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Inductive Reasoning is Improved in Children Between the Ages of 9 and 11 by Computer-Based Math Instruction

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Description

The evaluation study's findings are presented in this study, which focuses on a computer-based training program for inductive reasoning for students between the ages of 9 and 11 (N=118). The program incorporates mathematical content-based tasks. Based on his theory of inductive reasoning and the concept of "Cognitive training for children," the online training consists of 120 fun problems. The study had 118 participants in the experimental and control groups. In the pre- and posttests, a computer-based inductive reasoning test with 44 multiple-choice questions was used to evaluate the training's efficacy (Cronbach's=.91). The eDia online assessment platform was used to deliver both the test and the training tasks, which used Arabic language and directions. After six weeks of training, the experimental group outperformed the control group significantly on the posttest by more than one standard deviation. In a global setting, the training had a large effect size (Cohen d = 1.71). There was no significant variation in response to the intervention program, as indicated by the non-significant variance of the latent slope. This study demonstrated that students' ability to develop inductive reasoning even at the class level and in a computerized environment from the ages of 9 to 11 was highly effective, regardless of their gender, academic achievement, or original level of inductive reasoning economic standing [1].

One of almost all transversal skills, inductive reasoning (IR) is considered one of the most important component skills. It drives cognitive development, plays a central role in learning processes like knowledge acquisition and application, and it is a good indicator of learning potential. "Inductive reasoning enables one to detect regularities, rules, or generalizations and, conversely, to detect irregularities," says IR, which is involved in a wide range of everyday cognitive activities like categorical generalization, analogical reasoning, causal reasoning, and probabilistic judgment. One way we organize our world is like this. This suggests that school activities should explicitly incorporate the development of IR and especially the improvement of reasoning skills in formalized education [2,3].

According to the reasoning skills are typically taught in school, with a primary emphasis on reading, writing, and mathematics). State that students' reasoning skills in reading and science did not significantly improve between grades 2 and 6, but that "there was a steady increase detectable in mathematics, especially in the first four years of schooling Overall, these results highlighted the importance, sensitivity, and potential of the development of thinking skills in the early years of schooling." Therefore, improving students' ability to think critically should be a real goal in education. 2015). The wide range of abilities that students possess is one of the greatest obstacles to classroom instruction. Training programs are needed that can be used even in classrooms, can accommodate individual differences, and can meet the actual cognitive needs of students. In this regard, face-to-face programs are not very successful, but technology-based training programs can offer practical solutions to these issues. Technology that goes beyond adaptive fostering has the ability to motivate students of the 21st century at a higher level.

The evaluation study's direct conclusion is presented in this paper, which discusses a technology-based inductive reasoning training program for students between the ages of 9 and 11. Based on his theory of inductive reasoning and the concept of "Cognitive training for children," the online training consists of 120 fun problems. The training tasks are applicable during regular school hours as part of the mathematics lesson because they are embedded in all of the problems. We are aware of no Arabic online training program that is empirically proven and focuses on the development of students' inductive reasoning abilities in an educational setting. Despite its significance, there is no universally accepted definition of inductive reasoning. According to the classical interpretation, IR is a type of reasoning under uncertainty (level of confidence) because it involves forming hypotheses about rules and covers the processes of moving from the specific to the general (direction). The latter is the reason it is frequently referred to as the antithesis of deductive reasoning, whose mechanisms are logical (level of confidence) and move from the general to the specific (direction). The most detailed definition was probably published. who thought that IR meant finding regularities by finding similarities, differences, or a combination of the two in attributes or relationships to or between objects. Six IR operations are the result of this: system formation, discrimination, generalization, cross-classification, recognizing relations, and discriminating between relations. IR appears to develop at a relatively young age, but with age, it becomes significantly more effective. IR says that it grows throughout a wide age range, from elementary school through high school. Due to the lack of direct and explicit IR stimulation in schools, the average rate of development is relatively slow at about one quarter of a standard deviation per year. Instead of being guided by explicit instruction, the growth occurs on its own as a "by-product" of instruction [4,5].

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Conflict of Interest

None.

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