

DEVELOPMENT OF STUDENTS' DIVERGENT THINKING IN NATURAL SCIENCE CLASSES

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ABSTRACT: Along with theoretical knowledge, practice plays an important role in the formation of young professional qualities of students. Natural scientific knowledge has been acquired for many years due to practical activities. Scientific experience and practical knowledge have been and continue to play an important role in knowing and understanding the environment. It is known that natural science is a science that studies the wide-ranging material world, various features of nature, and is formed on the basis of scientific experience, and practice is the foundation of this science. The practical activity of mankind based on the knowledge of the laws of nature determines the process of knowledge, the progress of science. Practice is the criterion of truth. The need for knowledge arises in practice, and their correctness is checked and confirmed through practice.

KEYWORDS: Divergent thinking, single solution, ideas, information, theoretical knowledge, Natural scientific, physical, social

INTRODUCTION

Divergent thinking is a thought process or method used to generate creative ideas by exploring multiple possible solutions. This usually happens in a spontaneous, free-flowing, “non-linear” way, so many ideas are generated in an emergent cognitive style. In a short amount of time, many possible solutions are explored and unexpected connections are drawn. After divergent thinking, ideas and information are organized and organized using convergent thinking, which follows a specific set of logical steps to arrive at a single solution, which in some cases is the “correct” solution.

Activities that encourage divergent thinking include creating a list of questions, taking time for reflection and meditation, brainstorming, topic mapping, bubble mapping, journaling, tabletop role-playing, creating artwork, and free writing. In freewriting, a person focuses on a specific topic and writes about it in a short, stream-of-consciousness manner.

THE MAIN FINDINGS AND RESULTS

There is a parallel between playfulness and divergent thinking in preschool children. Research documented by Lieberman examined the relationship between these two traits, with playfulness “conceptualized and operationalized in terms of five traits: physical, social, and cognitive spontaneity and a sense of humor.” According to the author, during the study, observing children’s play behavior, they noted “individual differences in spontaneity, joy, and sense of humor, which means the connection between the aforementioned qualities and some factors in the intellectual structure. This study shows that different thinking or creative behavior in childhood playfulness emphasized the connection between actions and behavior in later years, creative teenagers and adults”.

Future research opportunities in this area could examine the longitudinal study of children in kindergarten and the development or evolution of divergent thinking abilities during adolescence and into adulthood, which may substantiate the link between playfulness and divergent thinking in later life. This long-term study can help parents and teachers identify this behavior (or lack of it) in children, especially at an age when it can be reinforced if it’s already shown, or supported if it’s not yet shown.

Although little research has been done on the effects of sleep deprivation on divergent thinking, one study by JA Horn found that even when motivation to perform well is maintained, sleep can affect divergent thinking. In this study, twelve subjects were deprived of sleep for thirty-two hours, while a control group of twelve subjects maintained normal sleep patterns. Subjects’ performance on verbal fluency tasks and a difficult test of nonverbal planning was “significantly impaired by sleep loss,” even after controlling for personal motivation to perform well. This study found that even “a single night of sleep loss can affect divergent thinking,” which “contrasts with the results of convergent thinking tasks, which are more resistant to short-term sleep loss”. Insomnia and divergent thinking studies can be further explored at the biological or chemical level to determine why cognitive function is affected by sleep deprivation associated with divergent thinking, and if the effects differ between subjects. It is deprived of REM compared to non-REM sleep.

CONCLUSION

In conclusion, we can say that when we pronounce the word intelligence, we mean measuring it through tests. But how true these theories are. To what extent can we trust them? We can observe that the questions of this type of tests do not take into account the living conditions of representatives of all strata. Even Alfred Bine mentioned the need to work on the analysis of intelligence tests he discovered. The reason is that the results of these tests are far from the truth. In addition, such tests are aimed at researching only one aspect of intelligence. It has been observed that the results of people with highly developed emotional and practical intelligence do not show good results in these tests. However, today the IQ coefficient has not lost its significance.

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