

# The Effect of Using a Proposed Teaching Strategy Based on the Selective Thinking on Students' Acquisition Concepts in Mathematics

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## Abstract

This study aimed at identify the effect of using a proposed teaching strategy based on the selective thinking in acquire mathematical concepts by Classroom Teacher Students at Al- al- Bayt University, The sample of the study consisted of ( 74 ) students, equally distributed into a control group and an experimental group. The selective thinking strategy was taught to the experimental group. To achieve the study objectives, the researcher composed a 50-item test, measuring specific mathematical concepts. The tool's validity and reliability were examined and their values were accepted for the study. The study results showed the following:

- 1-There were no statistically significant differences at ( $\alpha \leq 0.05$ ) between the two measurements (pre and post tests) in acquiring mathematical concepts in favour of the control group.
- 2-There were statistically significant differences at ( $\alpha \leq 0.05$ ) between the two measurements (pre and post tests) in acquiring mathematical concepts and in favour of the post measurement.
- 3- There were statistically significant differences at ( $\alpha \leq 0.05$ ) between the scores of the two groups ( the experimental and control ) in acquiring mathematical concepts in the post measurement and in favour of the experimental group.

**Keywords:** strategy , selective thinking , mathematical concepts , student-teacher.

## Introduction

Considered Instructional Strategies and methods of modern teaching of the success of the school curriculum factors, so methods teaching followed by the teacher in the implementation of the curriculum will result in the achievement of specific objectives, while recognizing that there is no specific teaching method could say it's the best method of teaching, as a way of dumping may be valid and is perfect in my teaching position is but they are not valid for another position, and educational outcomes such as the realization of physical concepts concrete and abstract concepts are desirable educational outcomes in their investigation after the occurrence of the learning process is seen as a benchmark for judging the quality of methods and models of educational used under certain conditions (Al helleh, 2008) .

And help teachers of modern strategies by providing them with an important set of teaching skills to enable them to choose the strategies that fit the educational situation. Strategy is intended teaching everything related manner the teacher to use in order to achieve the education goal (Shaheen, 2011).

Also, learn concepts and develop a continuous process does not take place upon presentation of the concept, but requires planning for teaching includes an integrated organization of knowledge that allows the drum to identify the things and attitudes and the comparison between them and classification To gain access to the formation of the concept and the acquisition and therefore emphasize the integration of forms of knowledge and hierarchical construction and learned (Rawashdeh , 2004).

The educational strategies is one of the basic and essential to the work of the teacher in the field of teaching skills, lack knowledge of teacher quality of his students and their ability and their intelligence will lead to a poor choice of means and appropriate modalities for the possibility of connecting ideas and concepts to them, because it hurts too much in the stages of their progress, may lead to confusion teacher at choice of means, when thinking about how to get to his students (zaitun, 2004).

And is known to think that explore some degree of expertise in order to reach the goal, this may be the target of understanding, or decision-making, planning, problem solving or judgment on something that is a mixture of psychological operations chemical and neurological overlapping with each resulting in thinking By thinking addresses the human mind dilemmas sensory information and ideas shall be recovered or inferred or judged (Attia, 2009).

The solution in the mathematical problems And overall mental forms and processes performed by the human mind, which enables it to the world in which they live modern, and thus being able to deal with it more effectively to achieve its objectives. Thinking is the realization of the mind in the problem of what to come to solve other and know that: the use of previous knowledge in solving upcoming problems, including the process of thinking two activities are important: critical thinking, creative thinking, and knows the critical thinking as: the ability to generate choices and justification and acceptance of logic and proof, also known as creative thinking as: reordering of what is known in a manner conducive to know what is not known, and look the

importance of teaching thinking skills in the graduation of learners able to self-learning, and to organize their lives, producers in their community and their collaborators, are able to take the appropriate decision (Fendi, and Ghaidan,2011 ).

And selective thinking is the process of thinking carried out by the individual so that selecting specific facts or evidence and facts fall or other evidence in order to prove a case. In a form of selective thinking exposed students to examples that make up the concept as well as al-Qaida is determined by which this concept Formation and concept according to this model always starts the process Classification performed by students affiliated and non-affiliated examples that offer them and to detect and identify examples of this concept to be learned according to form (zind,2004).

can be achieved with selective thinking teach students using this form through the use of the following stages:

1- display the data and identify the qualities through the following actions:

1-1. teacher presents examples of positive and negative examples without providing assistance.

