



RESEARCHING ABOUT RELATIONS BETWEEN PROBLEM SOLVING SKILLS IN MATHS AND COMPREHENSION SKILLS IN TURKISH FOR 7TH AND 8TH GRADE STUDENTS'

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ABSTRACT

The purpose of this study is searching the relationship between primary 7th and 8th grade students' problem solving skills in mathematics and Turkish skills. In Turkish part reading, writing, listening and speaking skills are mentioned, in maths part problem solving process is mentioned. The sample of this study is occurred by 100 7th grade and 100 8th grade students, a total of 200 students in Yalçın Çiftçioğlu Primary School, Dr. Sadık Ahmet Primary School, Fatih College and Academy College in Büyükçekmece, İstanbul. Problem test by 20 questions is applied to the students who are in this sample study and reading, listening, writing and speaking skills assessment forms which intended to determine Turkish skills are filled by their Turkish teachers. Clinical interview method as a method of data collection is used in realization of this research. Data will be collected by video recordings, observation, interview which reflect students' problem solving skills. Problem test which involves equation problems are applied to the students and looking at the relationship between the score obtained from this test and the scores obtained from Turkish skills assessment forms create the size of quantitative research. In research, analysis of qualitative data was made by PASW statistics 18 package program. As a result of research a positive correlation was found between mathematics problem solving skill and general Turkish skills reading, listening, writing and speaking skills. Looking at the results in 7th grade students' the relationship between reading ability and math scores are more powerful than others. In 8th grade students the relationship between math scores and listening skills was found to be more powerful than others. In the light of this work, language skills acquired in Turkish lessons are related to problem solving process, so it has been concluded that especially these skills need to be addressed in Turkish lessons.

Keywords: Turkish skills, problem solving skills, maths

INTRODUCTION

Math is hard to understand in our country, even all over the world and therefore it is considered to be a dislike or unpopular course. While searching for answers on various factors in education process why not love math lesson? Justice discussed, we have seen benefit addressing as an important factor the problem of expression. Because the presentation of the problem is considered in general habit of repetition of the abbreviated sentences related to the problem. Whereas after student understand phrases came to him as a problem, he will find the solution by his problem world which his own sentences will constitute in his brain. The true center of building problem and problem solving is the brain of the student. For this reason, student should realize the sentences he read or the narration made by the teacher (Albayrak and Erkal, 2003).

According to cognitive theorists, in problem solving, understanding and comprehension is important. In Barb and Quinn (1997)'s study, they used Polya's method and according to this method attention is drawn to the necessity of to better understand the problem in problem solving process and process is made intended to solve it. In problem understanding what is being asked and in order to find being asked understanding what is required is pre condition to achieve the solution. One of the major difficulties encountered in solving the problem of understanding of the problem is due to not be read properly. Students with general reading difficulties have difficulty in understanding a problem (Baykul, 2002; Polya, 1957).



Charles and Lester explained that one of the factors that affect the process of problem solving is the ability of reading (Karataş and Güven, 2004). It is understood that all these courses about reading comprehension maintain a close relationship with mathematics. Turkish and mathematics courses in the area of expression and skills courses have affective features which complement each other in the formation of students' cognitive and sensual comprehension skills (Albayrak, 2001).

Understanding of concepts, using the concept, reading the problem, description of the problem or in the continuity of the solution to the problem description, in terms of children reach the results, it occurs that Turkish and mathematics courses have features which complement each other. Contemporary life, especially success is based on the fact that reading and writing, the simplest activities of daily life, the most complex social, economic, scientific and political activities in every field we have seen that this vehicle is being used (Albayrak and Erkal, 2003). In the light of all these studies, it occurs that Turkish lesson including in the process of problem solving, reading comprehension, writing, listening and expressing skills the necessity of entering in to cooperation with mathematics. Especially it is emphasized that how will be the results of this cooperation in the lower secondary education. With this research, it is put forward especially in terms of understanding and shaping the importance of the success of Turkish. How the relationship between Turkish and mathematics lessons should be in this sense solutions can be developed in the direction of the important points. The purpose of this study is searching the relationship between primary 7th and 8th grade students' problem solving skills in mathematics and Turkish skills.

Method

This part includes research model, sample, data gathering techniques and explanations concerning data collection.

Research Model

The purpose of this research that will be carried on 7th and 8th grade students is to examine the correlation between their mathematical problem solving skills and Turkish skills. In this research, qualitative and quantitative research method will be used.

Population and sample

The population of this research consists of 7th and 8th grade students in Büyükçekmece, Istanbul. Since it is not possible to perform a test on all students mentioned, sampling is adopted. To represent the population, using random sampling, 200 students were chosen from four different schools; 100 students from 7th grades, 100 students from 8th grades.

