



THE LEVELS OF FIFTH GRADE STUDENTS' ASSOCIATING WHAT THEY LEARNED IN THE "MATTER AND CHANGE" UNIT IN SCIENCE COURSE WITH DAILY LIFE

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Abstract:

Through Science Teaching Program, it is aimed to raise individuals who can investigate, establish cause and effect relations, use the information learnt in daily life and also be a researcher. Associating the knowledge with daily life activities is important both from the point of asserting the success of instruction and persistency of information. The objective of the study is to specify the level of students relating their knowledge that they have learnt about the subjects in the "Matter and Change" unit appearing in Science courses with their daily life. Besides, it is aimed to determine the relation between their scientific process skills and level of their associating these skills with daily life. The study group consists of 100 grade five students attending secondary schools. The scale of Associating Knowledge with Daily life developed by the researcher and The Scale of Associating Knowledge with Daily life test as Scientific Process skill scale were used as data collecting tools. Following the researches, it was found that students failed in relating the information acquired with Daily life in full, and that their level of relating their knowledge with Daily life increased as their scientific process skills increase.

Keywords: matter and change, science, associating with daily life

1. Introduction

Rapidly globalizing world has together caused the change of all concepts known about the production, distribution, usage, storage and reproduction of knowledge. In such a rapid change process, the education system in which the students acquired the ready knowledge and participated passively in the education process has left its place to a new education system in which students participate actively in learning process, scrutinize the cause and effect relation between the events, produce solutions to the problems

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applying the acquired knowledge to new situations. Therefore, in order to increase the quality of science education in many countries, educational reforms have been realized.

One of the main goals of teaching sciences is to provide students to use the knowledge they acquired in their education in daily life. Associating the knowledge acquired in Science courses with daily life activities is important both from the point of asserting the success of instruction and persistency of knowledge. With reference to the importance of persistency of knowledge as well as its effect on the success, it is important to evaluate this situation by the program designer, scripters and teachers (İlkörücü, Göçmençelebi & Özkan, 2009).

Being a life sciences literate with developing technology has become an obligation and raising science literate individuals has become a concern for all educators. As a general definition, life sciences literacy is; the combination of all skills, attitudes, values, understanding and knowledge related with sciences which are necessary for investigating, developing problem solving and decision making skills, critical thinking, being life-long learning individuals and sustaining sense of wonder about the earth (MEB, 2004). For this reason, the knowledge and skills acquired in Sciences courses constitute an important place in the lives of students.

Due to the fact that the topics and concepts in science courses are intangible and theoretical, it has been ascertained that the students have difficulty in comprehending scientific concepts and develop a negative attitude against life sciences (Pınarbaşı, Doymuş, Canpolat & Bayrakçeken, 1998; Özmen, 2003; Anagün, Ağır & Kaynaş, 2010; Taşdemir & Demirbaş, 2010). One of the reasons why students have difficulty in this course is their not using the samples of scientific concepts in learning environments in their daily life samples (Yiğit, Devocioğlu & Aycacı, 2002). Getting the students to gain the skills to relate the events and facts in their daily lives with life sciences courses enable them to learn meaningfully and to develop a positive attitude toward sciences courses (Ayas & Özmen, 1998).

The objective of science education is not only to make students acquire the knowledge they will use in daily life, but also to make them develop solution proposals to the problems they will face in their daily lives.

1.1 Purpose of the Study

It was aimed in the study to specify the level of secondary school, Grade Five students' relating their knowledge they have learnt about the topics in the "Matter and Change" unit in their sciences course with their daily life. In line with this general purpose, answers to the following subproblems were sought:

- What are the levels of secondary school, grade five students in associating the scientific knowledge about the subjects they learnt in the "Matter and Change" unit appearing in sciences course with the daily life?
- Is there a relationship between the levels of secondary school grade five students in associating the scientific knowledge about the subjects they learnt in the "Matter

and Change" unit appearing in life sciences courses and the scientific process skills they acquired?

2. Method

2.1 Research Design

This study is a descriptive research.

2.2 Study Group

The study group consists of 100 fifth grade students attending secondary schools.

2.3 Data Collection Tools

The Scale of Associating Knowledge with Daily Life (SAKDL) developed by the researcher and the Scale of Associating Knowledge Test (SAKT) again developed by the researcher, as Scientific Process Skill Scale (SPSS) were used as data collection tools.

SAKDL was prepared on the basis of course books for fifth grade sciences courses by National Education Ministry. The scale consists of 12 open-ended questions. The opinions of experienced science teachers were consulted in the matters of the scope validity of scale items and their scientific accuracy for the content validity of the scale.

2.4 Analysis of the Data

The responses of students to the SAKDL were categorized as true, partially true, false-unanswered. Following the application, the level of students' associating science concepts with daily life was determined as giving 0(zero) for false and missing answers, 1(one) for partially true answers and 2(two) points for true answers (Table 1).

Table 1: Scoring for System Associating Knowledge with Daily Life Scale

Points	Categories	Evaluation Criteria
0	Unanswered or False	Missed or nonvalid scientifically, completely false answers
1	Partially True	Having statements with not completely true answers, but can be accepted as true in explanations.
2	True	Written-made scientifically full true explanations

The answers of the students to the SAKDL were evaluated by experienced life sciences teachers.