1-2. The student compares examples offered by others whether positive or negative.

. guess concept student test his health.

2. test the concept or access to it, and this is done through the following actions:

2-1 give students more examples of non-specific

2-2 students give examples of their experiences.

2-3 proves knowledge is obligatory and called the concept, redefines the concept depending on its major characteristics.

3-1 thinking strategy analysis, and can be achieved through the following actions:

3-2 Students describe the ideas presented.

3-3 Students discuss the role of hypothesis and attributes presented.

3-4 Students discuss the hypotheses posed, and hypotheses are usually raised speculation smart. ( zind, 2004, p. 411-412).

In this model the teacher concept offers without declaration of any without mentioning the concept, and then offers a range of affiliated and non-affiliated examples, where the teacher at the beginning of the lesson presented examples all counting on the learner at once without classification and the learner to the appropriate example chosen from among the examples, and classified based on the characteristics mentioned in the definition, then receive appropriate feedback after each test process, and repeated attempts even reach the learner to the concept name, and then learners displays examples of their own, so they understood and defined (Mari and Muhammad, 2005, p. 151 , Nashawati, 1985, p. 419).

The selection model puts it upon himself to students naming concept by characteristics in the definition and the examples given, the classification example belongs in the light of these characteristics in the definition as well as it puts the responsibility of the students to give other examples of affiliated and non-affiliated from their experiences, and re-defining the concept in their own way (Kazem, 2008, p. 45).

## Related Literature

The researcher surveyed studies on the use of selective thinking strategy, the following detailed view of her:

Hamid Alchukrgi (2013) investigated the impact of a proposed strategy based on selective thinking in the acquisition of second grade students average grammatical concepts and the development of their tendency toward rules, and study sample consisted of 79 female students from the second grade average in high Excellencies for girls in Iraq, distributed The sample represents the two divisions, one experimental group and the rate of (40) students studied in accordance with the strategy of selective thinking and the other control group and by (39) a student, I studied the normal way. And requests the goal of search preparation tools, was the first to acquire grammatical concepts where the tool became final form consisting of (33) paragraph test objective of the test of a multi. The second tool was a tendency towards rules scale and be of (32) items and the results showed the existence of significant differences between middle-level students group and the control group in the acquisition of grammatical concepts and support the experimental group, and the results showed the presence of significant difference statistically about material rules and support the experimental.

Fendi and Seham (2011) aimed to investigate the impact of the selection model to acquire grammatical concepts among students average first grade, and consisted appointed (98) student and distributed to the experimental and control groups, the researchers used a standard tool with students of the three groups to measure the acquisition of grammatical concepts, as prepared by researchers test for the acquisition of grammatical concepts and component (33) paragraph of the test type of multi-, and results showed no difference statistically significant between the averages of the experimental and control groups in the acquisition of grammatical concepts and the experimental, and the lack of a statistically significant between students of the first experimental group and female differences The second experimental group in the acquisition of grammatical concepts.

Kazem conducted a study (2008) aimed to know the effect is typical selection and Fryer to acquire Islamic concepts and the development of critical thinking among students fourth grade year in Islamic Education, this study was conducted in Iraq in one of Baghdad schools and prepared test items distributed consists of (60) to six levels of Bloom's Taxonomy. And it found the results to outweigh the students first experimental group which studied according to (model selection) on the second two groups studied according to (model Fryer) and control group which studied the usual way to test the acquisition of Islamic concepts and critical thinking, and a greater female second experimental group which studied according to (a specimen Fryer) to the control group which studied the usual way to test the acquisition of Mathematics concepts and critical thinking.

The objective of this study that the reward if pistol (Edmunds, 2004) to see some of the variables relationship style positive and negative thinking among university students, applied to the study procedures on a sample of (75) male students, and (105) of the female in a US university, and ended Results of the study that the rate of (41.4%) of the students both male and female have shown a tendency towards positive thinking. The study also showed a significant relationship between stereotyped thinking and variables of achievement and sex for the benefit of students have high grads collection and females where students with high achievement and female students showed more towards thinking miles positive, the study did not show significant relationship between variable and specialization typical positive and negative thinking.

