FDH3363 Research Methods in Technology Enhanced Learning 5.0 credits

Forskningsmetoder i teknikstött lärande

This is a translation of the Swedish, legally binding, course syllabus.

Establishment

Course syllabus for FDH3363 valid from Autumn 2019

Grading scale

P, F

Education cycle

Third cycle

Specific prerequisites

The course can be taken by PhD students from all research disciplines but aims first and foremost at PhD-students working in TEL.

Language of instruction

The language of instruction is specified in the course offering information in the course catalogue.

Intended learning outcomes

After completing the course, the PhD-student will be able to:

● Analyse and critically examine chosen examples of TEL research studies from a methodological perspective.

● Understand the benefits and challenges of mixing methods.

● Plan and conduct data collection for a TEL-oriented research study that combines quantitative and qualitative approaches.

● Prepare data analysis and integration across methods.

● Improve methodological research skills in TEL empirically as well as theoretically.

Course contents

The pervasive integration of digital technology in education influences both teaching and learning practices, and allows access to data, mainly available from emerging online learning environments, that can be used to improve conditions for students' learning and/or to improve teacher support. Increased access to previously unavailable digital learner data allows us to perform new types of analyses that aim to measure chosen learning and teaching activities objectively compared to the use of more traditional methods that are often based on learners' and/or teachers' perceived attitudes and/or observations.

To better understand how we can harness information and communications technologies to support learners and teachers in educational settings, a methodological shift is required in how we measure technology-enhanced learning (TEL). This shift proposes the use of mixed methods originating from various research fields, such as computer science, informatics and education. In this course, students will first be given an opportunity to analyse and criticise chosen examples of TEL research studies from a methodological perspective. Second, benefits and challenges of mixed methods approaches in TEL research will be discussed and problematized. Third, students will be introduced to chosen mixed methods approaches, including design-based methods as well as emerging learning analytics research methods. These research methods will be taught theoretically, analytically and through practical exercises, where relevant to the PhD students' research interests methods will be applied. In this course, students will plan and implement data collection for a TEL-focused research study that is relevant to their own PhD projects and that employs a mixed-method approach. Finally, students will be expected to prepare data analysis and integration across chosen methods. Overall, the course aims to support PhD students in the development of their empirical and theoretical methodological research skills needed to perform rigorous TEL-oriented research.

Disposition

Three activities will be interwoven:

1. Reading seminars, in total around 4 seminars.

2. Practical exercises in which chosen methods will be practised by using relevant open access toolkits, such as the Sheila toolkit or the Connected learning analytics toolkit to perform learning analytics research.

3. Lectures (1-2) offered by external lecturers.

Course literature

• Creswell, J. W. (2013). Research design: Qualitative, quantitative, and mixed methods approaches. Sage Publications, Incorporated.

Suggested literature

• Andersson, T. & Shattuck, J. (2012). Design-based research. Educational Researcher, 41(1), 16-25.

• Avella, J., Kebritchi, M., Nunn, S., & Kanai, T., (2016). Learning analytics methods, benefits, and challenges in higher education: A systematic literature review. Online Learning, 20(2), 13-29.

• Lang, C., Siemens, G., Wise, A., & Gasevic, D. (2017). Handbook of Learning Analytics. DOI: 10.18608/hla17

• Lee, A., Thomas, M., & Baskerville, R. (2015). Going back to basics in design science: from the information technology artifact to the information systems artifact. Information Systems Journal, 25, 5-21.

• Mor, Y., & Winters, N. (2007). Design approaches in technology-enhanced learning. Interactive Learning Environments, 15(1), 61-75.

• Poth, C. (2018). The contribution of mixed insights to advancing technology-enhanced formative assessment within higher education learning environments: an illustrative example. International Journal of Educational Technology in Higher Education.

• Slater, S. (2017). Tools for Educational Data Mining: A review. Journal of Education and Behavioral Statistics, 42(1), 85-106.

• Viberg, O. Hatakka, M., Bälter, O., & Mavroudi, A. (2018). The current landscape of learning analytics in higher education. Computers in Human Behavior, 89, 98-110.

A number of relevant online sources and relevant to the PhD students' own projects' papers will be offered at the beginning of the course.

Equipment

None

Examination

• EXA1 - Examination, 5.0 credits, grading scale: P, F

Based on recommendation from KTH's coordinator for disabilities, the examiner will decide how to adapt an examination for students with documented disability.

The examiner may apply another examination format when re-examining individual students.

If the course is discontinued, students may request to be examined during the following two academic years.

To complete the course, students must:

● Read the literature and actively participate in the discussion seminars.

● Actively participate in the practical exercises.

● Plan and implement data collection for a TEL-oriented research study relevant to its own PhD project.

● Plan for data analysis and integration of the chosen mixed methods in the study.

● Deliver a paper that presents the conducted in this course TEL-oriented research study, which employs a relevant mixed-method approach.

After completing the course, the student will know how to plan, implement and analyse a TEL-oriented research study, which employs a mixed method approach. The students will know about opportunities and challenges which might appear when performing TEL research. Moreover, the students will know about available methods and toolkits that are relevant for TEL researchers.

Other requirements for final grade

● Active participation in 75% of the research seminars

● An oral presentation of the performed work related to the design of the own study

● Approved paper

Ethical approach

- All members of a group are responsible for the group's work.
- In any assessment, every student shall honestly disclose any help received and sources used.
- In an oral assessment, every student shall be able to present and answer questions about the entire assignment and solution.