

## **Effectiveness of employing the lateral thinking strategy during the teaching of geography in developing problem-solving skills**

By

**Sumaya Daifallah Al-Momani**

Faculty of Education/ Curriculum and Instruction department/ Yarmouk University/ Amman, Jordan

Email: [sumaya.19942@gmail.com](mailto:sumaya.19942@gmail.com)

**Hani Hatmel Obeidat**

Faculty of Education/ Curriculum and Instruction department/ Yarmouk University/ Amman, Jordan

Email: [hatmalko@hotmail.com](mailto:hatmalko@hotmail.com)

### **Abstract**

The current study aimed to identify the effectiveness of employing the lateral thinking strategy during the teaching of geography in developing problem-solving skills. The researchers used the quasi experimental design. In order the purpose of the study, the researchers developed a test of the problem solving skill and established its validity and reliability. Sity students were chosen randomly and were distributed into two groups, one experimental (30 students) and the other control (30 students). The results showed that the students of the experimental group who studied according to the lateral thinking strategy were superior to the students of the control group who studied according to the usual method on the problem-solving skill test. The study recommended the need to apply the lateral thinking strategy while teaching geography

**Keywords:** lateral thinking strategy, problem solving, geography

### **Theoretical framework**

To keep pace with these developments of the twenty-first century, it is necessary to focus on the students' mind and to provide them with the ability to criticize, infer, create and other higher-order thinking skills, which are concerned with moving from memory to a culture of thinking. The student's mind and self and how it receives information, processes it, organizes it, employs it and stores it in memory for a long period of time that is easy to retrieve, and the role of the teacher should be changed from the tutor's role that explains information to the role of the planner and designer of the educational process (Beheiry and Abdel-Fattah, 2019).

Lateral thinking is related to the global thinker Edward De Bono, who invented this term, and named it as well to distinguish it from another type of thinking he called vertical thinking, which is based mainly on logic or what humans are familiar with and accustomed to, and his development has depended on this type of thinking On understanding the mechanism by which the brain works from a scientific point of view, that is, with what has been reached through neuroscience (Garwan, 1999).

And (Edward, 2011) defines lateral thinking as the ability to look at issues from their different sides, in ways that differ from logical thinking in order to arrive at renewable creative ideas.

Abd Rabbo (2016) states that lateral thinking is a pattern of thinking that is used by

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those who can break the restrictions of vertical thinking, so that they can see more angles of the problem, enabling them to produce more ideas to solve them. The owner of the lateral thinking style is not satisfied with a single solution, but rather puts possible solutions to the problem, then excludes inappropriate solutions until he reaches the correct solution and then makes a decision (Diab, 2016).

Lateral thinking also helps in developing moral thinking skills, and contributes to solving problems in an unconventional way. It also aims to change the fixed intellectual templates in the mind, rebuild them again and see the problem from all its dimensions. It can be said that lateral thinking is concerned with looking at the problem from all its angles in a comprehensive manner for all its aspects, and not neglecting any aspect or corner of the problem, and it is also interested in reconsidering all information about the old problem in addition to the modern one, thus making a holistic view that leads to solving the problem as a whole (Jihad, 2019, Ibrahim, 2016).

De Bono (2010) confirmed that the learner's practice of lateral thinking skills expands the scope of the imagination, as it enables him to think outside the limits of traditional thinking and confront problems with better ideas to obtain immediate results and generate an idea through other ideas, and to design ways to solve problems in a creative way. Lateral thinking has four basic principles: distinguishing the dominant polarized ideas, studying for a new vision of things, getting rid of the simultaneous control of vertical thinking, and taking advantage of chance.

Kumara (2017) & Aggarwal, (2012) concentrate on the importance of developing lateral thinking for learners since it helps to make the learner think outside the boundaries of traditional thinking, helping him to solve problems in a new creative way and unusual solutions.

Lateral thinking and problem-solving skills are of great importance in the scope of imagination and thinking in many possibilities, so the mind develops towards broad-range thinking and this type mainly reflects in the development of intelligence skills significantly (Al-Suwaidan, 2008).

