

## A Study on Puzzle-Based Game to Teach Elementary Students to Code

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**Abstract :** In this study, we developed a puzzle game based on coding and a web-based management system to observe the user's learning status in real time and maximize the understanding of the coding of elementary students. We have improved upon and existing coding game which cannot be connected to textual language coding or comprehends learning state. We analyzed the syntax of various coding languages for the curriculum and provided a menu to convert icon into textual coding languages. In addition, the management system includes multiple types of tutoring, real-time analysis of user play data and feedback. Following its application in regular elementary school software classes, students reported positive effects on understanding and interest in coding were shown by students. It is expected that this will contribute to quality improvement in software education by providing contents with proven educational value by breaking away from simple learning-oriented coding games.

**Keywords :** coding education, serious game, coding, education management system

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