

**(A prelude to) Storytelling a method for improving  
mathematic education**

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**التحقيق في رواية القصص كواحدة من طرق انخفاض التسرب  
الأكاديمي في تعليم الرياضيات**

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**المخلص:**

تم إجراء هذا البحث لمعرفة ما إذا كان من الممكن تحسين التعليم الرياضي عن طريق سرد القصص.

للمساعدة في تحقيق هذا الهدف ، تم استخدام طريقتين بحثيتين: طريقة البحث النوعي والملاحظة في أحد فصول الرياضيات خلال فصل دراسي واحد.

أظهرت النتائج تأثيراً إيجابياً على سرد الرياضيات في تدريس الرياضيات ، حيث يمكن لمدرس هذه الطريقة خلق بيئة إيجابية في الفصل ، وجذب انتباه الفصل وتخفيف التفكير في الرياضيات.

تساعد هذه الطريقة في تحقيق تقدم ملحوظ في تركيز الطلاب وفهم انتباه الطلاب ، مما يشجع الطلاب على المشاركة أكثر في عملية التدريس ونسيان المفاهيم التي يتم تدريسها بشكل أقل

بعد الفصل.

الكلمات المفتاحية: تعليم الرياضيات ، سرد القصص ، التعلم ، الفشل الأكاديمي

**Abstract:**

This research has been conducted to find out whether it is possible to improve mathematic education by storytelling.

To help to attain this goal, two research methods;the qualitative research and observational method;have beenused in one of the mathematics classes during one semester.

The results demonstrated a positive influence ofstorytelling on mathematics teaching.With this method teacher can create a positive environment in the class, capture the class's attention and ease the mathematictraining.

This method helps to get a remarkable progress in students' concentration and to grasp students' attention, which encourage the students to participate more in teaching process and forget less the taught concepts after the class.

**Keywords:** math education, storytelling, learning, academic failure

**Introduction:**

Obviously, one of the main goals of public education in any country, including Iran, is to teach thinking and analyzing skills to students. Lessons such as mathematics, physics, chemistry, and literature are fundamental for preparing the young minds for future academic educations. The main effort of education, at least in recent years, is to promote a sense of discovery within students and mathematics is expected to play a major role in this respect.

But recent studies show a sharp decline in mathematics skills at middle and high school levels, mainly because students do not comprehend mathematics and are not interested in learning it. Students do not even have a good communication with mathematics teachers.

We have seen that as soon as students start the school, teacher says: "Take the math seriously, you need to put more effort into it."

Each word and symbol is important and carries its own individual meaning, "serious" for students is scary because they have learned that they are meant to take the "difficult task" seriously, so they are already afraid they might not learn it well because it is supposed to be hard. Then mathematics becomes a monster that students feel they must fight. As it is "difficult task". This is a beginning for student's avoidance or even aversion.

**General Objectives of Mathematic Education**

The fundamental goal of teaching mathematics is to strengthen the young individual's mind. And the purpose of school education is to prepare them for real-life situations.

Objectives of mathematics education can be described in three below main areas:

**Acquire the necessary knowledge**

The essential knowledge in mathematics science are the basic concepts that, within the time and the technological advances, they are still relatively valid, and are a perpetual need.

**Acquire the essential skills**

Skills in math training are, having hands-on experience in different teaching methods and a bunch of abilities for teaching the different learning methods to students.

**Acquire the essential attitudes**

Attitude is the desire to act on a certain path that is derived from a set of necessary knowledge and skills for students. All training, including the acquisition of knowledge and the development of skills are aimed to achieve

these values.

**Educational goal:**

Educational goals in mathematics teaching are the most important part. The main task of math education is to prepare students for everyday life, to build enough self confidence in students to make them able to evaluate and find solution for their problems on their own.

