

Determining Eighth Year Students' Attitudes Toward Science Courses and Investigating the Relation Between Attitude and Scholastic Achievement

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Abstract

The aim of the research is to reveal the attitudes of the eighth year students about the science courses and to investigate the relation between attitude and scholastic achievement. The research realized through correlational survey model in descriptive style was carried out with 40 students chosen randomly among from the eighth year students of a secondary school. As data collection tools for the research, scholastic achievement test and attitude scale for determining their attitudes toward science courses were used. It was seen that there was a significant relation between the scholastic achievement and the attitude toward science courses of the eighth year students participated to the research. It can be said from the obtained results that the students having a positive attitude toward science courses are more successful in science courses.

Key Words: Science, Attitude, Scholastic Achievement, Secondary School Students.

1. Introduction

One of the goals of science education is to get students to develop positive attitudes toward learning science. For this reason, many studies have been carried out on the attitudes toward science recently. Attitude is defined as an inclination to give a positive or negative response to a situation (Aiken, 2006). Attitude is a psychological feature revealed from the observable behaviors of the individuals but cannot be directly observed (Kağıtçıbaşı, 2010). Attitude is a psychological tendency (Eagly and Chaiken, 1993). Attitude has three features as emotional, cognitive and behavioral (Yalçın, 1997). The researches carried out show that attitudes are acquired at early ages, and cannot change easily unless an extraordinary thing happens (Kocabaş, 1997). Attitude is an extremely important factor in learning and teaching. This situation affects the learning in science courses (Osborne, Simon, and Collins, 2003). The most emphasized emotional learning product is the attitude toward science courses (Özdemir, 2012).

The attitudes of the students affect the motivations and learning, have an important place in their performance and shape their behaviors (Külçe, 2005). The students who developed a positive attitude toward science at primary school period will be advantageous for sustaining this situation in their future (Uyanık, 2017). In order for a course to be successful and reach its goal, the attitude of a student toward that course should be positive. This is also valid for science courses. This matter, which affects the science literacy of students, sets a ground for developing an attitude such as giving a value to nature, science, technology and scholars (Yılmaz, 2012).

It is revealed both by teachers and students in many studies that associating knowledge with daily life in science teaching is important. This point may significantly change the interest and attitude of students toward science (Coştu, Ünal and Ayas, 2007; Pınarbaşı, Doymuş, Canpolat and Bayrakçeken, 1998). There are a lot of factors affecting attitude toward science courses. Some of these are teachers, methods applied in classes, laboratory conditions and exams. There exist many studies showing that science courses are disliked by the students, it is a difficult course, and they develop negative attitude toward this course (Osborne, Simon and Collins, 2003; Türkmen, 2003; Erdemir and Bakırcı, 2009). It was shown in a study that teacher candidates could associate their scientific knowledge with daily life. However, when the subject contents were examined, it was seen that there was a difference among physics, chemistry and biology. It was observed that associating daily life with physics was more than those of chemistry and biology.

It was considered that this difference stemmed from that the candidate teachers' interests and attitudes toward these lessons are different from their out-of-school experiences. This is also the valid case for our country (Balkan, Kırııcı and Aydoğdu, 2011). The developments in science and technology at present are among the most important factors that affect the structure and education systems of the societies. These developments affect the life style, business life and mentality of the mankind. For this reason, raising individuals that can keep pace with and contribute to the changes is one of the subject matters related with the education problems of the countries (Baloğlu, 1990). Science courses are not only activities giving scientific knowledge, but also an indispensable education that advances the mentality and behavior of the individual (Karatepe, 2003). Science is a discipline based on analytical thinking, sustaining inquiry and experimental criteria (Demirçalı, 2007).

Attitude in science education affects the learning considerably. Therefore, many researches in which students' attitudes toward science courses are investigated have been carried out recently. It was revealed in a study that the attitude of students toward science courses affected their achievement level positively (Altınok, 2004). In another research, the relation between the attitudes of fifth and eighth year students of a primary school toward science courses and their achievement conditions were studied and it was observed that there was a significant relation between them (Gürkan and Gökçe, 2000).

In a study carried out by Uyanık (2017), the relation between the attitudes of fourth year students of a primary school toward science course and their scholastic achievement related with this lesson was studied. It was concluded that there was a meaningful relation between their attitude toward science course and their scholastic achievement

Purpose of the study

The objective of the research is to reveal the attitudes of eighth year students related with the science courses and to investigate the relation between attitude and scholastic achievement.

2. Method

2.1. Type of the study

Correlational survey model in descriptive type was used in the study to investigate the relation between the students' attitudes toward science courses and their scholastic achievements.

2.2. Study Group

Study group consists of 40 students selected randomly on a voluntary basis among from eighth year students of a secondary school.

