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The Impact of the Strategy (Be - Share - Listen - Innovate) in Developing Conceptual and Procedural knowledge Among Female Primary School Students in Al-Qurayyat Governorate

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Abstract

The study aimed to reveal the effect of the strategy (Be - Share - Listen - Innovate) in developing conceptual and procedural knowledge among primary school students in Al-Qurayyat Governorate. To achieve the objectives of the study, the researcher prepared an achievement test in the unit of measurement (perimeter, area, and volume). It consists of (35) items distributed over (9) items in the field of mathematical concepts, (14) items in the field of mathematical generalizations, and (12) items in the field of skills and algorithms. The study sample amounted to (55) female students who were in the experimental group (30) female student, and the control group (25) female students from the Twelfth School for Girls, affiliated with the schools of the Al-Qurayyat Education Department, were randomly selected during the second semester of the year (2022-2023). The results of the study showed that the adjusted averages were in favor of the experimental group with higher adjusted arithmetic averages for mathematical concepts, mathematical generalizations, and procedural knowledge, meaning that the effect size value and practical significance for teaching using the strategy amounted to (0.519) for mathematical concepts, (0.605) for mathematical generalizations, and (0.553) for skills and algorithms, all of which are greater than the upper limit of the effect size according to the reference frame (0.14). The study recommended employing the strategy (Be - Share - Listen - Innovate) among mathematics teachers.

Keywords: *Strategy (Be - Share - Listen - Innovate), Developing Conceptual and Procedural knowledge, Al-Qurayyat Governorate.*

Introduction

Mathematics is one of the most important teaching activities offered to all students at various educational levels, but many students find severe difficulties in the field of mathematics to the extent that mathematics learning difficulties represent the most important and common learning difficulties and attract human attention, and for this contemporary developments have imposed a change in the general view of mathematics education and increased the interest of educators to work on developing new and effective teaching methods, especially those that are interested in provoking the learner's thinking and his real participation in the learning process through cooperation, between The students themselves and then cooperate with the teacher and ask for help from him when necessary, and these strategies are the strategy (Be - Share - Listen - Innovate) in the development of conceptual and procedural knowledge, where the purpose of teaching it exceeded the learner's possession of the skills of arithmetic operations, or dealing with traditional tasks far from reality, to provide learners with correct thinking and

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understanding that develops their abilities to solve the problems they face in their environment.

On the other hand, Obaid (2004) points out that there is a noticeable decline in students' possession of basic skills, analytical ability when solving mathematical problems, and weakness in their ability to solve indirect problems, so the motives for developing mathematics curricula and teaching methods must be centered on linking mathematics as an educational subject in life so that the learner is able to possess applied tools. And the strategy (Be - Share - Listen - Innovate) in the development of conceptual and procedural knowledge in teaching develops mental processes as a goal of the educational process instead of just knowledge, and transfers the center of the educational process from the teacher to the learner, and the student becomes the focus of the educational process. In scouting situations, it is not enough for the student to learn information only, but create the conditions for him to analyze the concept and translate it into words, that is, accomplish this with his own effort (Al-Shandawili, 2004).

The mathematical structure is an essential component in mathematics curricula and looks at the mathematical content as a tightly interconnected and connected building and its basic unit is the concepts that are the most important forms of mathematical knowledge, and the basis on which the rest of its forms of principles, laws and theories depend, which gives it its flexibility and helps in organizing and absorbing it, and the concepts are more related to the life of the learner, so their awareness and familiarity with their meanings make mathematics meaningful, clearer and more understandable for the learner, which reflects positively on self-learning and facing situations new and the development of thinking, enhance motivation and facilitate the process of sports communication (Darey, Terzinha, Peter & Christina, 2012).

