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Using Augmented Reality, Artistic Research and Mobile Phones to Explore Practice-based Learning

Introduction

Mobile devices like smartphones, tablet computers, and wearable devices have been widely adapted and new technologies are constantly consumed. Pachler and colleagues (2010) clearly positioned that mobile learning is a rapidly emerging field of education research and practice and that developing theoretical and conceptual frameworks to explain the complex interrelationships between learning, everyday life and new technologies is a complex endeavour. Cook (2010) argues that one of the aims of design research is to identify and model technology-mediated, social learning and behaviours in order to design tools that support and promote the practices under investigation. While Adams and colleagues (2013) illustrate that these types of research activities for mobile technologies as boundary crossing that negotiate between different communities and context as a means to support and investigate technology-enhanced learning. This paper the use artistic research practices as means to further explore design research for education in two on-going research projects. Drawing from Kozel's (2011) view of artistic research as a convergence of materialities, which allows the research to be pulled in different directions with the notion that vision is material, as is the tactile engagement with objects; concepts have their own materiality, and movement provokes a dance of materiality and meaning. Connecting mobile learning to a kinaesthetic approach rather than the visual addresses the convergence between the virtual and the physical world and provides a novel way to investigate mobile learning. Our research aim is to explore how augmented reality with mobile devices coupled with artistic research be used for practice-based education. The objective is to investigate if these diverse practices can be a stepping-stone for larger mobile learning projects that can leverage practice-based learning with mobile devices into more sustainable and scalable educational experiences.

Background

Over the last year as part of two on-going research projects; Living Archives and AffeXity an ancillary investigation of how this research could be used for supporting practice-based learning that leverages 21-century digital skills with diverse groups of learners is being conducted. Living Archives[1] is research project that investigates the role of the public archive by performing memory, connecting open and diverse data through participatory design. While the AffeXity project explores augmented choreography in cities, and a-fixity as an urban condition. The core of these two project has grown from artistic research, that includes a set of overlapping practices: artistic practices of dance improvisation, video shooting, digital image editing and sound composition, combined with the daily practices of moving through a city and using mobile devices (Kozel, 2012). Our interest is to position mobile learning research into these on-going projects that serve multiple aims of the host projects while providing and test-bed for design-based research for education.

Description of Interventions

Research was conducted in three workshops focused on practice-based learning with diverse adults that ranged from amateur dancers, high school students, and university students. The three of the interventions were design workshops were the researchers, professional dancers, and choreographers, and the learners co-created experiences that ended with a public exhibition. The first workshop was with six adult amateur dancers that are part of a physically disabled organisation. The second workshop was with high school students from the local performing arts school. The third workshop was part of a University mobility for the Baltic countries, where design students worked with the technology in the city. Each of these workshops followed a general participatory design process where we worked in a professional environment (the first two at the local dance company the other at the university) with a mixed team of researchers, professional dancers, choreographers, and the learners. For the workshops we conducted short pre and post surveys to determine the level of experience of the learners with mobile augmented reality, opinions about the workshops for practice-based learning. Additionally, we video documented the workshops and conducted

[1] http://livingarchives.mah.se/

group after action reviews of their experiences. For the first two workshops we also conducted a survey with the audience in order to get some insight on performance.

Initial Results

Our initial findings point towards benefits of mobile learning for practice based learning for kinaesthetic activities that leverage both the physical and visual aspects in these cases dance. This may have significance, since the value of mobile learning is tied to the affordances that these technologies offer rather then the anyplace anytime metaphor. Other findings from the work focus on the process of digital creation and the tools used. For these interventions, we focused on commercially available application that work on standard smartphones (Android and iOS) and a web-based tool, yet for collaborative work these tools proved inefficient. From the learning perspective, most of the students had some familiarity with the tools, but less experience in creating digital content in a formal sense in terms of video shooting, image making, and sound design. From an interaction design perspective, a multitude challenges were observed in the design of augmented reality locative performances in terms of having groups of the audiences vying for the same tag to trigger the digital component, the overlapping of audio streams, and the tension created by the live performers and their digital avatars. Designing for group interaction where each user has a device and can move freely around provides orchestration challenges that can range for collaboration to cooperation (Perttula et al., 2013). In the case of the high school students, the majority of the students are familiar with producing media from an informal practice but have no formal training in media practices.

Conclusion

The strength of coupling artistic research to DBR is the acknowledgement that design research requires tensions that include successes and failures. We see these interventions as technology sketches that provide a way to balance the research aims with products and services that allow more iterations that solve the design problem.

References

Adams, A., Fitzgerald, E., & Priestnall, G. (2013). Of Catwalk Technologies and Boundary Creatures. *Transactions on Computer-Human Interaction (TOCHI*, *20*(3). doi:10.1145/2491500.2491503

Cook, J. (2010). Mobile Phones as Mediating Tools within Augmented Contexts for Development. *International Journal of Mobile and Blended Learning*, *2*(3), 1–12.

Kozel, S. (2011). The Virtual and the Physical: A Phenomenological Approach to Performance Research. In M. Biggs & H. Karlsson (Eds.), *The Routledge Companion to Research in the Arts-Routledge* (pp. 204–222).

Kozel, S. (2012). The Fibreculture Journal, 1–26.

Pachler, N., Cook, J., & Bachmair, B. (2010). Mobile learning: structures, agency, practices.

Perttula, A., Tuomi, P., Kiili, K., Suominen, M., Koivisto, A., & Multisilta, J. (2013). Enriching shared experience by collective heart rate. *International Journal of Social and Humanistic Computing*, *2*(1), 31–50.