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# Analyzing the Ability of Correlating the Knowledge with Daily Life of Prospective Teachers who will Educate the New Generation

**By**

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## Abstract

*In this study, the main aim is to analyze the elementary mathematics' prospective teachers' ability of using their past acquisitions while solving the daily problems. In order to achieve this goal, open ended questions are directed to the prospective teachers and they are expected to solve the problem. Both the variety of the approaches they use to solve the problems and their ideas about the problems can be a guide for us, the teachers, to find out what they know. This study has been carried on 77 (female: 33, male: 44) 4th grade students studying at Mathematic Teaching Department of Dicle University. Solving the problem, analytic thinking forms and ability of using past knowledge have been valued instead of scoring. Analyses of data show that most of the prospective teachers (81.9%) solved the problem using mathematical concepts, a few of them (18.1%) has solved it using physical concepts.*

**Keywords:** *Elementary mathematics teachers, daily life problems, acquisition, new generation, prospective teachers.*

## 1. Introduction

Mathematics is a discipline that is not peculiar to just mathematicians, effective in daily life, too, and should be known by everyone to some extent (Tutak, Gün and Emül, 2010). As in many countries, mathematics is included in the most important disciplines from elementary to higher education. The importance of mathematics is clear not only with the rate it is included in formal training programs, but also with its being indisputable for us to carry our daily life actively in today's technology age (Gömleksiz, 1997).

In this day and age when the technology is rapidly developing, human being tries to keep pace with this rapid change. In this adjustment process, the skills of creativity, reasoning and problem solving come to the fore. Mathematics teaching has a big share in gaining these skills (Quot: Turanlı, Türker and Keçeli, 2008; NTCM, 1987). When it comes today, we clearly witness that the need and interest in mathematics have been increasing every day in the past quarter century. Then, although we are in the beginning of the 21st century, the developments in information and communication technology, the quantum computer's being come into use that provides nearly light speed transfer of information and efforts to develop new programming languages have made mathematics and mathematics teaching more and more important.

During the last decade, the techniques of mathematics teaching have always been a matter of discussion (Quot: Altun, 2006: Santos-Trigo, 1996). Fuson (1992) and Schoenfeld (1992) have defended the idea

that the inadequate approaches of mathematical problem solving activities are, to some extent, the results of teachers applications. For example, Fuson defends that giving much importance to problem solving and using mostly the same examples of problems in the North America results in the children's seeing mathematics as remembering particular rules and application activity (Transand: Özünlü, 2003: Fuson, 1992; Schoenfeld 1992). The researchers also show that even though they have the necessary pre-knowledge and skills, the students have difficulty in solving intermediate unusual problems (Quot: Altun, 2006: Fitzpack, 1994; Marschal, 1998; Schonfer, 1988). If the education and acquisitions of the school becomes meaningful and are used in daily life, they could be more beneficial. Interdisciplinary teaching adopts this kind of an approach (Dervişoğlu and Soran, 2004). It is important for showing the students that mathematics is not a subject so different from life by providing a daily situation to be expressed with mathematics (Bali, 2002).

As we take into consideration that a teacher in making a learning environment more difficult or easier, we can see that the teacher plays a very important role (Turanlı, Türker and Keçeli, 2008). Mathematics is not generally liked by the students because it is generally comprised of abstract concepts. However, people are always face to face with mathematics in their daily life but they are unaware of this. For instance, at the breakfast, while cutting the cheese with a knife, they make geometrical and algebraic operations. Moreover, unconsciously, while trying to make it seem better, more and more different geometrical shapes occur.

In parallel with the information and technology, the requirement for the mathematics increase day by day. This fact necessitates the efforts for mathematics and mathematics teaching programs to be handled within a more logical and planned frame. In many researches until today, although it is emphasized that mathematics' and mathematics teaching's being in a correlation with daily life could make positive effects on mathematical concepts and durations, in our daily life it is clearly seen that there is either little or no correlation between mathematics and daily life (Quot: Cankoy, 2005: Brown, Collins and Duguid, 1989; NCTM, 1989; Pape & Tchoshanov, 2001; Pesek & Kirshner, 2000; Wilson, Teslow and Taylor, 1993). It is an inevitable reality that education takes a big place in information communities. In the development of a country, creating an information community, mathematics is very important for the future of the country. Mathematics teaching and learning opens up the individual's horizons (Aydin, 2003).