Khashan, Qandil, Al-Nazir, and Al-Salouli (2014) indicate that mathematical knowledge is classified into two types: Conceptual Knowledge and Procedural Knowledge. Conceptual knowledge consists of a set of links that arise internally and are connected to previous ideas, including understanding mathematical ideas and knowing basic facts. As for procedural knowledge, it is based on possessing the skill in applying the concepts and principles that were previously learned. It can be said that when the learner has an integrative view towards mathematics, he will view the concepts and procedures as connected. For example, it is not enough to teach the learner how to find the area of a square. The most important thing is to teach him what we mean by area. Firstly, we move to the concept of the area of a square and find it in multiple contexts. Researchers' efforts are directed towards developing the level of mathematical knowledge among learners, as their weakness is in acquiring conceptual and procedural knowledge (Bonani & Kuart, 2018).

The strategy (Be – Share – Listen – Innovate) is one of the active learning strategies developed by Johnson & Smith (1991), and is used with mathematical tasks that the teacher can employ in the classroom that require the learner to be or write his answer to questions, then present them in front of his colleagues, then listen to their answers, and then propose or create a new answer that includes the best ideas presented, this strategy focuses on the effectiveness of learners through writing, listening, speaking and thinking (Corbo, 2014). The steps of that strategy can be presented as follows:

The first step: The answer is (Be) and is done by dividing students into groups, and each group has a rapporteur who manages the session and is responsible for the answer issued by the group, where they discuss their ideas and answers to the question or problem, and the learner begins to formulate his answer himself, writes the answer in a special paper, and records his ideas to give them the opportunity to reflect and analyze where he generates new ideas by recalling previous knowledge and information for them and building new knowledge.

Second Step: (Share) In this step, students present their solutions and answers to their classmates, where all learners see the same information and concepts but in multiple and different ways.

Third Step: (Listen) This step requires learners to listen carefully while the groups present their answer in the participation step, as it helps them to interpret, analyze and solve problems.

Fourth Step: (Innovate) This step requires learners to present new ideas through reflection and deep thinking, and based on the previous steps, they are asked to innovate and provide an answer that has not been addressed, including the best ideas (Allen & Tanner, 2002).

The strategic philosophy (Be - Share - Listen - Innovate) emerges from the constructivist theory that emphasized abandoning traditional education and replacing it with learning in which the learner is active, positive and involved in the learning process. (Zaitoun, 2007, 45) indicates that the principles of constructivist learning are that learning occurs naturally, and it is an active and continuous constructive process, and the learner builds his learning on his own, as he builds his knowledge in light of his previous experiences, and rebuilding his knowledge takes place through the process of social negotiation with others. These principles are consistent with the strategic principles of (Be - Share - Listen - Innovate). The learning process is active in which the learner himself participates, discovers knowledge, develops solutions to problems, adjusts his cognitive structure, and increases his thinking skills (Ramadan, 2008, 64). The strategy (Be - Share - Listen - Innovate) focuses on the learner being the active element in the learning process, constructing meanings and providing new explanations himself, which indicates that this strategy belongs to the framework of constructivist learning. Mersal, (2017).

Conceptual knowledge is related to the procedures implemented by the student, where Said (2016) indicates that conceptual knowledge is knowledge of mathematical concepts, while procedural knowledge is determined by symbols, laws and knowledge that are used to solve mathematical problems, and the National Center for the Evaluation of Educational Achievement in America (NAEP) has stressed the need for students to acquire conceptual and procedural knowledge of the content of fractions and decimals, geometric shapes and measurement, and to employ this knowledge in solving problems and using appropriate information (NCES, 2001).

Khashan, Qandil, Al-Nazir and Al-Salouli (2014) have pointed out that mathematical knowledge is classified into two types of knowledge: conceptual knowledge and procedural knowledge. Conceptual knowledge consists of a set of relationships that arise internally, and these relationships are related to pre-existing ideas, conceptual knowledge includes understanding mathematical ideas and actions, and knowing basic facts in arithmetic, and students possess conceptual knowledge when they are able to identify and apply principles, know and apply facts and terminology, and are able to identify similarities and differences between different concepts. Thus, the student faces a large amount of mathematical information and knowledge, which may be difficult for him to benefit from unless it is presented in an organized manner. If we look at the existing teaching methods, we find that they focus on the lower levels of learning, by providing a huge amount of information that is not connected to himself or to the student's environment, so he is unable to link what he is studying with what he previously studied in his cognitive structure, and thus he loses or forgets most of what was presented. It has information, as a result of the weak connection between the concepts present in this structure, which makes it randomly arranged and not suitable for any subsequent learning (Obaid, Abdul Sabour, Fahmi & Dabaa, 2005). Therefore, it is necessary to employ modern teaching strategies that help students develop achievement, and perhaps One of the best of these strategies is active learning (Qutait, 2008), and this is what required the researcher to encourage teachers to employ modern teaching strategies that take into

