Towards design guidelines for innovative learning environments

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ABSTRACT

Activity within innovative learning environments (ILEs) - ecosystems that include learners, teachers, pedagogical practices, digital/material resources, buildings and furniture - is indirectly influenced by a range of design choices, such as pedagogical design, social embedding through proposed ways of interacting, and instrumental support. Mobile technologies also form an integral part of ILEs, facilitating chosen pedagogies and social interactions, and supporting seamless learning across time and space. Increasingly, research is being conducted into the learning effects within ILEs, but the diversity and complexity in these environments makes it difficult for researchers and practitioners to identify and understand how tools, tasks and people come together to influence effective learning activity.

Evidence-based design guidelines should be grounded in learning theories that can elucidate the complex links between choices made in design for learning, and their indirect effect on the experience of learners. The Activity-Centred Analysis and Design (ACAD) framework (Carvalho & Goodyear, 2014) provides an analytical framework capable of informing design for learning that conceptualises learning as emergent phenomenon of a complex system. This poster presents the first steps in the development of design guidelines and an evaluation framework for ILEs, using the dimensions of the ACAD framework.

This poster reports on ongoing research, with the first phase exploring the effectiveness of completed studies using the ACAD dimensions of design (set, social, and epistemic design) to explore how emergent learning activity relates to designable aspects of complex learning environments. In it, we present a case design analysis of an effectivity study on two types of support for second language (L2) computer-supported collaborative writing (**epistemic design**) in the Technology-Enhanced Collaborative Learning Space (TECOL, 2019; Raes & Montero Perez, 2019) using ACAD to examine the roles of a collaboration script (**social design**) and a multi-shared visual workspace (**set design**). In this case, a nuanced analysis building on the original insights suggests that the role of collaboration scripts (social design) should not be understood as an isolated factor. Rather, a combination of both the collaboration script (social) and screen share (set) is likely to be stronger influencer of emergent learning activity. Whilst we can tease out differences in the groups with respect to social design, questions emerged about the roles of particular elements of the set design. These questions offer grounds for new explorations and highlight the importance of revealing the underlying values influencing design choices that indirectly influence emergent learning activity, which is not yet well understood.

The second phase of this ongoing research develops and fine-tunes a methodology to suggest effective design choices related to learning activity. The third phase creates and tests design guidelines and an evaluation framework for ILEs.

Author Keywords
innovative learning environments, computer-supported collaborative learning, networked learning, learning design, evaluation

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REFERENCES

Carvalho, L., & Goodyear, P. (Eds.) (2014). *The Architecture of Productive Learning Networks*. New York, NY: Routledge.

Carvalho, L., Goodyear, P., & de Laat, M. (Eds.) (2017). *Place-based Spaces for Networked Learning*. New York, NY: Routledge.

Carvalho, L., & Yeoman, P. (2019). Connecting the dots: Theorizing and mapping learning entanglement through archaeology and design. *British Journal of Educational Technology*.

Raes A., Windey I., Beernaert T., Bonte P., Vanherweghe G., Detienne L., Pieters M., Huysentruyt A., Depaepe F., Desmet P. (In Press*). Towards technology-enhanced, interactive learning spaces in higher education.* In: Spector M. (Eds.), Routledge Encyclopedia of Education. Routledge

Raes, A. & Montero Perez, M. (2019). *Scripting collaborative writing within a multi-shared visual workspace: a quasi-experimental study.* Accepted for presentation at EARLI 2019. Aachen, Germany.

Yeoman, P. (2015). Habits and habitats: An ethnography of learning entanglement. http://hdl.handle.net/2123/13982

Sharples, M. (2009). Methods for evaluating mobile learning. *Researching mobile learning: Frameworks, tools and research designs*, 17-39.

TECOL – Technology-Enhanced Collaborative Learning (2019). Retrieved from https://www.kuleuven-kulak.be/tecol?lang=en

Vavoula, G., & Sharples, M. (2009). Meeting the challenges in evaluating mobile learning: A 3-level evaluation framework. *International Journal of Mobile and Blended Learning (IJMBL)*, *1*(2), 54-75.