

Research and Innovation in the Educational Sector – FINNUT

Orchestrating 21st Century Learning Ecosystems

Orchestration refers to the design and real-time management of multiple learning activities. In 21st century's learning spaces, instructors have to orchestrate multiple tools in the best possible way for a fine-grained control of time and progress.

Goal

The aim of the project is to investigate how the insights of learning analytics can inform us to better orchestrate different e-learning tools and learning practices. In particular, we want to explore:

- What kind of learning analytics can help orchestrate a learning ecosystem?
- How can different learning analytics be integrated to improve educators' decisions?
- How do integrated learning analytics contribute to the creation of more meaningful and efficient set of technologies for learning?
- How can different technologies be coupled to help students overcome the difficulties they face while keeping them engaged?

Background

Learning analytics allow instructors and researchers to discover important learning episodes and phenomena (e.g., moment of learning/misconception), get better understanding of learner characteristics/needs; and understand the features that make the learning material effective. There is therefore a need to leverage learning analytics capabilities to formulate a conceptual framework for assisting researchers and instructors in improving the orchestration of e-learning tools and practices as well as harmonizing heterogeneous learning analytics streams.

Knowledge Status

Collecting and managing integrated learning analytics from different resources like video lectures, wikis, quizzes, LMSs and so forth, allow us to better understand students' progress, experience and usage behavior. Exploring important issues like, the dynamics between different e-learning tools, students' prioritization of e-learning tools, the association of different orchestrations with students' learning experience and the combination of different learning practices with different set of e-learning tools, will allow us to construct novel principles and technical knowledge in order to increase benefits arising from the efficient orchestration. Triangulating learning analytics from different learning spaces will definitely allow us to better understand and improve students' progress and experiences. In fact, we contend that the most compelling effect of learning analytics lies on their integration and synthesis in order to portray students' learning experience.

Methodology

In order to cope up with the research questions there is a need for empirically-oriented research to develop new knowledge about how analytics allow us to better orchestrate different tools and practices. Evidence-based models, tools and recommendations/guidelines drawn from large scale user-oriented studies will allow us to shed light and pave the way for richer learning experiences.

The empirically-oriented research needs to be utilized in an iterative process of: design, implementation, analysis, and revision. This will allow us to address educational problems in real-world settings, with two primary goals: to develop knowledge and solutions. By iteratively designing different orchestrations, implementing them and collecting/combining diverse analytics we will be able to portray students' progress and interaction with multiple technologies. This will allow us to understand how different orchestrations support students' awareness, experience, participation, and knowledge acquisition differently. Integration of the empirical results and requirements as well as refinement of a framework with practical (e.g., best practices) and technical (e.g., systems' design guidelines) knowledge, will help us to produce research that contributes towards the orchestration of multiple technologies to support better learning and teaching.

Four different case studies have been selected due to their different contexts (university, school, adult education), size (large/small scale) and domains (language learning, basic IT education, teacher education).

Social Relevance

Today there is a huge demand for innovative learning and professional development, with strong impact on schools, academia and industry. This demand is intertwined with the move towards advanced modes of contemporary learning technologies. The project addresses these challenges by generating new knowledge of the use and orchestration of learning technologies.

The top priority of the Future Learning project is to contribute significantly towards enhancement of the current learning services at institutional and social level; an objective with direct influence and relevance to researchers and practitioners (i.e. policy makers, teachers).

Future Learning (2016–2019) is a project led by the Department of Computer and Information Science (IDI) at NTNU, together with the national collaborators from the program for Teacher Education (PLU) at NTNU and the Alphabet King Reading Lab. At the international level, FUTURE LEARNING collaborates with the Computer-Human Interaction in Learning & Instruction (CHILI) at EPFL and the Centre for Languages in Switzerland.

URL: www.ntnu.edu/idi/future-learning

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About the programme

The Programme for Research and Innovation in the Educational Sector – FINNUT, is a ten-year research initiative on education. The programme finances research projects on themes linked to ECEC, primary and secondary school, upper secondary education and training, higher education and adult skills. The main goal of the programme is to develop new high-quality knowledge that is relevant for policy development, administration, the practice field and the individual, to contribute to renewal of the research field, and to encourage innovation in the educational sector.

For more information go to: www.forskningsradet.no/finnut