The creator of Realistic Mathematics Education is Netherlander mathematics educator (RME) Hans Freudenthal. By submitting those that mathematics has started with real problems in the history, the life has been put into mathematics and then formal mathematics has been reached, Hans Freudenthal has stated that it is anti didactic to firstly give formal mathematical information and then pass to application. Freudenthal has defined mathematics learning as duration of interpretation and has stated his idea as "for a child, mathematics begins with interpretation and in order to make real mathematics interpretation can be based on at every steps" (Quot: Altun, 2006: Nelissen and Tomic, 1998). According to Freudenthal, mathematics is a human activity that is not explored but invented. In order to keep things around him, human being counts, measures, classify and collocates them. For example, the yard of a rectangle dimensions of which are "a" and "b" is represented with A=a.b . This is an activity of measuring which has been created by us. According to this approach that has aroused as a reaction to traditional education, the requirement of mathematics must be main point of education and mathematics teaching must start with real life problems (Kayan and Çakıroğlu, 2008; Gravemeijer, a.o. 1990; Transand: Özünlü, 2003: Fuson, 1992; Schoenfeld 1992).

Mathematical power has been a subject that is studied especially in the United States of America with the aim of using the skills that are required by mathematics in daily life in 90s. As the most comprehensive definition, mathematical power is "a complex skill that comprises the students' gathering and using mathematical knowledge, solving unusual problems, communicating via mathematics, creating connections among different disciplines by making innovations, guessing and making logical implications" (Yeşildere and Türnüklü, 2008).

After the international comparisons made by Trends in International Mathematics and Science Study (TIMSS), high averages of some far east countries that have considered problem solving methods with open ended questions, and have organized mathematics teaching as problem centered (Cai, 2003; Kaur, 2001, Fuson, 1992; Schoenfeld 1992) has taken programmers attention to the applications of these countries.

As Johnson and Johnson (1991) has stated, an effective mathematics teaching must be focused on problem solving. Students can use mathematical methods for problem solving. It can be stated that the ability of problem solving is the base of growing creative people. For this reason, it can be thought that problem solving ability can be gained effectively by innovative learning strategy. By using materials, innovative learning improves the students' abilities like critical thinking and problem solving, and increases the stability of the gained knowledge. However, in order to reach all these, the teachers should be capable of content knowledge and expressing it.

Problems must serve as the entrance to mathematical knowledge. For this reason, the last studies on elementary mathematic programs and the standards of evaluating the successes of mathematics pay attention to improve mathematical problem solving and questioning abilities, and considers these problems' being solved in the real life (Verschaffel, et al., 1999; Fuson, 1992; Schoenfeld 1992).

Growing up good problem solving individuals is not possible simply by their awareness levels' being at a good rate. In addition to these qualifications, the individual must have a good ability of questioning. Questioning is a process of coming to an end by thinking all the factors and taking them into consideration. Mathematics teaching takes a role that's much more than teaching operations, numbers and expressing calculating skills those are inevitable parts of daily life, and it provides important supports such as thinking, creating connections between events, logically thinking, making predictions, problem solving that helps us remain standing in the daily life that is getting more and more complex every day. Although it is difficult for us to see the examples of it by the wrong educational system of today, making connections among terms and exploring the relations of them, creating new solution ways special to the situation is sine qua non of "mathematics" (Umay, 2003).

People thinking analytic and questioning the events pay attention to pattern, structures or rules of events or symbolic images of the real life; they question whether all these patterns have come out by chance or by a particular reason. For everyone, it is generally by trial and error to find the most suitable questioning style for themselves (NCTM, 2000). Before pacing into their education life, the children learn from their parents to use win-up toy by the rope among their toys. Even if they had got a verbal education, the parents, while turning, unconsciously calculate the surface area of the geometrical shape, cone.

Analytic approach is a questioning style that is generally based on deductive thinking that is analyzing the structures and examining separately, calculating them and reaching the target. When it comes to holistic approach, structures are viewed from the top as a whole, and individuals are not considered as whole, one by one. In his/her own culture, if using spoon while eating is not a tradition , or if he/she has never seen a bicycle before, the child may not have gained those concepts, or he/she may have learned them by himself/herself. (Quot: Umay, 2003; Nieto, 1996; Atkinson, 1992; Malloy, 1999).

