

Developing Serious Games to Improve Learning Experience of Programming: A Case Study

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Abstract : Game-based learning is an emerging pedagogy to make the learning experience more effective, enjoyable, and fun. However, most games used in classroom settings have been overly simplistic. This paper presents a case study on a Python-based online game designed to improve the effectiveness in both teaching and research in higher education. The proposed game system not only creates a fun and enjoyable experience for students to learn various topics in programming but also improves the effectiveness of teaching in several aspects, including material presentation, helping students to recognize the importance of the subjects, and linking theoretical concepts to practice. The proposed game system also serves as an information cyber-infrastructure that automatically collects and stores data from players. The data could be useful in research areas including human-computer interaction, decision making, opinion mining, and artificial intelligence. They further provide other possibilities beyond these areas due to the customizable nature of the game.

Keywords : game-based learning, programming, research-teaching integration, Hearthstone

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