account the role of the student in learning and teaching mathematics. In this strategy, each student begins to answer a question or problem posed by the teacher, and then each student participates. His thoughts with his partner, with the need to listen carefully to what the partner has come up with so that together they can create a response that is better than any of the individual responses (Siti, 2013).

The basic steps of the strategy revolve around four steps: behave, share, listen, and innovate, each of which depends on the step that precedes it, and the steps of the strategy are to formulate activities related to educational tasks, develop a plan to answer them, share students to answer them and exchange views with partners (pair - group), and each couple listens to each other's answers and shows differences and similarities in ideas and opinions through discussion and dialogue (Rosyana, et al. 2018; Afrilianto, 2014).

The strategy included the following steps:

- The first step (Be): The student is given the opportunity to think and formulate the solution individually in order to understand and detail the information contained in the mathematical task. Here, the student must record his thoughts and the details he collected about the mathematical task in order to begin discussing it with colleagues in the next step (share).

- Second step (Share): Students begin to exchange information that was recorded individually for each student, and each student begins to be open to the ideas of others.

- Third step (Listen): Students begin to listen carefully to the discussions taking place within small cooperative groups, or between groups. At this stage, the student writes down notes and ideas related to the mathematical problem at hand.

- Fourth step (Innovate): Students begin to merge the ideas resulting from the two steps (share, listen), and find a relationship between them and their answer in step (be), then formulate new answers to the presented mathematical problem, and the student can through these successive steps to write his ideas and answers to the mathematical problems posed, and then share them with his peers or group colleagues, and listen well to the discussions that take place on the problems raised, as the teacher asks the students to invent or create a new answer that he did not address colleagues, containing the best ideas, be prepared to present them if asked.

Hence, the researcher believes that the two concepts of conceptual knowledge include the relationships that make all parts of mathematical knowledge, including facts, generalizations, principles, laws, and mathematical rules, linked to each other through a close network of links, and includes producing examples of mathematical concepts, using shapes and drawings to express them, realizing the interconnection and complementarity between concepts, and defining principles, laws and rules related to mathematical concepts and the interpretation of the relationship between them. As for procedural knowledge, it expresses the ability to implement procedures and algorithms that consist of the rules and principles used to carry out tasks, and it expresses the language of symbols and conditions, and procedural fluency is performing procedural operations from mathematical skills and algorithms in a flexible, accurate and appropriate manner to the situations.

Many studies have been conducted on the subject of the study, as Abu Sakran (2020) conducted a study that aimed to investigate the effect of employing the (F.S.L.C) strategy in developing conceptual and procedural knowledge among fourth-grade female students in Gaza City, using the experimental method, and the study sample amounted to (60) female students, and they were divided equally into two experimental and control groups, and their tool was a test consisting of (30) questions to measure conceptual and procedural knowledge in the engineering and measurement unit. Its results indicated that there was a significant impact of using the (F.S.L.C) strategy in developing conceptual and procedural knowledge among fourth-grade female students.

Al-Astal and Abu Odeh (2020) conducted a study aimed at identifying the level of conceptual knowledge necessary to teach mathematics among student teachers at the Islamic University of Gaza, which used the quantitative and qualitative descriptive approach. The conceptual knowledge test was applied in the topics of numbers and operations, and its preparation was based on one of the measures of mathematical knowledge (MKT) that was developed at the University of Michigan, in addition to the individual oral interview tool. The study was applied to a sample of (181) students who were randomly selected. The results showed that the level of conceptual knowledge necessary to teach mathematics was at more than (34%) of students and teachers is very low.