The environment in which ideas are clearly, fearlessly, comfortably defended, thoughts are considered, effort is made for thinking together; provides different kinds of questioning styles to be known closely. In this way, the individuals learn more about themselves an about the questioning styles, and then can find the most suitable questioning style for themselves (Umay, 2003)

Using mathematics' instruments is among the frequently examined subjects at mathematics and physics teaching. The effects of using these instruments on the student's success (Hawkins, 2007; Fuson, 1992 ; Schoenfeld, 1992), the teachers' ways of using these instruments at classes (Stein and Bovalino, 2001; Moyer, 2001), the attitudes of mathematics teachers for using instruments at classes (Tooke et al., 1992; Moyer, 2001, Ünlü, 2007) are some of the titles of the studies on this area. In the subject researches, the attention is drawn to that students can make sense just by using the instruments actively by themselves, and it is stated that the students that learn by using real instruments are more successful in applying the abstract concepts of mathematics to the real life. At a $6^{th}$ and $8^{th}$ grade mathematics teaching program - sharing the same idea – as the geometrical thinking is improved; it is pointed out that the knowledge gained from the geometric activities must be formed in a hierarchic order visually, analytically and inductively (Ministry of National Education of Turkey [MEB], 2007: 44). While creating geometric structures, the compass has more importance than the other drawing instruments such as grades and ruler. Because solving the problems such as dividing a line segment into two equal parts, dividing an angle into two equal parts by using just compass and grades helps the students explore the qualifications of geometric shapes and provides their comprehension about these concepts be better (Napitulu, 2001). Benefiting from compass and grades is important not because it brings the students the skill of using these instruments, but mostly for it helps them analyze the qualifications of the shapes drawn (Cherowitzo, 2006).

Smart (1998) states that while drawing geometric structures with compass and grades, following the steps stated below will help improvement of the signed skills:

1. Analyze: At this first step, the student makes the expected drawing assuming that the things required in the problem are performed.

2. Drawing: At the end of this step, drawing is made using compass and grades.

3. Proof: This step includes the duration of proving whether the drawn shape is the one requested in the problem.

4. Discussion: At this step, the possible solutions or situations are discussed.

Researchers have signed that the teacher's guiding the students with questions while using the instruments and using social activities such as discussions trigger the students' geometric thinking (Olkun and Toluk, 2004). For this reason, it is also necessary to analyze how the prospective teachers use the drawing instruments such as ruler, compass and grades during the lesson.

In this study, it is aimed to determine the prospective teachers', studying at Ziya Gokalp Education Faculty Elementary Mathematics Teaching Department, skill of getting "The Triangle's Center of gravity" by the acquisitions based on the problem given to them.

***Aim***

In this study, the main aim is to analyze how the prospective teachers, trained to educate new century's individuals, use their knowledge to solve the problems of daily life. In parallel with this aim, the problem of, whose origin is Polish mathematician Steinhaus, "Building common school for three neighbor villages? In the problem, it is stated that there are 50 students in the first village, 70 students in the second village and 90 students in the third village. In the problem, it is requested to build the school at a place where the children must make the least effort to reach." (Transand: Yuksel, 1962). The second aim is determining the prospective teachers' level of using their acquisitions of $8^{th}$ grade mathematics in addition to what they have acquired from the physics lesson while trying to solve the problem. Some of these acquisitions are as; "1) sees the limited area as a triangle that is created by connecting the points attained in twos, 2) draws the median lines of any acute triangle, 3) sees that the triangle crosses at a point of the median lines and 4) knows that the point where the median lines cross is the center of

gravity of the triangle". Another aim of the study is to observe the prospective teachers' ability to use ruler, compass and grades to gain these skills which are very important in physical sciences and technical areas. Therefore, it need to examine how to prospective teachers use the drawing instruments such as ruler, compass and grades during the lesson.

## 2. Method

In this study, a problem related to the real life has been prepared, directed to the prospected teachers and their solutions to the problem and their skills of questioning have been searched with an example event. Here it is aimed to deeply analyze at which degree the prospective teachers correlate both their knowledge of both mathematics/geometry and physics for solving their daily problems. As case study analyzes the daily events actually (Yin 1994), it has been used as this kind of descriptive research in this study.

