What Role Can Games Play in a Computer Networking Course – A Case Study

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Abstract:

As the demand for computer networking professionals in industry increases, the demand to successfully teach computer networking courses in universities and colleges around the world has risen. Educators face the challenge of engaging students with abstract and highly theoretically technical content that students find to be both dull and boring. One promising approach to address this challenge is to implement a Game-Based Learning (GBL) strategy in networking courses. Including games in a course increases student interest and participation. Games are inherently fun and therefore, most students are inclined to participate in the game playing. Not only do the games help keep students excited and motivated in the lectures, but they can also serve as a means to reinforce key concepts. Moreover, students have a natural competitive tendency with a strong urge to win and therefore, games that are announced in advance as covering prior material can serve as a motivator for students to prepare before class. This paper presents the design, implementations, and outcomes of including a GBL strategy in an Introduction to Computer Networking course. To evaluate the effectiveness of the GBL approach, both qualitative and quantitative data were collected. Surveys and interviews captured student perceptions of engagement and enjoyment, while academic performance (quiz scores, lab assessments, and final exam results) were analyzed and compared to other sections taught with conventional methods. Results indicated that students in the GBL-enhanced course reported significantly higher levels of motivation and attendance along with improved retention of key networking principles.