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Usability Evaluation of Methodology Based on Gamification

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Abstract

This paper investigates the effect of cognitive learning styles on the teaching of educational robotics to preschool children. With the use of the GEFT educational tool, the learners were divided into two categories, those who learn dependently (FD) and those who learn independently (FI) from their environment. Then, through an appropriate educational program adapted to the educational needs of the two learning categories and utilizing gamification techniques, the ease of use of the specific methodology is established, both for the learner and for the instructor. The preferred methodology was direct observation, where the observer was able to collect the necessary information through the educational robotics scenario, without participating in the process. The research tools used were a structured observation design for learners, as well as a weighted teacher questionnaire on which the observation design was based. More specifically, it is the weighted Mechatronic System Usability Evaluation questionnaire that was designed and developed by Tsagaris Apostolos and examines the usability of educational robotics systems used by teachers. The survey was based on the five axes that evaluate Usability: Effectiveness, Efficiency, Satisfaction, Ease of Use and Ease of Learning. In conclusion, based on the findings of the research, this particular methodology is easy to use for children and is not influenced by gender and responds equally well to both cognitive learning styles of children. Finally, the training methodology is also useful for teachers.

Keywords: educational robotics, field dependent, field independent, gamification, preschool education