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Determination of Attitudes about Science of University Students

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Abstract: In the preschool period, one of the most important factors in the development of children as inquisitive, curious, interested and sensitive individuals is their ability to perceive and learn science. In this period, pre-school teachers and child-educators are the person who will be able to love and teach science to children. It is expected that the persons in this profession group will firstly be in a positive attitude towards science so that they can grasp and associate this knowledge with their daily life. The aim of this study is to determine the attitudes of the child educators and prospective preschool teachers towards science. In the 2017-2018 academic year, the students of the Child Development Program and Pre-School Teachers Department students who are in the 3rd and 4th grade at Kafkas University constitute the universe of work. The sample group represents 118 students who agreed to participate in the survey. Personal data form and "*Scientific Attitude Scale*" which is developed by Geban et al. (1994), were used as data collection tool. When the collected data were examined, it was determined that the data showed normal distribution suitability. For this reason, ANOVA and independent t-test analysis were used for the analysis of the data. As a result of the statistical analyzes, there was no significant difference between university students' attitudes toward science and their sex, age and class. When the students are examined in terms of the areas they have studied, a significant difference was found in favor of the child development program ($p<0.05$). This result can be explained as the fact that the students who continue to the child development program are mostly educated in the same sections of the girls' vocational high schools in their upper secondary education and they have gotten more applications in their fields.

Keywords: Child development program, Pre-school department, Science education

Introduction

Many students at different levels of education perceive science courses as difficult to understand because they contain abstract concepts that are difficult to apprehend (Şener & Taş, 2016). Students' attitudes towards the science class play an important role in enabling more effective and lasting learning in these classes (Özbaş, 2016). However, students can develop positive or negative attitudes towards science due to certain reasons in these classes (Sinan et al., 2014; Yıldırım & Kansız, 2017). The negative attitudes students acquire towards the science class in the class also render the effective teaching process difficult.

Considering the fact that attitudes are acquired at early ages, preschool education comes forward. In science education in the preschool period, teachers assume an effective and important role in students' academic lives related to science (Çamlıbel Çakmak, 2012). Because, at this period, children are in a searching and inquisitive attitude towards science in order to recognize their environment with their innate sense of curiosity and

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discovery. It is the preschool teachers and child development experts who stir up cognitive satisfaction in children with the questions they ask (Aktemur Gürler, Akcanca, Alkan & Alkan, 2017).

Teachers' attitudes and behaviors towards science teaching play a decisive role in students' attitudes toward science (Çamlıbel Çakmak, 2012; Devies & Howe, 2003; Olgan, Alparslan & Öztekin, 2014; Saka & Kıyıcı, 2004; Watt, Salehjee & Essex, 2017). For this reason, in the undergraduate and associate degree process, it is considered that the determination of the attitudes of the prospective teachers and child development experts towards the science class and the determination of negative attitudes, if any, will be useful in solving the problems related to science education (Aktemur Gürler et al., 2017; Watters & Ginns, 2000; Can & Şahin, 2015). In the light of these information, moving from the expectation specified with this study, it is aimed to identify the attitude of preschool teachers and child development experts towards the science class.

Method

Population of this study consists of Child Development program students and Junior and Senior Students of the Preschool Teaching Program at Kafkas University in 2017-2018 Academic year fall term. Sample group consists of 118 students who agreed to participate in the study.

Table 1. Demographic characteristics of the participants

Demographic characteristics of students	Variables	N	%
Gender	Female	98	83.1
	Male	20	16.9
Program	Preschool Teaching	51	43.2
	Child Development Program	67	56.8
School Year	Freshmen*	36	30.5
	Sophomore*	31	26.8
	Junior**	21	17.8
	Senior**	30	25.4
Age Level	20 and younger	57	48.3
	Between 21 and 23	49	41.5
	24 and older	12	10.2
	Total	118	100

*Child Development Program, ** Preschool Teaching

A total of 118 students, 98 (83.1 %) female and 20 (16.9 %) male have participated in the study. 21 (17.8%) of the students are studying at junior year of college, 30 (25.4%) are at senior year, a total of 51 (43.2%) are at preschool teaching; 36 (30.5%) are at freshmen year, 31 (26.8%)are at sophomore year and a total of 67 (56.8%) are at the child development program. It has been identified that 57 (48.3%) of participants are under 20, 49 (41.5%) are between 21 and 23 age range, and 12 (10.2%) are over 24.

