

**Enhancing Students' Learning Experience in Software Development
by Employing Gamification
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In recent years, gamification is recognized as one of the innovative approaches to enhance students' learning experience and stimulate their engagement and motivation in learning STEM subjects. Gamification was adopted in the EM108 Software Development for Engineers, a C Programming module taught to first-year undergraduate students during the second semester of the academic year 2018/2019 at Dublin City University, Ireland. A new Gamification model was developed as part of the Horizon 2020 NEWTON project and deployed in the NEWTELP platform. NEWTELP is an innovative learning management system used to disseminate various types of technology-enhanced learning materials to the students, throughout the entire semester for all learning activities. Students earned gamification points and badges for different learning activities quizzes every week. A leader board is also provided by the NEWTELP platform to stimulate students' engagement. Students can view their gamification achievement and their position in the leader board at any time. A questionnaire was conducted the end of the semester to investigate the impact of gamification on students' learning experience. The results show that more than half of participants (52%) were excited when earning points. A large number of participants (64%) thought gamification is an interesting and useful feature of the NEWTELP system. Over half of students (53%) found gamification makes them more interested in learning programming. Over half of them (53%) found gamification kept them more engaged in the course.