***Participants***

This study carried out on 77 4$^{th}$ grade students of the Mathematics Teacher Training program of Dicle University's Ziya Gokalp Education Faculty, located in the Diyarbakir province of Turkey.

***Data Collection tool***

In this study, paper-pencil test was used as a means of data collection.

***Procedure***

In this study, a problem has been prepared for the participant teachers that are responsible for the education of young learners. The problem is based on three acquisitions necessary for solving the daily problems by using their knowledge of mathematics and physics. The problem is asked to the students at the final exam of the lesson "Mathematics and Life" in the spring semester of 2009-2010 academic year. Before the study, the prospective teachers are requested to take compass, ruler and grades with themselves. They are given 50 minutes to answer the question. At the end of the exam their papers are collected and scored.

***Reliability and Validity***

In order to provide a problem sentence and the validity of the perception related to these sentences, three lecturer and four post-graduate students, who are expert at physics and mathematics, have been consulted for their ideas. In parallel with ideas and thought of both academic members and post-graduate students, the deficiencies of the problem sentence and the perception related to it have been made up and rendered fit for the purpose. In addition to this, the participants are requested to write their thoughts about the problem sentence and perception. When the thoughts of the participants are viewed, it is seen that all of them have loved the activity, and nearly all of them have perceived right and stated interesting solution ways. Taking these findings into consideration, it can be said that the assessment instrument is valid and reliable.

***Role of the Researcher***

In this study, the researchers have been ready at the final exam of "Mathematics and Life." So, they have taken notes as participant viewers and have made informal interviews with volunteering students. At this study, it has been seen that the prospective teachers either never used compass and contractor furthermore it was the first time they had used it since their secondary school education. In the literature, even thought there have been many studies about this subject and the deficiencies have been detected, no solution has been presented. Some prospective teachers were observed to turn the page while drawing instead of turning the compass to right/left.

***Data Analysis***

The data acquired by this study has been analyzed by using the techniques of grouping, categorizing,

indicating by frequency. These operations include the prospective teachers' level of understanding the problem sentence, their solution suggestions to the problems and accuracy of these solutions, and their arte of using class instruments such as ruler and compass.

## 3. Findings

In this part, the data gathered from to study will be presented under three titles:

***Personnel Information***
Distribution of the participant prospective teachers' genders has been presented in the Table.1.

**Table 1. Frequency and Percentage Distribution of the Prospective Teachers' According to Their Genders**

| **Gender** | **f** | **%** |
|---|---|---|
| **Female** | **33** | **42.9** |
| **Male** | **44** | **57.1** |
| **Total** | **77** | **100** |

According to the Table.1, among prospective mathematics teachers participated in the research, 42,9% are female, 57,1% are male students. The distribution according to the kind of the graduated high schools of the participant prospective mathematics teachers has been shown in the Table.2.

**Table 2. Frequency and Percentage Distribution of the Prospective Teachers According to the Kind of the Graduated High Schools**

| **Graduate** | | **f** | **%** |
|---|---|---|---|
| Regular High Schools | Female | 20 | 26.0 |
| | Male | 32 | 41.5 |
| Anatolian High Schools | Female | 13 | 16.9 |
| | Male | 12 | 15.6 |
| **Total** | | **77** | **100** |

When Table.2 is analyzed, 67.5% of the male and female participants have been graduated from regular high schools, and 32.5% of them have been graduated from Anatolian high schools. The distribution according to their usage of classroom instruments has been shown in the Table.3.

**Table 3. Frequency and Percentage Distribution of the Prospective Teachers According to Their Rate of Using Classroom Instruments**

| **Use of Teaching Materials to** | | **f** | **%** |
|---|---|---|---|
| Ruler | Very Often | 35 | 45.5 |
| | Rarely | 14 | 18.2 |
| | Noting | 2 | 02.6 |
| | Leave Blank | 26 | 33.7 |
| Protractor | Very Often | 6 | 07.8 |
| | Rarely | 27 | 35.1 |
| | Noting | 18 | 23.4 |
| | Leave Blank | 26 | 33.7 |
| Compasses | Very Often | 11 | 14.3 |

| | | | |
|---|---|---|---|
| | Rarely | 29 | 37.7 |
| | Noting | 11 | 14.3 |
| | Leave Blank | 26 | 33.7 |
| **Total** | | **77** | **100** |