Data Collection Tools

2.3.1. Science Achievement Test

An achievement test developed by the researcher, having 15 questions with multiple choice and four options, the reliability of which was found to be 0.78, and prepared by taking into consideration the views of experts on the field as well as the content of science course and student acquisitions was used. The scores of the achievement test were evaluated over 15 points.

2.3.2. Science Attitude scale

The attitude scale used in the research was prepared by the researcher and its reliability was found to be 0.77. The scale is formed as five point Likert-type scale, and it consists of 15 items. The options in the scale were scored as "Strongly disagree" (1 Point), "Disagree" (2 points), "Undecided" (3 points), "Agree" (4 points), "Strongly agree" (5 points) for each item. The options for negative statements were scored as "Strongly disagree" (5 Points), "Disagree" (Points), "Undecided" (3 Points), "Agree" (2 Points), "Strongly agree" (1 Point), and the sum of the points given were taken as basis. The highest point that can be taken for the attitude scale is 70, and the lowest is 14. The increase in the total points is the indication of the increase of positive attitude toward science courses.

2.4. The Analysis of the Data

The results were obtained by using SPSS 21 package programme. In order to find the relation between the attitude scale and the achievement test, Pearson Correlation Coefficient was used. The correlation coefficient changes between -1.00 and 1.00. -1.00 shows a negative relation, 1.00 shows a positive relation, and 0.00 shows that there is no relation (Büyüköztürk, 2012). The level of significance was taken as 0.05.

3. Findings

Correlation analysis was carried out by using SPSS 21 package programme for the findings. The results obtained are given in Table 1.

Table 1. Correlation Analysis of Science Scholastic Achievement and Attitudes Toward Science of Secondary School, Eighth Year Students.

		Achievment	Attitude
Achievment	N	37	37
	p	.045	-
	r	.332	1
Attitude	N	37	37
	p	-	.332
	r	1	.045

It is seen from Table1 that there is a significant relation between science achievement and attitudes toward science of the secondary school, eighth year students ($r=0.332$, $p<.05$). Regarding this result, it can be said that the more the positive attitude toward science increases, the more the achievement in science course increases. This shows that there is a relation between achievement and attitude. In other words, it can be said that the students with a positive attitude toward science are more successful in science courses.

4. Conclusion

It has been observed that there is a significant relation between the scholastic achievement and attitudes toward science of the eighth year students who participated the survey. It might be said that the students whose attitudes toward science are positive are also more succesful in science lessons. When this situation is taken into consideration, behaviors that will decrease students' motivation toward the lesson should be avoided, students should be oriented and supported to study their lessons.

It has been understood from many studies carried out that there is a significant relation between the attitudes of the students toward science courses and their becoming successful (Türkmen, 2002; Koballa, 1988). In another study, it was revealed that even though the teaching environment is not suitable for the students, the attitudes of the students affect their success in science (Demirbaş and Yağbasan, 2004). In the survey performed by Balım, Sucuoğlu and Aydın (2009), it was suggested that the course achievement of the students who have a positive attitude toward science also have a higher success in the lesson. When the relation between the scholastic achievement and the attitude toward science is taken into consideration, the behaviors that will drive the students away from the lesson should be avoided, they should be made eager and supported to study their lessons.

References

- Aiken, L.R. (2006). Psychological testing and assessment. (3rd ed.). Boston, Allyn & Bacon.
- Altınok, H. (2004). Öğretmenlerin fen öğretimine yönelik tutumlarına ilişkin öğrenci algıları ve öğrencilerin fen bilgisi dersine yönelik tutum ve güdüleri. Hacettepe Üniversitesi Eğitim Fakültesi Dergisi, (26), 1-8.
- Balkan Kırıyıcı, F. and Aydoğdu, M. (2011). Determination of Pre-Service Science Teachers' Levels Of Relating The Scientific Knowledge to Their Daily Lives. Necatibey Eğitim Fakültesi Elektronik Fen ve Matematik Eğitimi Dergisi, 5(1).
- Balım, A., G., Sucuoğlu H. and Aydın G. (2009). Fen ve Teknolojiye Yönelik Tutum Ölçeğinin Geliştirilmesi. Pamukkale Üniversitesi Eğitim Fakültesi Dergisi, 25, 33- 41.
- Baloğlu, Z. (1990). Türkiye'de Eğitim, İstanbul (Tüsiad), Apa Ofset
- Basımevi Çilenti, K., (1985). "Fen Eğitimi Teknolojisi" Ankara, Kadioğlu Matbaası
- Büyüköztürk, Ş. (2012). Sosyal Bilimler İçin Veri Analizi El Kitabı: İstatistik, araştırma deseni spss uygulamaları ve yorum 16. Baskı, Pegem Akademi Yayıncılık, Ankara.
- Coştu, B., Ünal, S., Ayas, A. (2007). Günlük Yaşamdaki Olayların Fen Bilimleri Öğretiminde Kullanılması. Kırşehir Eğitim Fakültesi Dergisi, 8(1), 197-207.
- Demirbaş, M. ve Yağbasan, R. (2004). Fen Bilgisi Öğretiminde, Duyuşsal Özelliklerin Değerlendirilmesinin İşlevi ve Öğretim Süreci İçinde, Öğretmen Uygulamalarının Analizi Üzerine Bir Araştırma. Gazi Üniversitesi Kırşehir Eğitim Fakültesi Dergisi, 5(2), 177-193.
- Demirçalı, S. (2007). İlköğretim 8. Sınıf Fen Bilgisi Dersi "Genetik" Ünitesinde Fen-Teknoloji-Toplum Yaklaşımına Dayalı Yardımcı Etkinlik Geliştirme ve Uygulama. Yayımlanmamış Yüksek Lisans Tezi, Gazi Üniversitesi Eğitim Bilimleri Enstitüsü, Ankara.
- Eagly, A. H. and Chaiken, S. (1993). The psychology of attitudes. Fort Worth Texas: Harcourt Brace Jovanovich College Publishers.

