ABSTRACT

Based on the previous research, there were many researchers which had observed serious game, and some of them had discussed the cognitive skill and motivation behavior on a game. However, some of the researchers had not yet published the research result about the modeling of cognitive skill and motivation behavior players’ classification.

This research presented three genuine contributions that made general approach in serious game. On the first contribution it had been made classification method to understand players’ cognitive skill as long as they played the game. The second contribution was that developing a classification method to show players’ motivation behavior as long as they played the serious game. The third contribution was that completing the both method by using pedagogic artificial intelligence that was teacher sensitivity which had planted in the game to classify players’ cognitive and motivation behavior. It had been developed design and method to classify cognitive skill and motivation behavior based on pedagogic artificial intelligence to serious game that was named CSG (Cognitive Skill Game) and MBG (Motivation Behavior Game). CSG was a game model of serious game to classify players’ cognitive skill based on LVQ (Learning Vector Quantization). MBG is a game model serious game to classify players’ motivation habit based on LVQ. LVQ method usage was used to classification method and multi objective optimization by using assessment weight from the teacher that was called pedagogic artificial intelligence.

The result of CSG modeling research was a model and mathematic function from cognitive skill classification system on a serious game based on LVQ called Cognitive Skill Classification Structure. In the CSG multi objective research, it was found that the player with trial and error character had strong multi objective character. The development of modeling and measurement validation of cognitive skill classification was the development Petri net model for CSG that consisted of 18 places and 18 transitions which had spread in the three models. Cognitive classification measurement by CSG could be called semi valid; it could be seen by part of deviation average equal to 55% and Coefficient of Variance percentage average score not more than 26 %. From the research, it could be concluded that players dominant characteristic when they played CSG were trial and error. More than (63%) players had trial and error character.

The result of the MBG modeling research was a model and mathematic function from motivation behavior classification system on serious game based on LVQ called Motivation Behavior Classification Structure. In the research of MBG multi objective, it was found that the players with mental effort character had strong multi objective character. The development of modeling and the measurement validation of motivation behavior classification was the development of Petri net model to MBG that consisted of 22 place dan 24 transition spread on three model. However, motivation classification measurement by MBG could be called valid, showed by deviation average less than 28 % and percentage average score of Coefficient of Variance not more than 22%. From the research it could be concluded that dominant characteristic from all players when played MBG was active choice. More than half (70%) players had active choice character.

Keywords: serious game, cognitive skill game, motivation behavior game, learning vector quantization,