When Table.3 is analyzed, the prospective mathematics teachers' percentage of never using ruler, compass and grades are viewed as 2.6%, 14.3% and 23.4%, respectively. Also, while looking at frequent usage percentage of these instruments, ruler, compass and grades are used with a percentage of 45.5%, 14.3% and 7.8%, respectively. The distribution of the participants according to the disciplines*use while solving the problem has been shown in the Table.4

**Table 4. Frequency and Percentage Distribution of the Prospective Teachers According to the Disciplines They Use While Solving the Problem**

| **Problem Solving** | | **f** | **%** |
|---|---|---|---|
| Mathematics | Female | 29 | 37.7 |
| | Male | 34 | 44.2 |
| Physics | Female | 4 | 5.2 |
| | Male | 10 | 12.9 |
| **Total** | | **77** | **100** |

In the Table.4, when the data related to the disciplines used by the prospective teachers for problem solving is analyzed, it has been detected that as 37.6% of the female participants have solved the problem by using mathematical concepts, 5.2% have solved it by using physical concepts. As 44,4% of male prospective mathematics teachers have solved the problem by using mathematical concepts, 12,9% of them have solved it by using physical concepts. When Table.4 is analyzed regardless of gender difference, it is seen that while 81,9% of the prospective teachers solved the problem using mathematical concepts, 18, 1% of them has solved it using physical concepts.

***Thoughts of Prospective Teachers about the Activity***

All thoughts of the prospective teachers who have participated in the activity have been analyzed and common answers have been summarized in the Table.5. The results obtained within the research question have been defined by using prospective mathematics teachers' quotations directly.

**Table 5. Frequency and Percentage Distribution of the Prospective Teachers' Thoughts about the Activity**

| **The opinions of mathematics tutorial** | **f** | **%** |
|---|---|---|
| 1.I feel myself lucky for participating in this activity | 18 | 23.4 |
| 2. I feel happiness because; I have the freedom to use the ability of finding more solution. | 9 | 11.7 |
| 3.When I read the perception about the activity, I thought that I couldn't come up with the problem, but after thinking on it for a while, I realized that I could use my previous knowledge | 23 | 29.9 |
| 4. I quickly realized that the problem of the activity is related with my daily life | 11 | 14.3 |
| 5.I have been affected while reading the problem, because I had studied my primary school in a village | 19 | 24.7 |
| 6.I think it is an enjoyable and pragmatic activity | 15 | 19.5 |
| 7. I realized that I used my imagination and I thought creative, the statement that students' skills of problem solving and creativeness | 11 | 14.3 |
| 8. I paused for a while as trying to use compass and contractor for the first time | 26 | 33.7 |

| | | |
|---|---|---|
| after my primary education | | |
| 9. I think that, this kind of activities provide permanent learning's | 6 | 7.8 |
| 10.While teaching, I would like to make this kind of activities based on problem solving | 48 | 62.3 |

As it is seen the Table, when the forms of thoughts have been valued, prospective mathematics teachers' thoughts have been collected under 10 statements. Some of these statements are detected as: "I feel myself lucky for participating in this activity" 23,4%. "When I read the perception about the activity, I thought that I couldn't come up with the problem, but after thinking on it for a while, I realized that I could use my previous knowledge" 29.9%, "I have been affected while reading the problem, because I had studied my primary school in a village" 24.7%, "I paused for a while as using compass and grades for the first time after the primary school" 33.7%. "I think it is an enjoyable and pragmatic activity" 19.5%, "While teaching, I would like to make this kind of activities based on problem solving" 62.3%.

**Table 6. Frequency and Percentage Distribution of the Prospective Teachers' Acquisitions from the Problem Statement**

| **The opinions of Mathematics tutorial** | **f** | **%** |
|---|---|---|
| The area got by connecting the points representing the village in twos is seen as a triangle. | 52 | 67.5 |
| It draws the medians of an acute triangle. | 14 | 18.2 |
| It is observed that the triangle crosses at a point among the medians. | 14 | 18.2 |
| It is known that the point at which the medians cross is the triangle's centre of gravity | 62 | 80.5 |

In the Table.6. It is seen that during solving and at the end of the problem, after the prospective teachers' connecting the point representing the villages in twos; those reached the acquisition that it is seen as a acute triangle (67.5%), those reached the acquisition that it draws any acute triangle's median line (18.2%), those reached the acquisition that it sees the triangle across at a point in the median lines (18.2%), those reached the acquisition that it knows the point at which median lines cross is the triangle's center of gravity (80.5).