Al-Enezi (2020) also conducted a study that aimed to verify whether mathematics students possess conceptual and procedural knowledge, using the experimental method. The researcher prepared a test consisting of (20) questions for conceptual knowledge and (20) questions for procedural knowledge, and applied the test to a sample of (367) second-grade intermediate students in the city of Hail. The results of the study revealed a decline and weakness in the degree of mathematics proficiency of second-grade intermediate students for procedural knowledge, as their possession of conceptual knowledge was to a moderate degree.

While Verantika (2017) conducted a study aimed at identifying the impact of the (F.S.L.C) strategy in improving sports communication and self-confidence among middle school students, using the experimental method, and the sample was from students of Bandung National School in Indonesia, and a sports communication test and a questionnaire were used to measure self-confidence, where the results showed a positive effect of the (F.S.L.C) strategy on sports communication among middle school students.

The study of Yuliana & Setianingsih (2017) aimed to identify the impact of the strategy (F.S.L.C) in teaching realistic mathematics to eleventh grade students in East Java in Indonesia, using the experimental curriculum and its sample was (40) students, and the study tools were test, questionnaire and observation card, and the results of the study revealed the effectiveness of the strategy in teaching students' realistic mathematics.

It is clear from the presentation of previous studies related to the current study that they vary in the study populations, some of which were applied to middle school students such as the study of Verantika, 2017, and the study of Al-Enezi (2020), and some of them were applied to secondary school students such as the study of Yuliana and Setianinghe (2017) and the other was applied to primary school students, specifically the fourth grade of primary school, such as the study of Abu Sakran (2020), As for the curriculum, almost all of them used the experimental method, except for the study of Al-Astal and Abu Odeh (2020), which used the quantitative and qualitative descriptive approach, and this study is characterized by its quest to find out the impact of employing the strategy of be - share - listen - innovate in developing conceptual and procedural knowledge among sixth grade primary students in Al-Qurayyat Governorate.

Study problem

The educational process has become facing many problems of education, which is the problem of low level of mathematical achievement among students in mathematics, all these changes and global developments that the world has witnessed recently led to the widening gap between students' educational and educational needs, and the professional capabilities of teachers to keep pace with rapid cultural changes, and it has become necessary to develop the educational process and keep pace with its curricula and teaching methods by adopting modern philosophies to teach Mathematics and its methods used and the achievement of educational goals, that the strategy (F.S.L.C) cognitive strategy is a strong strategy to bring about and generate motivational changes such as strengthening self-efficacy and insisting on achieving goals as it has effects on performance, and teacher modeling does not just mean imitating the learner of the teacher

or observing him, but to learn how to think. Despite the important and pivotal role played by conceptual and procedural mathematical knowledge in the process of learning mathematics, there is a low ownership of it by students of the general education stages, as indicated by the study (Al-Maliki, 2017), and the study (Al-Khoulani, 2022), and many studies, including (Mersal 2017, Said 2016), have confirmed that there is a possibility of developing it among students of the basic stage by following learning strategies based on providing the opportunity to think, produce and use sports activities that allow learners to interact, and the results of some studies such as the study of (Ramadan, 2008), the study of (Hajras, 2011), the study of (Ibrahim, 2011), the study of (Abdullah, 2012), and the study of (Corbo, 2014) proved the effectiveness of the strategy (Be - Share - Listen - Innovate) in developing some skills such as mathematical reasoning, academic achievement, problem-solving skills and mathematical communication among learners; The problem of the study is determined to answer the following questions:

The first question: "What is the impact of the strategy (Be - Share - Listen - Innovate) in developing the conceptual knowledge of sixth grade students in Al-Qurayyat Governorate?"

The second question: "What is the impact of the strategy of (being - participating - listening - innovation) in developing procedural knowledge among sixth grade students in Al-Qurayyat Governorate?"

The third question: "Does the (Be-Share-Listen-Innovation) strategy achieve a significant impact in the development of conceptual and procedural knowledge among the experimental group students?"

