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The Effect of Using a Strategy Based on The Principles of Triz Theory in Developing the Preparatory Stage Students' Creative Solving Skills of Mathematical Problems

A Summary of Master Degree Proposal in Education (Mathematics Education)

By

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2011 - 1432

Study Problem:

Since TRIZ Theory is one of the modern theories which are concerned with the creative problem solving and there are no Arabic researches in this area, the problem has been crystallized and stated in the following main question:

- **What is the effectiveness of a strategy based on principles of TRIZ theory in developing the preparatory stage students' creative solving skills of mathematical problems?**

It was divided into three sub-questions:

1- What are the creative problem solving skills related to mathematics and required by the first-grade prep school students?

2- To what extent do the preparatory stage students master these skills?

3- What is the suggested instructional strategy based on some principles of TRIZ theory in developing the creative solving skills of mathematical problems among the first-grade prep school students?

4- What is the effect the suggested strategy in developing the creative solving skills of mathematical problems among the first-grade prep school students?

Study Significance:

- Investigating the effect the suggested strategy in developing the creative solving skills of mathematical problems.

- Preparing a list of the creative solving skills of mathematical problems, which may be useful to mathematics educators.

- Building a test for measuring the creative solving skills of mathematical problems, which may be useful to mathematics education teachers.

- Providing a procedural model based on TRIZ theory in a teacher manual that can be used in other courses and disciplines.

Study Terms:

The following terms were defined operationally in the present study: Creative problem solving and TRIZ theory.

Study Limitations:

The present study limited itself to:

- A group of first-grade prep school students from Al-Zaytoun Educational Administration, Cairo and dividing them into two sub-groups: control and experimental.

- Two units in Geometry for the first-grade prep school students (the second semester).

Study Procedures:

1- Reviewing the previous literature related to the creative problem solving and TRIZ theory.

2- Identifying the creative solving skills of mathematical problems required for the first-grade prep school students.

3- Developing the test of creative solving skills of mathematical problems and judging its validity by a panel of experts.

4- Designing the suggested strategy in the light of TRIZ theory for developing creative solving skills of mathematical problems among the first-grade prep school students and judging its validity.

5- Drawing the study sample and administering the tools as a pre-application.

6- Experimenting the suggested strategy to the study sample and administering the tools as a post-application in order to measure its effectiveness.

7- Treating the data statistically and interpreting the findings.

The Findings of the Study :

The most important findings of the present study are summarized in the following section:

1) There were statistically significant differences at the level 0.01 between the scores of the experimental group and those of the control group on the understanding the challenge in favour of the former . the first hypothesis was accepted.

2) There were statistically significant differences at the level 0.01 between the scores of the experimental group and those of the control group on the generating idea in favour of the former. the second hypothesis was accepted.

3) There were statistically significant differences at the level 0.01 between the scores of the experimental group and those of the control group on the solve problem in favour of the former . the third hypothesis was accepted.

4) There were statistically significant differences at the level 0.01 between the scores of the experimental group and those of the control group on the creative problem solving test as a whole in favour of the former . the fourth hypothesis was accepted.