

Abstract

Piaget's theory states that learning mathematics for Elementary School (SD) aged 6-12 years, tends to manipulate concrete objects and it is difficult to understand abstract objects. The change in learning from conventional to online becomes a problem for learning mathematics. Pedagogical agents bring a new atmosphere to assist students in understanding mathematics learning. Learning media with pedagogical agents refers to learning that is carried out remotely and there is still a lack of teachers in utilizing e-learning technology, causing a lack of creativity in delivering online learning. The system was built with the rational unified process design concept and the design of pedagogical agents using the metacognitive scaffolding method. Agents designed with this metacognitive scaffolding will accompany students' learning in mathematics learning as the function of the scaffolding. To assess how big the impact of pedagogical agents applied in mathematics lessons for Elementary Schools (SD), an experimental research approach was carried out using the Nonrandomized Control Group Pretest-Posttest Design experiment method with the addition of a questionnaire as an indicator of the agent's assessment in testing the scaffolding method. The results show that the pedagogical agent using the metacognitive scaffolding method has a good influence on student learning, has a significant impact on student learning outcomes, and the pedagogical agent with the metacognitive scaffolding method is effective to apply.

Keywords: *pedagogical agent, mathematics, rational unified process, scaffolding metacognitive, e-learning.*