This topic has attracted the attention of researchers, including Al-Quraishi's study (2014) to reveal lateral thinking and problem-solving skills among outstanding and ordinary school students, and the results showed that the relationship between lateral thinking and problem-solving skills is a direct correlation.

The study of Abdel Ghaffar Al-Mansi, Youssef and Al-Sawaf (2016) aimed to identify lateral thinking and its relationship to the ability to solve problems among university students. They used a Lateral thinking test. The results revealed a significant relationship between lateral thinking strategy and problem solving.

Gabr (2020) revealed the effectiveness of using lateral thinking strategies in developing some soft skills for the female student teacher at the Faculty of Early Childhood Education in Matrouh Governorate. It revealed that it was effective on the students after the treatment period.

Abdel-Moneim (2021) investigated the effectiveness of a proposed educational program based on de Bono theory for developing lateral thinking and self-regulation skills for learning and creative problem solving for eighth grade female students in Gaza. The results showed that there are significant differences at ( $\alpha= 0.01$ ) between the mean The scores of the experimental group who studied with the proposed educational program based on de Bono

theory and the average scores of the students of the control group on the post-test of lateral thinking in favor of the experimental group.

### ***Questions of the Study***

1- Are there statistically significant differences at ( $\alpha= 0.05$ ) between the mean scores of the experimental group and the mean scores of the control group in the problem-solving skills test due to the teaching method (lateral thinking strategy, and the usual method)?

### ***The Importance of the Study***

The authors of geography books in Jordan can benefit from the results of the study by employing the lateral thinking approach.

Geography teachers can benefit from the results of the study by making use of the implementation of the lateral thinking approach in classroom situations.

### ***Procedural Definitions***

#### ***Lateral thinking***

is defined procedurally as one of the teaching approaches that can be employed in teaching geography, which is a mental process that directs the individual towards an idea for the purpose of understanding and solving it by building the largest possible number of creative ideas in a way that is different from what others realized and without restrictions on the mind, and it will Lateral thinking strategies (focus strategy, random entry strategy, challenge strategy, harvest strategy, and alternatives strategy) are used.

#### ***Problem-solving skills***

procedurally defined as a learning method that prompts the learner to contribute to solving a specific problem through the different knowledge and skills he possesses. The problem-solving steps will be used, namely: (defining the problem, analyzing the problem, interpreting and organizing information, conclusions and reaching a decision, evaluation).

#### ***Study Approach***

Then researcher used the quasi experimental design since it is the suitable design for the study

#### ***Participants of the Study***

Two tenth grade classroom sections were chosen from Ebeen Comprehensive and Mixed Secondary School) from Ajloun Directorate of Education using the intentional method. One classroom section was randomly assigned to be the experimental group (30 female students) and the other to be the control group (30 female students).

#### **Instrument of the Study**

#### ***Test of Problem Solving Skills***

To achieve the objectives of the study, a problem-solving skills test was prepared analyzing the previous educational literature related to problem-solving skills, and the previous studies related to problem-solving skills such as the study of Al-Hibi and Al-Qassas (2019), and analyzing the content of the educational unit (contemporary environment problems) from the class geography book. Based on the foregoing, the test items were prepared to measure the performance of the members of the two study groups in the problem-solving skills of tenth grade students. Accordingly, the test in its final form consisted of (20) multiple-choice items distributed equally over four skills (recognition and identification of the problem, Explanation

of the problem, suggested solutions, choosing the alternative and arriving at a decision). The validity of the test was confirmed by examining it by a group of experienced and specialists

### **Reliability of the Test**

To verify the stability of the problem-solving skills test, the test was applied twice with two weeks duration between them and Pearson correlation coefficient was calculated. The results are shown in table 1 below.

