Um, E. et al., 2012. Emotional design in multimedia learning. *Journal of Educational Psychology*, 104(2), pp.485–498.
- [21] Um, E. & Plass, J.L., 2010. Emotional Design in Multimedia Learning. , (d), pp.1–26.
- [22] Walter, A. & Spool, J., 2011. *Designing for emotion*, New York: A Book Apart.
- [23] Wheeler, S., 2015. *Learning with 'e's: Educational theory and practice in the digital age*, Crown House Publishing Ltd.
- [24] Yagou, A., 2006. Critical reflections on design and emotion. *Proceedings of the Design Research Society ...*, pp.1–8.