

## Understanding Student Engagement through Sentiment Analytics of Response Times to Electronically Shared Feedback

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**Abstract :** The rapid advancement of Information and communication technologies (ICT) is extremely influencing every aspect of Higher Education. It has transformed traditional teaching, learning, assessment and feedback into a new era of Digital Education. This also introduces many challenges in capturing and understanding student engagement with their studies in Higher Education. The School of Computing at Ulster University has developed a Feedback And Notification (FAN) Online tool that has been used to send students links to personalized feedback on their submitted assessments and record students' frequency of review of the shared feedback as well as the speed of collection. The feedback that the students initially receive is via a personal email directing them through to the feedback via a URL link that maps to the feedback created by the academic marker. This feedback is typically a Word or PDF report including comments and the final mark for the work submitted approximately three weeks before. When the student clicks on the link, the student's personal feedback is viewable in the browser and they can view the contents. The FAN tool provides the academic marker with a report that includes when and how often a student viewed the feedback via the link. This paper presents an investigation into student engagement through analyzing the interaction timestamps and frequency of review by the student. We have proposed an approach to modeling interaction timestamps and use sentiment classification techniques to analyze the data collected over the last five years for a set of modules. The data studied is across a number of final years and second-year modules in the School of Computing. The paper presents the details of quantitative analysis methods and describes further their interactions with the feedback overtime on each module studied. We have projected the students into different groups of engagement based on sentiment analysis results and then provide a suggestion of early targeted intervention for the set of students seen to be under-performing via our proposed model.

**Keywords :** feedback, engagement, interaction modelling, sentiment analysis

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