Table 1. Distribution of students according to age

Sex	N	%
Female	103	51,5
Male	97	48,5
Total	200	100



Data collection

To be able form the theoretical base of the research, local and foreign resources have been scanned; in addition expert sat that subject has been consulted. After a literature review, it has been revealed that there are no mathematical problem tests that also measure students' Turkish skills. By scanning previous year's exam questions, a problem test, therefore, has been prepared which includes equation problems students have difficulty in solving. In this test, words which reduce the probability of the students to understand the problem easily have been used on purpose. 20 questions have been prepared for each grade. After the validity and reliability values of the achievement tests have been analyzed, the following results have been acquired; Kr-20 reliability of the sample test for 7th grades is .80 and Kr-20 reliability of the sample test for 8th grades is .71. The questions of which discrimination index is lower than 20 have been removed out of test.

The evaluation forms used in the research concerning Turkish skills have been taken from teacher's guide book. That's why; these forms haven't been evaluated in terms of validity and reliability. These forms include items regarding reading, listening, speaking and writing skills. Five sub items which are necessary to use in math lessons have been chosen out of the mentioned main skills and they have been put together to prepare a test of 20 items. These forms have been filled by the Turkish teachers of the students to whom achievement tests have been applied in accordance with students' level of fulfilling the attainments in the form. The scoring system is as such; Never:1, Hardly:2, Partially:3, Highly:4, Totally: 5. An objective evaluation, thus, has been aimed. Pioneered by Piaget, clinical interview is a technique which investigates the form of information structure and the process of reasoning (Clement, 2000, p.547). In this technique, students are interviewed to be able to analyze their opinions in depth. Clinical interview gives important clues concerning the nature of reasoning and also it helps understand how students create their own world, how they reason, how they process their cognitive thinking and how they make up their minds (Ginsburg, 1981).

In our study, clinical interview has been made with 20 students with poor, average and good success levels on problem test. 10 of these students are at 7th grade, 10 are at 8th grade. It has been aimed at clinical interviews to observe thinking processes and to analyze their ways while solving a problem. While choosing clinical interview questions, it has been paid attention to choose questions which reflect their understanding the question, making an equation about the problem and their approaches to the problems which contain confusing Turkish words. Another objective is to observe their reading, understanding what they read, listening, speaking and writing skills using mathematical texts through which their Turkish skills are analyzed.

Data analysis

In the research, the analysis of quantitative data has been made with PASW statistics 18. While analyzing qualitative data, recorded data has been put on paper in detail. The qualitative data has been analyzed in four steps as Yıldırım and Şimşek (2006) stated; coding data, finding themes, arranging data according to codes and themes and interpreting findings. To analyze the content, similar data has been arranged within the frame of specific concepts and themes, and then this data has been interpreted by organizing in a way the readers can comprehend. Students have been evaluated according to their grades, sexes and mathematical success levels while analyzing the data. Codes are formed as follows:

- 7th and 8th indicate their grades at school.
- Y, O and D indicate their success in mathematics;

Y: Successful students

O: Average students



D: Poor students

Students' success levels have been formed on the basis of their mathematic exam grades in the previous term.

- E and K indicate their sexes.
- G indicates the interviewer.
- 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 indicate the order of students during the interview.

In this way, the effect of students' Turkish skills has been determined on their performance of problem solving. In the conclusion, a general evaluation has been made by combining findings from qualitative data with the ones from quantitative data.

Findings

Sub-problems as a result of statistical procedures and findings obtained from the analysis of the findings of the interpretations are given in this section of the research.

Can 7th and 8th class students read and understand equation problem? Sub-problem's findings and interpretations:

Related with this sub-problem, students were asked questions by using math texts and retrieved comments. Based on the answers given by the students it can be said they understand the text that they read mostly but they couldn't hold quantitative data in their memories. It can be mentioned the parts read they can transfer it as general outline. We can mention that there are words that make it difficult to understand math problem for almost all the students. Words such as; Inaccurate, too, as, more, time, and, or, time, equal to must be paid attention. According to the answers of the students, it can be said that a thumping majority believed that it is not enough to understand the problem.

At which level is the 7th and 8th students' the effects of writing skill are told on problem solving skill? Sub-problem's related findings and interpretation:

On the basis students answers, almost all the students' writing skill is important during problem solving can be said and while writing problem sentences, because of incorrect spelling they made incorrect solving.

What is the effect of 7th and 8th class students' listening equation problem, indicating their own sentences on their problem solving? Sub-problem's related findings and interpretation:

Students have referred to the importance of reading, listening and writing skills. It can be said that the majority of students believe speech skills does not effect to solve mathematical problems.

Can 7th and 8th class students make the solution by just listening before reading problem? Sub-problem's related findings and interpretation:

As a result of the interviews, some of the students' interpretations about qualifications of it is enough just listening to solve the problem: On the basis students' answers it can be said that most of the students can solve the math problem by just listening and about all of the students believe that they can make mistake because of not paying attention to small details.