**Training goal:**

(To evaluate students need in and outside the school with computational techniques )

To prepare and equip students for other lessons and daily life calculations needs

**Cultural goal**

(To familiarize students with mathematics as a part of human culture and thought)

Mathematics science is an important part of any culture. Referring to the history of the mathematics of a nation, will arouse a sense of pride in them and will foster their self confidence. This will relate lessons to national history and tradition.

**Emotional goal:**

The pleasure of mental activities and knowledge, improves our mathematics skills, arouses intellectual curiosity and boosts the sense of dignity and affection.

**Reasons of weaknesses in mathematics education**

**1. Content of textbooks**

One of the most important goals of mathematic education is to help students to overcome obstacles in new situations based on their prior learning, this is not achievable unless they have practiced and faced different situations and solved similar problems in advance.

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Now we will review how teachers have been constrained by the content of textbooks.

**Time Limit:**

Mathematics teaching time in school is limited. The content of lesson plans in all levels are based on a rigid time schedule, but solving the problem and encouraging students to think and find a method and also practicing needs time. Even though teacher is active from the beginning of the class, but textbooks content relies on a lot of math problem solving by students which leaves little time for them to think for a solution. Every concept in textbooks should be taught in 45 minutes, including thinking and solving the problems which in world norms and standards is only the time should be given to the students to think about the problem to lead them to find a solution themselves.

**Constrain the teacher to the determined content and activities**

Math's lesson plans at primary schools, constrain teachers to textbooks' content and structure, which makes them to rely only on the content of textbooks.

But if by modifying the resources which textbooks offer, in order to let the teacher to choose between the time consuming activities and those that make students to think, teacher will focus on finding the activities that further student's math's skills.

**Training methods:**

The ideas and concepts that make up mathematics are often complicated. Many times, they are made to appear much more difficult by the ways in which they are presented. The language and vocabulary used in mathematics are key to understanding its concepts

Mathematics is not easy when it is not taught in its own language and is confined to the characteristics of textbooks and teaching methods. The language of mathematics is difficult due to the ways in which the vocabulary has been taught. With excessive textbooks contents, there is no time

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to be found for additional explanation and teacher does not have enough time to give an explanation that goes beyond basic textbook contents in order to talk about math's history and to relate mathematics to students' everyday lives.

We should be aware that, even if the teacher is a math's professor, it does not necessarily mean that his method is going to be the best method of instruction for every individual student. Being Mathematicians is one thing and teaching mathematics something else.

The methods that seem proper to adults is not necessarily appropriate or more efficient for the middle grade students, who are still developing their rational thinking process.

After observing the teaching of some mathematics teachers, it was reported that almost all of them use the same teaching method. In this method, teacher first wrote the division, then explained the steps to the students.

Only few of them did not explain the solution clearly, but they also complicated the problem for children with unnecessarily explanations, which, after consuming a lot of time and energy, they almost solved the problem for students. Now it seems obvious that using inefficient and unrelated methods plays a major role in the failure of mathematic education.

**Problem solving method**

A problem solving method is, in fact, a comprehensive preparation for life. Life is, facing issues and obstacles and trying to overcome them. The educational activities are arranged in such a way to raise questions and problems in the students mind and teach them how to approach them.

**Conditions for creating a problem solving method:**

In the problem-solving method, the student should master the following skills in order to solve the problem:

1. Recognize the problem
2. Define and understand the problem
3. Identify the characteristics of the problem
4. Eager to solve the problem
5. Generate alternative solutions
6. Gather and evaluate necessary Information

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7. Evaluate the problem and gathered information, choose the valid solutions among the options and abandoning non-valid hypotheses.

