

The Role of Questioning Ability as an Indicator of Scientific Thinking in Children Aged 5-9

Authors : Aliya K. Salahova

Abstract : Scientific thinking is a fundamental cognitive skill that plays a crucial role in preparing young minds for an increasingly complex world. This study explores the connection between scientific thinking and the ability to ask questions in children aged 5-9. The research aims to identify and assess how questioning ability serves as an indicator of scientific thinking development in this age group. A longitudinal investigation was conducted over a span of 240 weeks, involving 72 children from diverse backgrounds. The participants were divided into an experimental group, engaging in weekly STEM activities, and a control group with no STEM involvement. The development of scientific thinking was evaluated through a comprehensive assessment of questioning skills, hypothesis formulation, logical reasoning, and problem-solving abilities. The findings reveal a significant correlation between the ability to ask questions and the level of scientific thinking in children aged 5-9. Participants in the experimental group exhibited a remarkable improvement in their questioning ability, which positively influenced their scientific thinking growth. In contrast, the control group, devoid of STEM activities, showed minimal progress in questioning skills and subsequent scientific thinking development. This study highlights the pivotal role of questioning ability as a key indicator of scientific thinking in young children. The results provide valuable insights for educators and researchers, emphasizing the importance of fostering and nurturing questioning skills to enhance scientific thinking capabilities from an early age. The implications of these findings are crucial for designing effective educational interventions to promote scientific curiosity and critical thinking in the next generation of scientific minds.

Keywords : scientific thinking, education, STEM, intervention, psychology, pedagogy, collaborative learning, longitudinal study

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