Objectives of the study:

- Revealing the impact of the strategy (Be - Share - Listen - Innovate) in developing conceptual knowledge among sixth grade students in Al-Qurayyat Governorate.

- Revealing the impact of the strategy (Be - Share - Listen - Innovate) in developing procedural knowledge among sixth grade students in Al-Qurayyat Governorate.

- What is the impact of the strategy (Be - Share - Listen - Innovate) in developing conceptual and procedural knowledge among the students of the experimental group?"

The importance of the study:

The importance of this study is evident in that it may direct the attention of those in charge of mathematics education to the role that the strategy (be - share - listen - innovate) may play in the development of conceptual and procedural knowledge among students, as well as researchers in this field may benefit from the tool designed for this study, and the benefit that educational supervisors may obtain from the results of this study in developing the professional performance of mathematics teachers in the stages of public education, and the need of the Ministry of Education for various studies on the impact of the strategy (be - share - listen - Innovate) in the development of conceptual and procedural knowledge, and increase the effectiveness of teaching methods used in schools and new educational innovations.

Study limitations: The study was limited to the following limits

- Spatial human temporal limits: This study was limited to female students of the sixth grade of primary school for girls in Al-Qurayyat Governorate during the second semester during the academic year (2022-2023).

- Objective (procedural) limits: Identify the impact of the strategy (Be - Share - Listen - Innovate) to teach the unit of measurement: perimeter, area, and volume in the mathematics course for the sixth grade of primary school in the development of

conceptual and procedural knowledge. A test was designed in the unit of ambient measurement, area, and volume, and it consisted of (35) paragraphs, including (9) items in the field of mathematical concepts, (14) items in the field of mathematical generalizations, and (12) items in the field of skills and algorithms, where the test was built according to the specification table.

Terminological and procedural definitions:

The strategy (Be - Share - Listen - Innovate): It is a strategy that has grown in the shadow of cooperative learning that challenges group learning situations; it allows students more time to think, use their previous experiences, and help the colleague to the other, and it goes through several steps (the step of thinking, the step of pairing, the step of participation), (Nasr, 2003). The researcher defines it procedurally as a teaching method derived from cooperative learning aimed at obtaining better and more contributions to classroom discussions, and activating students' previous knowledge: if the teacher asks a challenging question or an open question, and students are given time to think about the question, after that, the students gather in pairs so that each student exchanges his ideas about the answer to the question with his colleague next to him, another, to form each pair of students sharing a pair and finally; until (student square), and it becomes a working group of four students who dialogue and think together to reach one answer that they agree on its validity, presented to the rest of the groups in the class.

Conceptual knowledge: Anderson & Krathwohl (2001) define conceptual knowledge is knowledge of categories and classifications and the relationships between them and between them, and conceptual knowledge includes diagrams, mental models, and implicit or explicit theories in various models of cognitive psychology, these schemes, models and theories represent the individual's knowledge about how to organize and structure a particular subject, and show how different parts or information codes are interconnected and overlapped in a more systematic way, and how these parts work together. The researcher defines it procedurally as the set of concepts, symbols, relationships and mathematical generalizations in the content of the unit of measurement in the mathematics course for the sixth grade of primary school, and is measured by the total score obtained by the student in the conceptual knowledge test.

Procedural knowledge: It is defined idiomatically as the ability to conduct and apply algorithms, rules, laws and principles to concepts, facts and generalizations. (NCTM, 2000) and defines the researcher procedurally as a set of algorithms, skills and procedures followed by the student in solving the mathematical tasks of the unit of measurement in the mathematics course for the sixth grade of primary school, and measured by the total score obtained by the student in the procedural knowledge test.

Method and procedures

Study methodology: In the study, the researcher used the experimental method as it is the most appropriate for this study.

Study population: The study population consisted of all sixth-grade students in government girls' schools affiliated to the Al-Qurayyat Governorate Education Department during the second semester of the academic year (2022-2023).