## 4. Discussion, Result and Suggestions

In this study, prospective teachers', studying at Ziya Gokalp Education Faculty Elementary Mathematics Teaching Department, performing acquisitions like "Center of gravity of Any Triangle" by using previous mathematics knowledge such as "Divisibility of Positive Whole Numbers, Least Common Multiple, Inverse proportion" has been analyzed." Building a common school for three neighbor villages. In the problem, it is stated that there are 50 students in the first village, 70 students in the second village and 90 students in the third village. In the problem, it is requested to build the school at a place where the children must make the least effort to reach."

In the study, a problem related to the daily life has been prepared and presented to the prospective teachers to analyze their solution ways to the problem and their ability of questioning with case study method. Here it is aimed to deeply analyze at which degree do the prospective teachers correlate their knowledge of both mathematics/geometry and physics to solve their problems of daily life. The examples given by the teachers during the classes are very important for the students to develop their skills of correlating their acquisitions of the school with their daily life. This kind of examples and activities provides the students love their lessons and improve positive attitudes towards their lessons. For making correlations, the experiences of the students have a great role. The experiences are very important at making practices for correlating with the daily life, and at the activities such as application of a new knowledge at different situations (Köroğlu, Geçer, Taşçı and Ay, 2004). The results obtained from the studies done are in parallel with these results in many aspects.

The importance of problem solving is apprehended more and more every day. Problem solving, beyond being just a mathematical activity, has become a teaching method for the education of the other areas (physic sciences, social sciences etc.) and indisputable part of the daily life. Also, many studies with new points of views have been carried out at the area of mathematics about problem solving. For example, only the problem solving performances of students are seen sufficient, the duration of problem solving isn't paid much attention. (Seçil and Bulut, 2005; Çalışkan, Selçuk and Erol, 2006; Kayan and Çakıroğlu, 2008; Fuson, 1992; Schoenfeld, 1992).

When the data of Table 3. are analyzed, the high rate of students stating that they haven't used compass and grades is remarkable. Using classroom instruments in mathematics lessons objectify the abstract learning (Ünlü, 2007; Yenilmez, 2010).

Looking at the Table 4, regardless of gender difference, to find out the variety of solution ways that the participant prospective mathematics teachers have used for solving the problem of "Application of Mathematics to Mechanics", it is seen that the percentage of them solving the research problem with mathematical methods is 81.9%, and the percentage of those solving it with physical ways is 18.1%. This result is in parallel with prospective teachers' creating different solution ways of Kayan and Çakıroğlu's (2008) study analyzing prospective elementary mathematics teachers' believes of mathematical problem solving.

In the 1st and 6th statements of Table 5, the prospective teachers' thoughts as "I feel happy of having joined in such an activity", and "I think it is and enjoyable and educating activity" are in parallel with Moyer's(2001) study analyzing 10 secondary school teachers' manipulative usages for teaching mathematics.

The thoughts in the 7th statement of Table 5 that "I realized that I used my imagination and I thought creative, the statement that students' skills of problem solving and creativeness" have been emphasized in studies of Cnets, (2006); Stein and Bovalino, (2001).

The thoughts in the 8th statement of the Table 5 that "I paused for a while as trying to use compass and contractor for the first time after my primary education" have been stated in the study of Tooke (1992).

Their thoughts in the 10th statement of the data in Table 5 that "I would like to make these kind of activities while teaching" are in parallel with those the studies (Napitulu, 2001; Kayan and Çakıroğlu, 2008).

As some of thoughts of prospective teachers that will teach the individuals of the new century are presented in table 5, the statements such as;

*1. I felt myself happy for having the freedom of choosing one of the many solution ways,*
*2. When I first read the prescription about the activity, I thought I couldn't be able to come up with the activity, however, I realized that I would use my previous knowledge just after thinking on it,*
*3. I quickly realized that the problem of the activity is related with my daily life.*

They are in parallel wit the results of the research carried out by Altun and Memnun's researches (2008), "a problem for a mathematics teacher means: students don't know the ways to the solution; but it has a necessary background and is an interesting question". Schoenfeld, (1989), the statement of "in this point of view, problem solving is not only finding the result of a problem, but also means coming face to face with situations and finding flexible, working and elegant solutions to them" (Gail, 1996), are in parallel with the prospective teachers' expressions in the Table 5.