- Erdemir, N., Bakırcı, H. (2009). Fen Bilgisi Öğretmen Adaylarının Fen Branşlarına Karşı Tutumlarının Gelişim ve Değişimi. *Kastamonu Eğitim Derisi*, 17(1), 161-170.
- Gürkan, T. ve Gökçe, E. (2000). İlköğretim öğrencilerinin fen bilgisi dersine yönelik tutumları. IV. Fen Bilimleri Eğitimi Kongresi Bildiri Kitabı, 6-8 Eylül: 188-192.
- Kağıtçıbaşı, Ç. (2010). *Günümüzde insan ve insanlar: Sosyal Psikolojiye Giriş*. İstanbul, Evrim Yayınevi.
- Koballa, T. R. (1988). Attitude and related concepts in science education. *Science Education*, 72, 115-126.
- Kocabaş, A. (1997). Temel eğitim 2. kademe öğrencileri için müziğe ilişkin tutum ölçeğinin geçerlik ve güvenilirlik çalışması. *Hacettepe Üniversitesi Eğitim Fakültesi Dergisi*, 13, 141-145.
- Külçe, C. (2005). İlköğretim İkinci Kademe Öğrencilerinin Fen Bilgisi Dersine Yönelik Tutumları. Yayınlanmamış Yüksek Lisans Tezi, Pamukkale Üniversitesi Fen Bilimleri Enstitüsü, Denizli.
- Osborne, J., Simon, S., and Collins, S. (2003). Attitudes towards science: A review of the literature and its implications. *International Journal of Science Education*, 25(9), 1049-1079.
- Özdemir, A. M. (2012). İlköğretim 5. sınıf fen ve teknoloji dersi ünitelerinde kavramsal değişim yaklaşımının öğrenci başarısına etkisinin incelenmesi (Yayımlanmamış Doktora Tezi). Gazi Üniversitesi Eğitim Bilimleri Enstitüsü, Ankara.
- Pınarbaşı, T., Doymuş, K., Canpolat, N., Bayrakçeken, S. (1998). Üniversite Kimya Bölümü Öğrencilerinin Bilgilerinin Günlük Hayatla İlişkilendirebilme Düzeyleri. 23-25 Eylül III. Ulusal Fen Bilimleri Sempozyumu, Trabzon.
- Türkmen, L. (2002). Sınıf öğretmenliği 1.sınıf öğrencilerinin fen bilimleri ve fen bilgisi öğretimine yönelik tutumları. *Hacettepe Üniversitesi Eğitim Fakültesi Dergisi*, 23, 218-228.
- Türkmen, L. (2003). Fen Bilgisi eğitiminde tutumla ilgili çalışmalardan seçilmiş araştırmalar. *Eğitim ve Bilim*, 28 (130): 63-74.
- Uyanık, G. (2017). İlkokul Öğrencilerinin Fen Bilimleri Dersine Yönelik Tutumları ile Akademik Başarıları Arasındaki İlişki. *Türk Bilim Araştırma Vakfı*, 10(1), 86-93.
- Yalçın, P. (1997). Ankara merkez ilköğretim okullarındaki 5. sınıf öğrencilerinin matematik başarıları ile zekâ, kaygı ve tutum puanları arasındaki ilişki. (Yayımlanmamış Yüksek Lisans Tezi). Gazi Üniversitesi Eğitim Bilimleri Enstitüsü, Ankara.
- Yılmaz, A. (2012). İlköğretim 8. Sınıf Öğrencilerinin Fen Bilimleri Dersine Karşı Tutumlarının Fen Bilimleri Dersini Günlük Hayatla İlişkilendirmedeki Başarılarına Etkisi. Yayınlanmamış Yüksek Lisans Tezi, Gazi Üniversitesi Eğitim Bilimleri Enstitüsü, Ankara.