Study sample: The study sample was represented in (55) female students who were randomly selected from the twelfth school for girls affiliated to the Al-Qurayyat Governorate Education Department during the second semester of the academic year (2022-2023), including (30) students in the experimental group, and (25) female students in the control group as shown in Table (1):

Table (1): Distribution of Study Sample Members

The Collection	Number	Percentage
Control group	25	45.454%
Experimental Group	30	54.545%
Total	**55**	**100.00%**

Study tools and materials:

First: Testing conceptual and procedural knowledge

- Objective of the test: The study aimed to find out "the impact of the strategy (be - share - listen - innovate) in the development of conceptual and procedural knowledge among primary school students in Al-Qurayyat Governorate".

- Determine the quality of the test questions: The test relied on the objective questions of multiple choice.

- Preparation of test paragraphs: The test items were prepared according to the unit of measurement: perimeter, area and size, and the correctness, accuracy, linguistic and scientific integrity, and comprehensiveness of the test paragraphs for the specific academic content were taken into account in preparing the test. The researcher designed a test in the unit of ambient measurement, area, and volume and consisted of (35) paragraphs (9) paragraphs in the field of mathematical concepts, (14) paragraphs in the field of mathematical generalizations, and (12) paragraphs in the field of skills and algorithms, where the test was built according to the specification table.

Authenticity of the achievement test: The achievement test was presented to (12) arbitrators from specialists in mathematics education and from supervisors and teachers of mathematics in the Department of Education in Al-Qurayyat Governorate, to ensure the clarity of the test paragraphs, their readability and suitability for the purpose for which they were prepared. Where the necessary adjustments were made based on feedback from the arbitrators, and the test maintained the number of its paragraphs, which amounted to (35) items. The amendments, which were unanimously agreed upon by the majority of the arbitrators, were accepted.

Stability of the test: To verify the stability of the tool, its stability was calculated using the Coder-Richadson equation 21 RK-21 by applying the tool to a sample of the study population and from outside its sample, which numbered (32) students, where the stability coefficient was reached, and this is an indicator to ensure that the test has the appropriate stability.

Test Instructions: Specific instructions have been developed to answer the test, including the test time that was set at (50) minutes according to the calculation of the average performance of students in the exploratory test.

Test correction: A score was given for each correct response, and zero for each wrong response.

Second: Student activity booklet

The student's activity booklet was prepared according to the strategy (Be - Share - Listen - Innovate), including the presentation of the unit's topics according to the steps of the strategy, where the appropriate mathematical tasks were determined, and to ensure the sincerity of the student's activity booklet, it was presented to (6) arbitrators who specialize in mathematics education, and after benefiting from their observations, the brochure was formulated in its final form, where the unit was implemented through (18) lessons.

Study variables:

First: The independent variable: teaching using the strategy (be – share – listen - innovate).

Second: Dependent variable: conceptual and procedural knowledge among sixth primary students in Al-Qurayyat Governorate.

Statistical methods: The researcher used arithmetic averages, standard deviations, and the use of multiple covariance analysis (One-way MANCOVA), analysis of covariance (One-way ANCOVA), and the square of ETA η2.

Study results and discussion

To answer the first question, which reads: "What is the impact of the strategy of being - sharing - listening - innovating in the development of conceptual knowledge among sixth-grade students in Al-Qurayyat Governorate?" As shown in the table below:

Table (2): Arithmetic averages and dimensional and tribal standard deviations for the performance of the control and experimental groups to test the conceptual knowledge of sixth grade students

Sub-dimensions	The Collection	Number	Tribal		Post	
			Average	Deviation Normative	Average	Deviation Normative
Mathematical concepts	Experimental	30	4.70	1.119	6.83	0.747
	Officer	25	4.96	1.060	4.80	1.080
Mathematical generalizations	Experimental	30	6.90	1.583	10.63	1.098
	Officer	25	7.20	2.500	7.32	1.492

Table (2) shows that there are differences in the arithmetic averages of the performance of the control group and the experimental group to test the conceptual knowledge of sixth grade students, and to find out the significance of these differences, a multiple common variance analysis (One-way MANCOVA) was performed, and the results were as in the following table:

Table (3): Analysis of multiple common variance for the two dimensions of the conceptual knowledge test among sixth grade students