It turns out that some previous studies dealt with selective thinking strategy and the impact of this strategy on the acquisition of the students different concepts such as Hamid and Alchukrgi study (2013) and the study of Fendi and Arrows (2011) and the study of Kazim (2008), which focused on the acquisition of Mathematics concepts, and characterized the current study all these studies that they studied the impact of selective thinking on the students acquired the basic concepts in mathematics.

### **The problem of the study and questions**

Characterized by rigid mathematics classroom teacher with students as most of teaching methods used in traditional teaching, which is tedious without raising of motivation among students which encouraged the researcher to regulate the use of a proposed strategy is based on selective thinking.

Diversity in teaching methods have led to the occurrence of Teachers of Mathematics at a loss, any roads using any methods are more effective and any better than other roads; the problem of teaching mathematics and large deep trouble deepening of the students in the school and the university both always stationed teacher about the old ways and in the traditional teaching, which essentially indoctrination, and therefore reflect the weak levels of students in their education in mathematics (Abed-Al-Maksoud, 2000).

The problem with this study is that they are looking at the most appropriate way to teach math so that students can through which absorb the information and the basic concepts in mathematics and understanding, and help the teacher to use the flexible way in the delivery of information mathematical concepts to suit the inclusive student level; and is also study a problem finding way to teach the basic concepts in mathematics strategy relies on human personality characteristics, as selective thinking strategy based on put multiple examples of the concept, and students are critical of examples, and classification, then test the acquisition of the concept of additional examples, and re-drafting of the definition, then the decomposition of thinking by discussing ideas strategy and hypotheses, enabling the student to understand the idea or question depending on his personality and his way and previous experience.

### **Goals of the study**

1. identify the impact of the use of teaching proposed strategy is based on selective thinking in the classroom teacher give students the basic concepts in mathematics at Al al-Bayt University.
2. employ the use of a proposed strategy is based on selective thinking in the classroom teacher give students the basic concepts in mathematics at Al al-Bayt University.

### **The importance of the study can determine the importance of the study, including the following**

1. The importance of students to the concepts of basic math to make it up to the level of mastery or mastery of which can expand its knowledge and experience life.
2. The importance of the use of modern strategy based on a focus on the learner and their impact on the overall performance of the student.
3. may contribute to the results of this study to make recommendations for teachers of mathematics and mathematics teachers in universities about how to use the strategy presented based on the selective give the students think about the concepts.

### **Purpose and Questions of the Study**

To achieve this, the study sought to answer the following questions:

1. Are there a statistically significant differences at the level of significance ( $\alpha \leq 0.05$ ) between the two

measurements (pre and post) to give the students of the class teacher of basic concepts in mathematics at the experimental group?

2. Are there a statistically significant differences at the level of significance ( $\alpha \leq 0.05$ ) between the two measurements (pre and post) to give the students the basic concepts in mathematics classroom teacher with the control group?

3. Are there a statistically significant differences at the level of significance ( $\alpha \leq 0.05$ ) between grade teacher give the students the basic concepts in mathematics in the dimensional measurement variable depending on the group?

4. Are there a statistically significant differences at the level of significance ( $\alpha \leq 0.05$ ) between the two measurements (post, and follow-up) to give the students of the class teacher of basic concepts in mathematics at the experimental group?

### Hypotheses of the study

1-There were statistically significant differences at the level of significance ( $\alpha \leq 0.05$ ) between the two measurements (pre and post) to give the students of the class teacher of basic concepts in mathematics at the experimental group.

2-There were statistically significant differences at the level of significance ( $\alpha \leq 0.05$ ) between the two measurements (pre and post) to give the students of the class teacher of basic concepts in mathematics with the control group.

3-There were statistically significant differences at the level of significance ( $\alpha \leq 0.05$ ) between grade teacher give the students the basic concepts in mathematics in telemetric depending on the variable Group.

### Procedural definitions

Strategy of selective thinking: a set of steps relating to the teaching of mathematics, which is followed by coordinated moves followed by the teacher in the course of teaching mathematical concepts to the classroom teacher and the students, which included the organization of educational material and employ appropriate teaching positions to learn.

Grade teacher students: students and their teacher in a row specialization ESF in Al al-Bayt University.

