Qualifying Exam

Wednesday February 28, 2024 at 1PM, online via Zoom (Remote)

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Effectiveness of the Technology-enhanced Question-based Tutoring in the Context of IT Learning

Chair: Dr. Dave Calvert
Advisor: Dr. Judi McCuaig
Co-Advisor: Dr. Agnieszka Palalas (external - Athabasca University)
Non-Advisory: Dr. Dan Gillis
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Abstract:

In the context of IT and computer science education, tutoring is a vital tool supporting the development of computational thinking and problem-solving skills. Mastering these skills is one of the first and most important steps that novice programmers have to take to be successful in their field. Tutoring is a part of the educational system nowadays that fulfills the need for personalized and on-demand support that cannot be satisfied by traditional classroom teaching.

The implementation of this important task is often entrusted to peer tutors – senior students hired by educational institutions. Peer tutoring is a successful method of supporting students in many ways: educationally (satisfying learners' need for support), economically (satisfying tutors' economic needs), and socially (providing a space for the growth of interpersonal skills). It has, however, several downsides. Inexperienced tutors, instead of guiding and supporting the learners' development, may take over the session and become tellers – focusing on conveying the basic knowledge, and often giving away answers that the learner should come up with on their own. Supporting tutors in their transition from telling to guiding can have a significant impact on the learner's progress, shifting the focus from remembering basic facts to understanding the methods and concepts.

In this proposed work, we will investigate supporting tutors with technological augmentations. The research will result in software that supports tutors to become guides rather than tellers. The technological augmentation will specifically address teaching strategies for guiding through questioning. In order to assess the impact of technological augmentation, we will explore existing taxonomies used in education and define one that encompasses behaviours and actions used in tutoring. Specific characteristics of that enhancement may include but not be limited to support in breaking down the assignment, formulating questions and analogies to guide learners and helping to build an action plan for the learner.