Source	Sub-dimensions	Sum of squares	Degrees of freedom	Average squares	F value	Significance level	Eta squared (η2)
Mathematical concepts before me (common)	Mathematical concepts	.001	1	.001	.001	.980	**.000**
Mathematical Generalizations Tribal (joint)	Mathematical generalizations	.672	1	.672	.388	.536	**.008**
Teaching method Hotlings Tres 3.049 F=10.252 Sig =0.000	Mathematical concepts	46.769	1	46.769	53.857	.000*	**.519**
	Mathematical generalizations	132.41	1	132.41	76.431	.000*	**.605**
Error	Mathematical concepts	43.419	50	.868			
	Mathematical generalizations	86.621	50	1.732			
Total	Mathematical	100.545	54				

	concepts		
	Mathematical generalizations	**238.109**	**54**

*Statistically significant at the level (0.05).

Table (3) shows that the value of "F" for the field of mathematical concepts to test the conceptual knowledge of sixth grade students amounted to (53.857), and the value of "F" for the field of mathematical generalizations amounted to (76.431), which are statistically significant values at the level of significance (0.05), that is, there are statistically significant differences in mathematical concepts, and mathematical generalizations to test conceptual and procedural knowledge among sixth grade students according to the strategy of being - sharing - listening - Innovating. To find out where these differences are going, the adjusted averages were extracted, as shown in the table below.

Table (4): Adjusted averages and standard errors for the two dimensions of conceptual knowledge (mathematical concepts, mathematical generalizations) for testing conceptual knowledge

Subdomains	The Collection	Average Adjusted	Standard error
Mathematical concepts	Experimental	6.811	**.176**
	Adjuster	4.826	**.194**
Mathematical generalizations	Experimental	10.646	**.248**
	Adjuster	**7.305**	**.274**

It is clear from Table (4) that the adjusted averages all came in favor of the experimental group with modified arithmetic averages higher than the control group in mathematical concepts and mathematical generalizations among sixth-grade students, meaning that there are statistically significant differences between the control and experimental groups in mathematical concepts and mathematical generalizations in favor of the experimental group.

To answer the second question, which reads: "What is the impact of the strategy of being - sharing - listening - innovating in the development of procedural knowledge among sixth grade students in Al-Qurayyat Governorate?" The following table illustrates those results:

Table (5): Dimensional and tribal standard averages and deviations for the performance of the control and experimental groups to test procedural knowledge among sixth grade students

Procedural knowledge	The Collection	Number	Tribal		Post	
			Average	Deviation Normative	Average	Deviation Normative
Skills and algorithms	Experimental	30	5.77	1.251	9.33	0.661
	Officer	25	5.44	1.781	6.52	1.735

Table (5) shows that there are differences in the averages of the performance of the control and experimental groups to test procedural knowledge skills and algorithms for sixth grade students, and to find out the significance of these differences, a one-way ANCOVA analysis was performed, as shown in the table below.

Table (6): Analysis of Common Single Variance for Procedural Knowledge Test among Sixth Grade Primary Students

Source	Sum of squares	Degrees of freedom	Average squares	F value	Significance level	Eta squared (η2)
Skills and algorithms before me (joint)	.019	1	.019	.012	.915	**.000**
Teaching method	99.330	1	99.330	61.890	.000*	**.553**

Error	80.247	50	1.605
Total	**192.836**	**54**	

*Statistically significant at the level (0.05).

Table (6) shows that the value of "F" for procedural knowledge represented in skills and algorithms amounted to (61.890), which is a statistically significant value at the level of significance (0.05), that is, there are statistically significant differences in the test of procedural knowledge of skills and algorithms among sixth grade students according to the strategy of being - participate - listen - innovate, and to know the direction of these differences, the adjusted averages were extracted, according to the table below.