### Limitation of the study

1. objectivity border: the extent of the acquisition of teacher grade students basic concepts in mathematics included in the basic course concepts in mathematics at Al al-Bayt University.

2. Human and spatial boundaries: Students grade teacher at the University House in the course of basic concepts in mathematics.

3. Time limits: This study was conducted during the second semester of the academic year 2013/2014.

**Methodology:** experimental method was used because it fits the nature of the study and its objectives.

### Participants of the Study

The participants of the study consisted of all grade teacher students enrolled in the course of basic concepts in mathematics in the first semester including 104 male and female students.

They were deliberate selected and divided into two equal groups by an officer and a pilot (37) students per group, was chosen as a prospective sample of 30 students from outside the study sample and the study population to ensure the stability of the tool.

**Equal groups:** verification of the two sets of equality of the study was a test application (T-Test) and Table 1 illustrate.

The results of a test application (Independent Samples T-Test) on average student achievement in pre-test choice depending on the two groups (experimental, control):

Table(1)

Group	Mean	Standard deviation	T	Sig.
Control	11.00	2.03	1.01	0.09
Experimental	10.0	2.45	1.06	0.11

Note from the table (1) that there were no statistically significant differences at the level of significance ( $\alpha = 0.05$ ) between the average student achievement in the pre-test depending on the two groups (experimental, control), as the values of (T) (1.01 & 1.06), that are not statistically significant, and this shows equality of the two groups of the study.

The stability of the test: in order to extract the reliability coefficient of the test was applied equation (kador- retcha destoon) (KR20)), and was tested for stability coefficient (0.87) which is a suitable value indicates the stability of the test.

Variables of the study: - the independent variable: the way her two levels:

The use of the group that studied using selective thinking strategy.

The use of the group that studied using the traditional method.

- Dependent variable: the acquisition of basic concepts in mathematics.

Statistical treatment: it was used the following statistical methods:

1. Test (Independent Samples t-test): to learn about the differences between the two groups (control and experimental) in telemetric.
2. test (Paired Samples t-test): to get to know the differences between the two measurements (pre-test, post) per set.

### The study procedures

The application of the study was to take the following actions:

1. Identification Division that contains 74 students and taught by the researcher.
2. Division split into two unequal each containing 37 male and female students, has been confirmed parity.
3. building math achievement test in accordance with the strategy of selective thinking course covers basic concepts in mathematics content, and through the table specifications and tests into account building standards.
4. check researcher of the test of sincerity during his presentation to a group of arbitrators majoring in mathematics and teaching methods, to ensure the veracity of the test, and the content of scientific material (course plan).
5. exploratory test on the sample application consists of (30) students from outside the study sample, it is another division of the same course taught by another colleague in order to stand on an achievement test conditions.
6. been teaching the experimental group according to the selective thinking strategy while the control group studied the traditional way (lecture and discussion).
7. post test has been prepared according to the procedure of atonement selective strategy which was used in the pre-test to make sure the impact of the strategy applied in the experiment.
8. correct answers students to study groups (experimental, control) on the test.
9. data of the study for the introduction of a computer for analysis.

### Results and test hypotheses:

This chapter includes display the results of the study, which aims to identify the impact of the use of strategic teaching proposed based on the selective thinking in give teachers grade students basic concepts in mathematics as stated in the course of the basic concepts in mathematics plan, were presented results of the study, according to what has been asked of hypotheses, It is as follows:

First hypothesis: There are statistically significant differences at the level of significance ( $\alpha \leq 0.05$ ) between the two measurements (pre and post) to give the teacher grade students the basic concepts of mathematics in the control group and to get telemetric.

To validate this hypothesis test was applied (Paired Samples t-test) on the steps of the control group students in the test grades depending on the two measures (tribal, post), Table 2 illustrates this.

Table( 2)

Application of test (Paired Samples t-test) on the steps of the control group students.

Sig.	T	Standard Deviation	Mean	Measurement
0.13	1.55-	2.03	11.00	Pre-test
		1.79	11.53	Post test

Note from the table (2) that the value of (T) for the performance of members of the control group in the test grades between the two measurements (pre-test, post) was (-1.55), a non-statistically significant value at the significance level ( $\alpha \leq 0.05$ ), and this indicates the existence of differences in averages, but not statistically significant between the two measurements (pre and post-test) for the control group. And it rejects the first hypothesis of the study, to become a "no statistically significant differences at the level of significance ( $\alpha \leq 0.05$ ) between the two measurements (pre and post) in Giving teachers grade students basic concepts in mathematics with the control group and to get telemetric."