In many countries of the world, education programs are checked by taking social needs into consideration and necessary regulations are made. The basic excuse for the regulations is raising individuals that keep pace with new scientific and technologic developments. Owing to the regulated and improved programs, the students have the chance of acquiring the skills to use their knowledge gained from school for solving the daily problems they face with.

In our country, the regulations made in the last decade on both at elementary and secondary school levels, have the aim of providing the students correlate their educational knowledge with their daily experiences. The teachers play a great role to reach this aim. We can say that using classroom instruments such as ruler, compass and grades especially at mathematics and physics classes make important contributions to the improvements of cognitive, affective and psycho-motor behaviors. It can also be viewed by the coordination and the order of the drawings made and the things produced during the classroom activities. Besides all these, students use some types of strategies to create a correlation between their knowledge of school and daily life. The most effective one of these strategies is correlation strategy. In many studies carried on this area, it is stated that students have difficulties in correlating their knowledge of school with their daily life. It is thought that educators have important roles as guides in a teaching-learning environment for the acquisition of these strategic knowledge and skills.

In this study, the prospective mathematics teachers' correlation of their previous knowledge with the techniques they used for the solution in their approach to a problem and their thoughts about the problems educational aspect have been valued.

It has been valued pleasantly that the prospective mathematics teachers used their previous physics knowledge for the solution of the problem and obtained correct results. Nowadays, use of classroom instruments and technologic devices has resulted in an increase of visuality in mathematics and so caused a rise in the importance of geometry teaching. Mathematics teaching takes a role that's much more than teaching operations, numbers and expressing calculating skills those are inevitable parts of daily life, and it provides important supports such as thinking, creating connections between events, logically thinking, making predictions, problem solving that helps us remain standing in the daily life that is getting more and more complex every day. One, maybe the first, of the areas in which questioning densely used is mathematics. Mathematical questioning is the base of mathematics (Umay, 2003). Mathematics, while teaching numbers, operations, algebra, geometry, proportion, yard calculating and many subjects, inherently teaches exploring patterns, reasoning, making predications, justified thinking, obtaining the results. Although it is difficult for us to see the examples of it by today's wrong educational system, making connections among terms and exploring the relations of them, creating new solution ways special to the situation is sine qua non of its qualifications. These days, differences are regarded as wealth and they are tried to be revealed instead of putting away or shattering. Because in this way everybody can find the way of thinking those are more suitable for themselves and they can understand the world better. In today's mathematics teaching, too, much attention is paid on the research of different thinking and learning ways and different questioning types (Quot. Umay, 2003: Malloy, 1999; NCTM, 1989). According to what are the individuals' questioning mathematical approaches determined? Could the variety of cultural substructure cause an increase in questioning approaches? Are the cultural differences the factors make the individual choose his/her questioning style? It is not enough just to meet students' different questioning approaches in order to develop the mathematical questioning skill. During the education, it is necessary to emphasize on the behaviors that are thought to increase the questioning skills (Umay, 2003). When the results obtained from the study carried on are compared with those of the literature, it is seen that they have different parts while they are similar in many. It is thought that consistence of this kind of different points of view result from cultural differences and points of views.

As all the other disciplines, mathematics is in relation with the society and environment. Social and environmental values may affect the individuals' approaches to the problem. In order to increase mostly the students' experiences about approach style, co operational studies must take more places. In addition

to these, while the problems are being studied on, the problems to be correlated with daily life should be given to the students. It shouldn't be taken out of consideration that these activities make contribution to the students' acquisitions of the three (cognitive, affective and kinesthetic) areas.

The establishment and explore of relations between the geometric shapes are important for the development of students' geometry skills. To win these important skills also plays a role in the development of skills in solving math problems. Therefore, since the level of primary school, compass, ruler and protractor such as concrete tools must be used by students. Because drawing figure simplifies some problems' solution. Therefore, teachers must use and let student use concrete tools.

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