Table (7): Adjusted Averages and Standard Errors for Procedural Knowledge Test

Procedural knowledge	The Collection	Average Adjusted	Standard error
Skills and algorithms	Experimental	9.37	**.239**
	Adjuster	**6.476**	**.263**

Table (7) shows that the adjusted averages came in favor of the experimental group with modified arithmetic averages higher than the control group in procedural knowledge of skills and algorithms among sixth grade students, meaning that there are statistically significant differences between the control group and the experimental group in procedural knowledge in favor of the experimental group.

This result is due to the fact that the four strategic steps that be - share - listen - innovate have a prominent role in helping the learner to build his own learning on his own basis and in light of his previous experiences, and to propose the appropriate solution for mathematical tasks, all through the process of social negotiation with his colleagues, which reflects positively on the formation of the conceptual and procedural cognitive structure of the learner, especially since the formation of that cognitive structure needs teaching strategies that focus on helping learners recognize the relationships between mathematical ideas and understand the way these relationships are related to each other, and these results are consistent with what was stated in the study of Abu Sakran (2020) and partly with the results of the study of (Verantika, 2017), which indicated the effectiveness of this strategy in sports communication and the study of both (Yuliana & Setianingsih, 2017) which showed the effectiveness of this strategy in teaching realistic mathematics.

To answer the third question, which reads: “Does the strategy (Be - Share - Listen - Innovate) achieve a significant impact in developing conceptual and procedural knowledge among the female students of the experimental group?” In order to answer this question and verify the effect of employing the strategy (Be - Share - Listen - Innovate) in developing conceptual and procedural knowledge among the students of the experimental group, and to know the size of the effect, the ETA square η2 was calculated as shown in Table (8):

Table (8): The value of the impact size "ETA square" for the strategy (Be - Share - Listen - Innovate) in the development of conceptual and procedural knowledge of the experimental group

Skills	Degrees of freedom	Value "F"	ETA Value	Impact size
Mathematical concepts	54	53.857	.519	**Big**
Mathematical generalizations	54	79.431	.605	**Big**
Skills and algorithms	**54**	**61.890**	**.553**	**Big**

It is clear from Table (8) that the value of the impact size and the practical significance of teaching using the strategy amounted to (0.519) for mathematical concepts, (0.605) for mathematical generalizations, and (0.553) for skills and algorithms, all of which are greater than the upper limit of the impact size according to the frame of reference of

(0.14) and therefore the strategy (Be - Share - Listen - Innovate) achieved a significant impact on the conceptual and procedural knowledge of the study sample.

Reaching (ETA square η2) for the field of mathematical concepts (0.519) means that (51.9%) of the variation in the field of mathematical concepts from the scale of conceptual and procedural knowledge between the control and experimental groups is attributed to teaching using the strategy of be - share - listen - innovate, and reaching the field of mathematical generalizations (0.605) means that (60.5%) of the variation in the field of mathematical generalizations from the scale of conceptual and procedural knowledge between the control and experimental groups is attributed to teaching using the strategy of be - share - listen - innovate, and reach the field of skills and algorithms (0.553) means that (55.3%) of the variation in the field of skills and algorithms from the measure of conceptual and procedural knowledge between the control group and the experimental group is attributed to teaching using the strategy (be - share - listen - innovate). This is due to the fact that this strategy has a role in helping learners plan well to deal with mathematical tasks through its stages and steps. In the first stage, information is prepared and a clear picture of the answer to the task at hand is formed in his own style. The second allows group participation in complete freedom to express their different opinions and confirm from the validity of their perceptions, and during the third stage, dialogue and discussion are exchanged to reach appropriate solutions to the tasks presented during the last stage. All of this makes the learner an essential focus in the learning process, enhances his positive role, and increases his opportunities for participation and demonstrating his abilities and skills in implementing various sports tasks.

Recommendations:

Based on the results of the study, the researcher recommends the following

- The importance of mathematics teachers employing the strategy (Be - Share - Listen - Innovate) in teaching primary school students.
- Urging colleges of education concerned with preparing mathematics teachers to focus on training student teachers to employ the strategy (Be - Share - Listen - Innovate) in teaching.
- Educational supervision departments in the education departments held training courses in the field of using the “Be - Share - Listen - Innovate” strategy targeting mathematics teachers in the primary stage.

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