The second assumption: There are statistically significant differences at the level of significance ( $\alpha \leq 0.05$ ) between the two measurements (pre and post) give the teacher in grade students the basic concepts of mathematics in the experimental group and to get telemetric. To validate this hypothesis test was applied (Paired Samples t-test) on the steps of the experimental group students in the test grades depending on the two measures (pre-test, post), Table (3) illustrates .

Table(3)

Sig.	T	Standard Deviation	Arithmetic average	Measurement
0.00	19.16-	2.45	10.09	Pre-test
		3.32	26.03	Post-test

Note from the table (3) that the value of (T) for the performance of the experimental group in the test grades between the two measurements (pre-test, post) was (-19.16), a statistically significant value at the significance level ( $\alpha \leq 0.05$ ), and this indicates the existence of differences in arithmetic mean between the two measurements (pre and post) experimental group to get telemetric. And it accepts the second hypothesis of the study, which stipulates that no statistically significant differences at the level of significance ( $\alpha \leq 0.05$ ) between the two measurements (pre and post) in Giving teachers grade students basic concepts in mathematics .

The third hypothesis: There are statistically significant differences at the level of significance ( $\alpha \leq 0.05$ ) degrees among members of the two groups (experimental, control) give the teacher in grade students basic concepts in mathematics in telemetric and to get the experimental group.

To validate this hypothesis test is applied ((Independent Samples t-test on the steps of the sample in the test grades in telemetric depending on the variable group, Table (4) shows that:

Table(4)

Sig.	T	Standard Deviation	Mean	Measurement
0.00	62	1.79	11.53	Pre-test
		3.32	26.03	Post-test

Note from Table (4), the value of (T) degrees respondents in telemetric depending on the variable group was (62) and statistical terms (0.00), a statistically significant value at the significance level ( $\alpha \leq 0.05$ ), and this indicates the existence of differences significant statistically between the arithmetic mean of the scores of students in the test grades due to the variable group and the experimental group with a mean (27.14), while the arithmetic average reached for the control group (11.55), and therefore there is the impact of a statistically significant at the significance level ( $\alpha \leq 0.05$ ) to use the thinking and strategy to give the teacher grade students basic concepts in mathematics, and it accepts third hypothesis of the study, which provides for the presence of statistically significant differences at the level of significance ( $\alpha \leq 0.05$ ) between the scores of members of the two groups (experimental, control) in Giving teachers grade students basic concepts in mathematics in telemetric and to get the experimental group.

Fourth hypothesis: There are statistically significant differences at the level of significance ( $\alpha \leq 0.05$ ) between the two measurements (dimension and follow-up) to give the teacher grade students the basic concepts of mathematics in the experimental group and to get telemetric.

To validate this hypothesis test was applied (Paired Samples t-test) on the steps of the experimental group students in the test grades depending on the two measures (dimension, follow-up), table (5) illustrates this.

Table(5)

Sig.	T	Standard Deviation	Mean	Measurement
0.09	1.85	3.35	26.15	Pre-test
		3.31	25.85	Post-test

Note from the table (5), the value of (T) of the scores of the experimental respondents between the two measurements dimension and follow-up was (1.85) statistically and in terms of (0.09), a non-statistically significant value at the significance level ( $\alpha \leq 0.05$ ), and this shows that there were no significant differences statistically between the arithmetic mean of the scores of students of the experimental group in the test grades depending on the measure (Dimension, and follow-up) and therefore not statistically significant differences at the level ( $\leq 0.05 \alpha$ ) between the two measurements (Dimension and follow-up) to give the teacher grade students basic concepts in mathematics at the experimental group and to get telemetric, and it rejects the hypothesis fourth to study to become a "no statistically significant differences at the level of significance ( $\alpha \leq 0.05$ ) between the two measurements (and follow-up) to give the teacher grade students basic concepts in mathematics at the experimental group and to get telemetric."

### Discuss the results

This chapter includes a discussion of the results of the study show that aims to identify the impact of the use of teaching proposed strategy is based on selective thinking in students grade teacher give the basic concepts in mathematics at the University House, the following presentation to discuss the results according to the study

questions.