8. Develop the solution

**The benefits and limitations of the problem-solving method:**

**1. Benefits:**

1. Relates mathematics to students' everyday lives
2. Psychologically, it's the best educational methods for developing rational thinking in students.
3. Due to its creative and flexible nature, calls student's inner interest
4. Compatible with regular classrooms

**Limitations:**

1. Demands more time than the school's regular activities.
2. Demands more experienced teacher and familiar ones with the method.
3. Due to its time consuming nature it might not be compatible with school's normal time schedules

**Problem solving method's steps**

During the teaching based on this method, following steps should be taken into consideration by teachers:

1. Define the problem's solution. At this stage, teacher details the problem without referring to the answer or solution method. In this method students are supposed to find the solution themselves.
2. Make sure students master the required background information, the facts and rules that are prerequisite for solving the problem.
3. Help students to recall the facts and rules needed for solving the problem.
4. Explain the problem verbally very well. At this point, teacher should describe the problem and explain its solutions in detail to give students enough material to allow them to discover the solution on their own.
5. Ask them to illustrate the solution, to get sure that they have completely understood the concept and ask them to solve a similar problem with the same concept and solve new issues with the same principles.

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Jason, in his book writes "we all are trying to find solutions to education systems challenges, but we should be more cautious in using new methods."

**The research's Main question:**

Is it possible to teach the algebra equations concept with storytelling method?

**1. Other questions**

1. Does this method help students to further their understanding of algebra equations concept?
2. Does it help them to express what they have learned?
3. Are they able to solve the related problems?
4. Does it promote "active learning" within the students by utilizing their sense of imagination?

**Discussions**

We ask the students few below mathematics questions.

If, your father was 40 years old at the time of your birth, after 4 further years, what would be the sum of your and your father's age?

Or imagine, one of you buys two cakes from the school's canteen and pays 5000 Tomans to school's janitor and receives 1500 Toman money back, now you want to calculate how much costs each cake.

Or, to buy lentils, you go to the grocery store and ask the grocer for the price of each kilo, and he replies that each kilo of lentils costs 3000 Tomans and now you want to know how many kilos of lentils you can buy with 1000 Tomans.

Have you been invited to any party or gathering? It has happened that you knew one person there and did not know the rest of the guests.?

In this point usually they talk about their different experiences. Again we ask, "what do you do if you do not know anyone in your friend's family gatherings?"

We try to lead them to get to the point to say, they try to find some other strangers in the same situation.

Now it is time to conclude the discussion in our favor and say "now you see that in such situation what happens, people make groups, friends with friends and strangers with strangers."

This is also exactly what happens with the numbers, friends with friends and strangers with strangers.

Then we ask the students, "have you ever happened to pass a deep river through a very narrow bridge, or some rod or wood used as a bridge?" Some of them will definitely start to share their own or others'

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experiences. Now it is time to ask whether, the other people have told them how pale and scared they have looked afterwards.

Again they start telling stories that ...

Now it's time to step in and deviate the discussion towards the numbers and mathematics telling them that this is also valid about numbers, like everyone else they pale and change color when they pass through such a bridge.

Then we explain them that the day's lesson is "equations" and we will show them how to manipulate and solve the similar question and problems.

Then, to illustrate them how a number pales and changes color passing through a river, we change number's sign. Or we describe that variables in an algebra equation, like strangers in a party or gatherings are unspecified numbers, that we do not know them. (mathematic website)

**Conclusion**

This study found that, this method helps the teacher to present mathematics in a way that can be more attractive for students. And also to make the students to recall the concept and rules effectively and then apply them in a variety of situations like exams, dealing with similar problems or doing their homework by remembering the related stories unconsciously, which prevents any possible mistake or error.

Recent studies show a sharp decline in mathematics skills at middle and high school levels, mainly because students do not understand mathematics and are not interested in learning it. They do not even have a good communication with mathematics teachers.

Maths with all its attractive and interesting nature still looks dense and difficult to many of students.

A pervasive mathematic education demands teaching methods and an efficient teaching method is not achievable unless concepts and principals of maths are mastered.

Mathematics plays a major role in choosing the study fields in high school, future academic and professional success, and a positive contribution in the future society. Mathematics also lends insights into education in the other areas of science.

Parents and students by missing the opportunities, put efforts in learning maths in the last minutes which leads students to an educational failure and leaves a negative feedback in students mind.

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