As data collection tool, a personal information form and the"science class attitude scale" developed by Geban et al. (1994) in 5-point Likert type was administered. The scale consists of a total of 15 questions, 10 positive and 5 negative, and a single factor. The scale ranked in the type of 5-point Likert has been evaluated over a total of 75 points. Means and standard deviations of the data analyzed with the SPSS package software has been calculated. When the collected data were examined, it was found that the data are congruent with normal distribution. Therefore, the parametric tests of independent t test and single factor analysis of variance was used. The Cronbach's Alpha score for this study was calculated as 0.890.

Results and Discussion

In the identification of students' attitudes towards the science class, first of all, statistical information including means and standard deviations, then the findings of the analyses searching for the relationship between students' attitude towards the science class and various variables were addressed.

Table 2. Students' attitudes towards the science class

	N	Max. Score	Min. Score	$\overline{X}$	sd
Attitude Towards The Science Class	118	74.0	15.0	52.55	10.84

It is identified that students' attitude towards the science class is at a medium level. Mean scores of maximum, minimum and medium attitude levels towards the science class have been identified according to the plus-minus 0.5 standard deviation ($\overline{X}$ ±0.5xSD) criterion (Çamlıbel Çakmak, 2012). According to this calculation, scores of 47 and under are identified as low, scores between 48 and 58 are as medium and scores of 59 and above is as high attitude. Given all the participants of the study, it is seen that 32.2% have low level, 36.4% have medium level and 31.4% have high level attitudes towards the science class. When the literature is reviewed, it has been identified that participants have a positive attitude towards the science class (Aktemur Gürler et al., 2017; Çamlıbel Çakmak, 2012; Erden & Sönmez, 2011; Olgan, Alpaslan & Öztekin, 2014; Özen Uyar & Ormancı, 2016; Sansar, 2010; Yıldız Duban & Gökçakan, 2012). In study, it can be argued that students' having a positive attitude towards the science class will contribute to them when teaching science in their future career.

Independent t test results of the participants' attitudes towards the science class according to gender and the type of education program they are enrolled in is presented at Table 3.

Table 3. Independent t test results of the participants' attitudes towards the science class according to gender and the type of education program

Variables		N	$\overline{X}$	S	sd	t	p
Gender	Female	98	52.16	10.15	116	0.858	0.393
	Male	20	54.45	13.90			
Program Type	Preschool	51	50.23	10.97	116	2.051	0.043
	Child development	67	54.31	10.49			

Given Table 3, it is seen that participants' attitude scores towards the science class did not significantly differ according to the gender variable ($t_{(116)}$=0.858, p>0.05). Mean attitude score for female students is $\overline{X}$= 52.16 while male students' mean score is $\overline{X}$= 54.45; therefore, it has been determined that students of both genders have moderate attitude towards the science class. Research showed that genders of students does not have any impact on the attitudes towards the science class (Altınok, 2004, Can & Şahin, 2015, Ersoy & Ergün, 2014, Sarıkaya, 2004). This result obtained in this study is thought to be stemming from the small number of male participants. In addition, it shows that the attitudes of male and female students towards the science class are affected from similar factors one of which is not gender.

A significant difference was found between the students' attitude scores towards the science class and the programs they study at (t (116) = 2.05, p <0.05). Preschool students' mean attitude scores towards the science class is calculated as $\overline{X}$= 50,23, while the mean score of the child development program is calculated as $\overline{X}$= 54,31. Given the mean scores, it is understood that the difference is in favor of the child development program. In the literature, Aktemur Gürler et al. (2017) found that students of the child development program have a higher level of attitude for science teaching. This result of the study is thought to be related to the fact that the students of the child development program have more chance to make practice in the field.