**- Discuss the results relating to the first hypothesis: There are statistically significant differences at the level of significance ( $\alpha \leq 0.05$ ) between the two measurements (pre and post) to give the teacher grade students the basic concepts of mathematics in the control group and to get telemetric.**

It showed about this hypothesis results and differences in averages, but not statistically significant between the two measurements (pre and Dimension) for the control group, and explains the researcher this result that the members of this group have studied art in the traditional way of teaching without the use of any strategy to help them increase their ability to the acquisition of basic concepts in mathematics; which had an impact on the development of non-performance with respect to the acquisition of these basic concepts between the two measurements tribal and Dimension

**- Discuss the results for the second hypothesis: There are statistically significant differences at the level of significance ( $\alpha \leq 0.05$ ) between the two measurements (pre and Dimension) give the teacher in grade students the basic concepts of mathematics in the experimental group and to get telemetric.**

Showed about this hypothesis results and differences in averages between the two measurements (pre and Dimension) experimental group to get telemetric, and explains the researcher this result that the members of this group have studied using the method of selective thinking, which is characterized by that stimulates the students and develop their ideas and respected, and that the use of style selective thinking makes students focus on higher-order thinking skills; thus contributing to the development of creativity they have through their transfer to a new state of the associated self-creative thinking, which makes the learning process a fun process by linking knowledge and work and think through the lecture and thus make it easier for students receive information and understanding, as explains the researcher of this result is that the teacher to use a method of selective thinking goes to ask questions and examples of sequential and multiple make it easier for students to understand the basic concept and leaves him the freedom to criticize examples, then test the acquisition of the concept of additional examples, and re-drafting of the definition, then the decomposition strategy thinking through the discussion of ideas and hypotheses; which makes it easier for students to acquire mathematical concepts process.

**Discuss the results relating to the third hypothesis:**

The results showed for the third hypothesis were no significant statistical differences between the averages of the scores of students in the test grades due to the variable group and the experimental group, and explains the researcher this result that the use of a method of selective thinking urges students to think according to his will and desires and not within the rules restrict his thinking, which makes students more enthusiastic of the educational process compared with the traditional method of teaching that makes unrestricted student think-tank the rules dictated by the teacher and thus kill the spirit of creativity thinking has, thus contributing to reduce the motivation toward learning among students who are studying in the traditional manner, as can the interpretation of this result is that the use of style selective thinking makes a certified student Ali Profile in the analysis and understanding of the issues and the role of the teacher effectively through general supervision over every step of the solution and stressed that, based on a logical base is correct, and the student using his own style in drawing conclusions from the general cases up to the concept required, which helps the student to retain mathematical concepts for the longer period of time as it is moving away from rote, which depends on the teacher directly method, also use this method develops the student's ability to rework sports generalizations own way, making it unable to keep them for longer, agreed this result with Hamid and Alchukrgi study (2013) and the study of Fendi and Arrows (2011) and Kazem study (2008) and Tai study (2006), which indicated the presence of a statistically significant between the mean differences of the experimental group students and students of the control group in the acquisition of concepts and to get the experimental group who has studied using the proposed strategy is based on selective thinking.

**After statistical analysis was reached following results:**

1. There were no statistically significant differences at the level of significance ( $\alpha \leq 0.05$ ) between the two measurements (pre and post) to give the teacher grade students the basic concepts of mathematics in the control group.
2. There are statistically significant differences at the level of significance ( $\alpha \leq 0.05$ ) between the two measurements (pre and post) to give the teacher grade students the basic concepts of mathematics in the experimental group and in favour of telemetric.
3. There were statistically significant differences at the level of significance ( $\alpha \leq 0.05$ ) degrees among members of the two groups (experimental, control) give the teacher in grade students basic concepts in mathematics in telemetric and in favor of the experimental group.

**In light of the findings, the researcher recommends the following:**

1. The use of selective thinking in the teaching of mathematics because of its great benefits in achievement and

- the development of thinking and organizing scientific material strategy.
2. interest in the use of selective thinking in teaching strategy in general.
3. selective thinking that strategy be within the course in methods of teaching mathematics and trained by students and teachers scientifically practical training.
4. For math teachers and university professors on the basis of steps and selective thinking strategy.

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