3. Findings

The percentages belonging to the categories by evaluating the answers of the students to SAKDL are given in Table 2.

The percentage of true answers of the students to the questions varies between 12-62%, partially true answers between 12-52%, and false answers between 5 -76%.

Table 2: Percentage Rates According to the Categories of Written Answers to the Questions in the Scale of Associating Sciences Knowledge with Daily Life

Questions	True	Partially True	False
1. After the bottle coming out of the refrigerator waits for a while, droplets form on its surface, what is the reason for this?	%16	%44	%40
2. What is the reason for the heater cores to be placed in the lower parts of the room?	%61	%30	%9
3. Telephone wires hang down in summer and gets tense in winter, what is the reason?	%35	%32	%33
4. Space is left between the train tracks, why?	%33	%31	%36
5. What is the reason for rinsing the glasses with a little hot water before pouring hot tea?	%43	%52	%5
6. What is the reason why our laundry dries faster in summer than in winter?	%47	%38	%15
7. Why salt is poured on the roads in winter?	%62	%31	%7
8. When we handle a snowball, our hand gets cold, why?	%51	%37	%12
9. Why is it getting hot while snowing in cold winter days?	%12	%25	%63
10. What is the reason for rubbing our hands to each other in cold weather?	%38	%51	%11
11. What is the reason for our getting cooled when we pour cologne on our hands?	%27	%21	%52
12. What is the reason for the cooling of the watermelon cut and kept in the sun?	%12	%12	%76
Average	%36,41	%33,66	%29,93

It is seen in Table 2 that few students gave true answers although there is scientific knowledge about the answers to third, fourth and sixth questions in the course books.

The questions only few students gave true answers are first (16%), ninth (12%), and twelfth (12%) questions. It was seen that students generally wrote the answer "because glass gets heat", or "ice melts" for the first question. For the ninth question, the students wrote the answer "the sun rises after snowing" and for the twelfth question, the students wrote an answer beyond our expectation "the inner part of watermelon is already cold".

As it is seen in Table 2, the highest ration of true are written for the second, seventh and eighth questions (%61, %62, %51 respectively). It can be said that their including the events in the questions to the situations they encountered or observed in their houses and surroundings may have affected the level of association of the students.

Table 3: Representation of the True Answer Percentages of Students on Multiple Choice SAKDL questions In SPSS According to SPS Steps

Scientific Process Skills	Ratios (%)
Observation	25.9
Classification	52.3
Measuring	62.8
Guessing	61.8

Inference	45.6
Hypothesis formation	51.1
Determining Variables	67.9
Controlling and Changing Variables	33.4
Designing an Experiment	58.7
Saving Data	64.9
Data Processing and Modeling	51.8
Inference and Interpretation	28.7

The average point students got on the SAKBLT is 6.8 out of 12, and 56.6 out of 100 points. As seen in Table 3, although the ratio of giving correct answers to the questions related with measuring, guessing, determining variables, saving data and scientific process skills) is over 60%, their ratio of correct answer to the questions related with observation, inference, controlling and changing variables, inference and interpretation is under 50%. It is seen that there is a statistically significant relation between the points of associating knowledge with Daily Life and Scientific Process Skills Scale points, and that this relation is in the same direction. According to these results, it can be said that as the scientific process skills level of the students increase, associating their knowledge with daily life levels also increase.

4. Conclusion and Discussion

It has been concluded in the study that the students can not fully associate the knowledge acquired from the "Matter and Change" unit with daily life, and that they fail in the interpretation of questions.

Similarly in the studies carried out on different education levels about various science subjects, it was found that most of the students can not associate their acquired knowledge with daily life at the desired level (Köse & Gül, 2016; Hüracan & Önder, 2012; Yiğit *et al.* 2002; Enginar, Saka & Sesli 2002; Doğan, Kıvrak & Baran 2004; Taşdemir & Demirbaş, 2010).

In the studies carried out, it was also stated that the teachers find the new curriculum and the activities in the course books intensive and heavy. Besides, it was also indicated that they can not decide which activity to perform and realize only the activities, the equipment of which they could obtain, and have difficulty in finishing the subjects (Yangın & Dindar, 2007). Depending on these statements, it can be inferred that the teacher may have superficially dealt with some activities in the unit.

For the questions to which students' correct answer ratios are high, in general, it is possible to say that the situations they often met, personally experienced and observed may have contributed to their success in associating the acquired knowledge with daily life.

While the students demonstrated an average success in most of scientific process skills, it was seen that they had a low ratio of success in observation, inference, controlling and changing variables, inference and interpretation skills. The main reason for their low-

level success is their not studying based on understanding but rote learning studying style. Gündoğdu, Kızıldaş & Çimen (2010) emphasized in their studies that scientific process skills are not acquired by exam-oriented teaching but acquired over time.

Observation, making inference, inference and interpretation skills are closely related with daily life. The low levels of association with daily life and low scores of the students in observation (25.9), inference (45.6), inference and interpretation (28.7) skills is due to their inability to make a connection between scientific process skills and associating knowledge with daily life levels. In this respect, more learning environments should be established to help students develop their scientific process skills in schools.

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