

UNIVERSITI TEKNOLOGI MARA

**MATHEMATICAL NARRATIVE GAME
WITH RANDOM SELECTION
QUESTIONS USING INTEGER
LINEAR PROGRAMMING, P29S23**

**NUR DAYANA HUDA BINTI MOHD ZOL
AZHARI, NUR NABILA FARHANA BINTI
MOHD NOH & NUR NABILAH BINTI ABDUL
RAZAK**

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ABSTRACT

Mathematics helps to understand the complexities of the world, such as the patterns in nature, economic system or formulating prediction. Learning mathematics requires learners to have a good understanding on the concepts and problem-solving skills. However, mathematics is often associated with complication and hardly seen in relation to the real world. Because of the hurdles, this perception is currently becoming one of the global issues as many learners choose to not to learn mathematics. Visualizing mathematics concept such as differentiation and integration in real life scenario and providing space for learners to learn while playing can be a suitable practice to persuade learners learning mathematics. Education games can make learning more enjoyable, motivating learners by offering challenges and control over their learning experience. This study aimed to design and develop a game prototype that covers topic of differentiation and integration and utilizes Integer Linear Programming (ILP) to select questions, focusing on maximizing user scores. Method of Analysis, Design, Development, Implementation, and Evaluation (ADDIE) is used mainly to develop the game prototype. The game called CalcQuest Adventure is developed and distributed to eight experts to evaluate its suitability as a tool for learning mathematics concept of differentiation and integration. A verified instrument called Suitability Evaluation Questionnaire is adapted in the study to evaluate CalcQuest Adventure. The result shows that overall mean value is 3.85 that indicates good feedback from experts. CalcQuest Adventure is ready to use for learning differentiation and integration.

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