Interpretations and findings related with qualitative data

In this section the findings of the quantitative study are presented.



Table 2. The relationship between 7th class Students’ Turkish skills and math problem solving skills

Turkish skills	Math score
General Turkish skill score	r=0,414
Reading skill score	r=0,401
Writing skill score	r=0,331
Listening skill score	r= 0,398
Speaking skill score	r= 0,235

When the table 2 examined, it can be said that there is a positive relation between 7th class students’ grades for Turkish skill course and math grade. While students’ grade for Turkish evaluation forms is rising, math grade is rising are seen.

Table 3. The relationship between 8th class students’ Turkish skills and math problem solving skills

Turkish skill	Math score
General Turkish skill score	r=0,560
Reading skill score	r=0,529
Writing skill score	r=0,516
Listening skill score	r= 0,566
Speaking skill score	r= 0,517

When the table 3 examined, it can be said that there is a positive relation between 8th class students’ grades for Turkish skill course and math grade. While students’ grade for Turkish evaluation forms is rising, math grade is rising are seen.

Results and Suggestions

If we look at the result of problem test and Turkish skill evaluation forms, the students who achieved problem test, their Turkish skill level are high. So we can mention that Turkish and Math courses are related. The main point about the studies we have to do, to understand math and problem solving skill, is indicating inadequacy of students’ Turkish course and to study about related removing this.

We are faced negative effective words because of our mistakes for problem solving test sand misunderstanding of solving process. We can classify these words and clauses; nouns, adjectives, adverbs, conjunctions and prepositions. We can have problems such words: “times more, from the beginning, from the end, all, equal” as nouns; “second, third, former, the next, twins, at least, what order, maximum, first, each” as adjectives; “much, early, at the same speed, at the same time, more, incomplete, orderly, later” as adverbs; “with, as, only, after that” as prepositions; “and, or” as conjunctions. These words and clauses must be taken in hand in Turkish lessons and give them meanings supply good results. It can be said to allude not only on the theoretical meaning but also on the meaning of the words in the sentences; 6th class studied “noun, prepositions, conjunctions, punctuations and adjective types”; 7th class studied “verbs and adverbs types”; 8th class studied “gerunds and infinitives”.

So, based on daily life for the students to understand problem situations and mathematical texts can be prepared by bringing together the power words. Thus, the relationship between Turkish skills and problem solving skills in mathematics these kinds of texts can be reflected in the students and omissions can be resolved.



Secondary education 7th and 8th grade students' the relationship between mathematical problem-solving skills and Turkish the results of this study are: After applications of mathematics to the students' general skills in Turkish Regarding the relationship between the scores of the test problem, a positive relationship was seen. This statement shows us while increasing Turkish skill grades, math achievement increases. Then all of a Turkish skill levels were scored separately, the relationship of mathematics score. Results shows that the relation between 7th class Turkish reading skill and math grade at a high level. The lowest relation talking skill and math grade is examined.

According to the results after clinical interviews, students' problem-solving failures that was caused by the lack of a number of Turkish, reading, writing, listening and speaking. It was observed that they have problems about processing although they understand the text who read, there are words make it difficult to understand while reading the problem, it is not enough to understand the problem, carelessness and processing errors results trouble. It was concluded that speaking skill which is one of Turkish skill doesn't affect directly problem solving process. It was seen that students can solve the problems containing less quantitative data by just listening, but there are high ratio to make mistake on the problem which is solved just by listening. In the frame of all surveys that have been made, math problem solving skill is related with Turkish skill can be said. For the students who have trouble about solving math questions, Turkish skill improving studies must be done will be beneficial. reading, writing and listening skill especially must be taken in hand concluded.

Based on the results of this study, the researchers for teacher training institutions, turkish, mathematics teachers were made some suggestions.

- Students must be applied reading, listening and writing activities very often during Turkish lessons.
- 6th, 7th and 8th class students are not only being given theoretical meaning of conjunctions, prepositions, adverbs told but also must be stood on the application and meaning in the sentences.
- In math lessons not only process level but also writing by using math texts, listening and speaking skill included linguistic activities must be done.
- Mathematical words should be given to the use correctly.
- Students in the class should discuss the use of mathematical language.
- Students must be encouraged to read their books according their level.
- By discussing of problem solving in this course, students use the language of mathematics can be developed.
- Meanings of words mixed nature of problems within the framework of cooperation with the Turkish and Mathematics teachers can be explained by Turkish Teachers.
- Students can be printed daily lives thinking about math problems. Thus, problem posing and writing skills as well as the opportunity to develop skills in Turkish can be submitted.
- The teacher who wish to print problem can provide the opportunity to do a speaking activity for students every time giving to a different students.
- It is suggested that in the frame of this study, in the primary 4th class level a similar study, in fact a larger sample of this study in 7th and 8th class.

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