**Table 1): Indicators of stability test problem solving skills**

<b>Recognition</b>	<b>Cronbach Alpha</b>	<b>Retest</b>	<b>Domain</b>
0.80	0.87		and identification of the problem
0.86	0.88		Interpretation of the problem
0.82	0.74		Suggested solutions
0.81	0.84		Choosing the alternative and arriving at a decision
<b>0.89</b>	<b>0.92</b>		<b>Total</b>

### **Results related to the question which states:**

Are there statistically significant differences at ( $\alpha= 0.05$ ) between the mean scores of the experimental group and the mean scores of the control group in the problem-solving skills test due to the teaching method (lateral thinking strategy, and the usual method). To answer this question: Mean score and standard deviations of the study members' performance in combined (total) problem-solving skills were calculated according to the variable of teaching strategy, and Table (2) shows this:

**Table (2): Arithmetic means and standard deviations of study personnel's performance in solving skills Problems combined (total) according to the variable of teaching strategy**

<b>test</b>		<b>Pre</b>		<b>Number</b>	<b>Group</b>
<b>Standard Deviation</b>	<b>Arithmetic mean</b>	<b>Standard deviation</b>	<b>Arithmetic mean</b>		
3.67	12.43	2.33	10.63	30	Control
1.96	16.53	2.74	10.60	30	Experimental
3.58	14.48	2.52	10.6	60	Total

Table: 2 shows that there is an observed difference between the mean score performance of the two experimental and control groups in the dimensional problem-solving skills combined (total) in favor of the experimental group. And to test the statistical significance of the observed difference in the performance of the study members after in the combined (total) problem-solving skills after adjusting the effect of the tribal performance according to the teaching strategy, One-Way ANCOVA was run. Table (3) shows the results:

**Table (3): Results of ANCOVA test of variance**

<b>Eta square</b>	<b>significance</b>	<b>Statistical F</b>	<b>mean squares</b>	<b>Degrees of freedom</b>	<b>Total squares</b>	<b>Source</b>
.301	.000	24.602	151.599	1	151.599	Tribal performance (accompanied)
.420	.000	41.343	254.755	1	254.755	strategy
			6.162	57	351.234	Error
				59	754.983	Total averaged

It is noticeable from Table (3) that there is a statistically significant difference between

the performance mean scores of the experimental and control groups in the combined (total) problem-solving skills, due to the teaching strategy and in favor of the lateral thinking strategy. The Eta square value (0.420) indicates that the teaching strategy explains (42%) of the variance in performance in all problem-solving skills.

This indicates that the lateral thinking strategy has a statistically significant effect on improving the performance of the experimental group with the combined problem-solving skills. The reason for this is due to the performance of the students of the experimental group, who were taught geography based on the lateral thinking strategy, which resulted in creating the students' attention and their interest in solving the life problems they face. Moreover this method takes into account the learners' needs and preferences for the ways in which they receive knowledge and generates a desire to integrate with the study of geography.

This also indicates the effectiveness of employing the lateral thinking strategy in teaching geography, where the lateral thinking strategy focuses on activating the capabilities of the brain and its ability to make decisions in order to solve life problems by changing ideas, concepts and perceptions to generate new concepts and new perceptions that are applicable in areas that need thinking. .

The development of lateral thinking among students contributes to supporting them to develop their skills in solving life problems with continuous motivation because of its role in facilitating problem-solving decision-making and its awareness through the information that the students stored in the cognitive structures and recalled it whenever it is necessary, using the preferred stimulus-response association. It seems that the students' preferred lateral thinking strategy because it provides the students with the right to learn in the way they prefer and create positive outcomes that contribute to the development of corrective decision-making in solving problems.

The reason may be that the lateral thinking strategy has the element of modernity and innovation, which helped the students to find innovative solutions to the problems they face, because the students were not accustomed to this type of learning. This stimulated their thinking and helped them in developing their lateral thinking skills to find solutions to problems.

## Recommendations

The researchers recommend the necessity of employing thinking strategies, especially the lateral thinking strategy, while teaching geography because of its role in developing students' problem-solving skills.

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