

Universiti Teknologi MARA

**Learning Logical Expression
Simplification via Game-Based
Learning**

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ABSTRACT

Logical Expression Simplification is a method used to simplify a complex logical expression to the simplest form. In order to Laws of Logic can be used to simplify the original expression to the simplest form therefore reducing the number of logic gates required to design the combinational logic circuit. However, most student have difficulties on how to simplify the logical expression. The idea of development a Game Based Learning Logical Expression Simplification is to encourage student to build interest and guide them to a better understanding of how to simplify a complex logical expression. This project implements game element such as timer, score, and challenge to the game. This is a computer-based game that can be played on Windows PC. ADDIE model was chosen as a framework in Methodology because it is a framework used by instructional designer and developers for developing new training program. Usability testing has been made by selecting some UiTM students who are learn Logical Expression Simplification in their syllabus to test the usability of the game. Result showed that most students who answer the questionnaire agree that the game can help and enhance learning Logical Expression Simplification. Analysis of testing also suggested some improvements to be added into the game in the future such as add more games and exercises and make the game available for other platform.

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