Thesis Project Portfolio

Novel Grading Tool Based on Open Source Software

(Technical Report)

Examining Grading Software Efficacy for Project-Based Deliverables in Higher Education

(STS Research Paper)

An Undergraduate Thesis

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Sociotechnical Synthesis

Further integration of technology within higher education has resulted in non-traditional assignments that current grading tools do not fully support. These non-traditional assignments may include Project-Based Learning (PBL) or Model-Eliciting Activities (MEAs) used in individual and group assessments, commonly used in engineering and design-based courses. To address the issue of evaluating non-traditional assignments, a novel tool is in development to assist instructors and grading teams with evaluating online deliverables. The tool is built upon existing annotation technology, Hypothes.is, and incorporates grading elements, such as custom rubrics, grade annotations containing point deductions and textual feedback, and an assignment release feature that prevents students from viewing annotations before final grade review. Considering that hands-on, project-based assessment is shown to improve learning and provide students with problem-solving experience, it is important to understand the relationship between this technology and higher education courses. This technology is capable of providing within-context and timely feedback for online projects and deliverables and would serve as the primary resource for students to improve their projects. Thus, it is imperative that the tool serves as an effective means of communication from graders to students for feedback and grades, and from student to grader for clarification and regrade requests.

Some STS theories that may apply to this technology and topic of grading is Cressman's Actor Network Theory (ANT) and Woolgar's 'configuring the user', due to the various stakeholders in higher education and the from the perspective of developing software for a future user. To conduct this research, a thorough literature review will be conducted, and data was gathered from two courses that used the tool and analyzed in the UX context using a User Experience Questionnaire (UEQ).

The outcome of this research will provide an analysis of current grading options in the perspective of ‘configuring the user’ and how this idea impacts the final design requirements of different tools. Further, findings from the literature review and data collected from the tool may elucidate better design requirements for technology that assists in evaluating web-based reports. Developing the capstone project allows for engagement with technical knowledge and skills necessary in software development while the STS research allows for analysis and reflection of how actors within higher education use grading tools and gain the most from it. Together, the social perceptions of technology in grading are considered while developing the tool and may be used to support particular design requirements and garner more insight into the social implications of technology in grading, whether they be positive or negative.