Seamless Learning in Lake Constance Region

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Abstract: As part of large-scale project in the Lake Constance region that borders Germany, Austria and Switzerland, seamless learning prototypes are designed, implemented, and evaluated. A design-based research (DBR) approach is used for the development, implementation and evaluation. The project consists of one base project that brings together instructional design and instructional technology specialists as well as (educational) software architects, supporting seven subprojects in developing seamless-learning lighthouse implementations mostly within higher and further education. Industrial partners are involved in all subprojects. The authors are unaware of similar seamless learning projects using a DBR approach that include evaluation and redesign and allow for comparison of experiences by applying DBR across subprojects. The project aims to generate novel seamless learning implementations, respective novel research and novel software supporting different aspects of seamless learning. The poster will present the project design, delineate areas of research and development, and include initial empirical results.

Keywords: seamless learning, design based research, design principles, educational design theory, instructional technology.

Introduction

Kuh [Ku96] coined the term seamless learning (SL), initiating the first phase of SL. The widespread and affordable availability of mobile devices with ubiquitous internet access fostered a second, more technically orientated, phase of SL. Wong [Wo15] points to the lowest common denominator of the two phases: "the continuity of individual learners' experiences across multiple learning spaces, particularly to connect formal and informal learning spaces" (p. 5). Wong also reviews the development of the research field and synthesizes existing definitions: "Seamless learning is when a person experiences a continuity of learning, *and consciously bridges the multifaceted learning efforts*, across a combination of locations, times, technologies or social settings" [Wo15, p. 10]. Consequently, SL draws our attention to the various *contexts* within which learning takes place, reveals respective requirements and asks how to align them in order to allow for SL *across* contexts (e.g., formal and informal learning, personal and group learning, physical and digital etc.). A focus on the transition from one educational context to another (e.g. from secondary to tertiary or further education) adds the lifelong learning

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perspective to SL. A central aim of the project is to identify gaps between various context requirements with the various stakeholders of the subprojects.

Design-based research (DBR) will be employed to simultaneously develop practical, relevant learning designs and empirically-tested design principles for SL. Within the DBR approach, a cyclical process will be followed for problem understanding, design, testing, evaluation and redesign in each of the disparate subprojects [MR12]: During workshops, the authentic contexts of learners' and teachers' experiences will be explored, resulting in requirements drawn up from the identified gaps of the subprojects. These requirements will be synthesised to form a problem landscape showing the different gaps, respective explanatory factors, first design heuristics and design ideas. The agile process of prototyping, testing and evaluation iterations will help to directly understand the impact of different design ideas and give evidence to effective design approaches. Through ongoing formative evaluation, empirical data will be collected on learners' experiences, as well as the outcomes and effectiveness of the design. Through redesign, the prototype will be further developed in different stages and the design improved until sufficiently robust with a context-sensitive theory of SL [De03, Eu14].

As an integrated SL approach, the technological subproject supervising of suitable tools and system support will become an indispensable part of the project. Experiences and identified media gaps gathered in testing and evaluation will optimise tool architecture and best-of-breed functionalities chosen for the next iterations, thus resulting in a more and more elaborated platform as general purpose SL technological-decision-support tool. Over a period of four years, not only will each subproject undergo multiple iterations, but the development of the most suitable practice solutions and design theories will be fostered by staggering subprojects to make best use of prior experiences to enhance subsequent development. Systematic comparison between subprojects aims to overcome the idiosyncratic perspective of a single specific design/principle; crucial for DBR.

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