One-factor ANOVA results of the participants' attitudes towards the science class according to school year and age is presented at Table 4.

Table 4. One-factor ANOVA results of the participants' attitudes towards the science class according to school year and age

Variables		Sum Of Squares	sd	Mean Squares	F	p
School Year	Between Groups	848.647	3	282.882	2.497	0.063
	Within Groups	12916.548	114	113.303		
	Total	13765.195	117			

Student ages	Between Groups	214.073	12	107.037	0.908	0.406
	Within Groups	13551.121	115	117.836		
	Total	13765.195	117			

When the attitude scores of the participants towards the science class is examined according to their school years, no significant difference was identified, $F_{(3.114)}$= 2.497, p>0.05. According to the Scheffe test results, it was seen that the mean scores of attitude towards the science class of the freshmen year ($\overline{X}$ = 52.50, S = 9.88) and sophomore year ($\overline{X}$ =56.41, S = 10.94) students of the child development program, and junior year ($\overline{X}$ = 52.00, S = 8.62) and senior year ($\overline{X}$ = 49.00, S = 12.34), students of the preschool teaching program are close to each other. Various other studies (Can and Şahin, 2015; Denizoğlu, 2008) obtained similar results and found that school year does not significantly affect students' attitudes towards the science class. It is remarkable that the mean scores of senior year students' attitudes towards the science class is low. It is thought both the workload the senior students burden given the school year they are getting through and the stress of getting assigned to a position may have caused their negative attitudes at this point.

When students' attitudes towards the science class is examined according to their ages, no significant difference was seen, $F_{(2.115)}$= 0.908, p>0.05. According to the Scheffe test results, the mean attitude scores towards the science class of students who are 20 and under ($\overline{X}$ = 53.17, S = 10.97), and students between the ages of 21 and 23 ($\overline{X}$ = 52.79, S = 9.57) and students who are older than 24 ($\overline{X}$ = 48.58, S = 14.79), are close to one another, however, it is seen that the mean attitude scores towards the science class of students who are 24 and older are at lower levels. Research reveals that as the age of the students increases, a decrease is seen in their attitudes towards the science class (Barmby, Kind, & Jones, 2008, Bennett & Hogart, 2009, Potvin & Hasni, 2014).

Conclusion

When the results of the study are examined, it is seen that gender has no effect on students' attitudes towards the science class. Another result obtained from the study is that the child development program students have a higher level of attitude in comparison to pre-school teaching students. It is thought that this result stems from the fact that the students of the child development program have more opportunity to make practice in the field. Another result obtained from the study is that the mean scores of senior year students' attitudes towards the science class is low. In addition, it is found that as the students' age levels increase their attitude scores towards the science class gets lower. It is possible to explain this result of the study that students' attitudes towards the science class is acquired at early ages and it will take time to change this.

Recommendations

Suggestions based on the results of the study are enumerated below.

- It is suggested that pre-school teaching students are provided with the opportunity to be able to make more practice in the field.
- It is considered that increasing the contents for the science education during the education period of the individuals who will teach science in the preschool period and steering them to the science education activities from the entrance to the university will contribute them.
- Students attitudes toward the science class at earlier ages can be identified through a deeper research and results of the study can be manifested.

References

Altınok, H. (2004). Teacher Candidates' Evaluation of Their Teaching Competencies, *Hacettepe University Journal of Education, 26*, 1-8.

Barmby, P., Kind, P. M., & Jones, K. (2008). Examining Changing Attitudes in Secondary School Science. *International Journal of Science Education, 30*(8), 1075-1093.

Bennett, J., & Hogarth, S. (2009). Would You Want to Talk to a Scientist at a Party? High School Students' Attitudes to School Science and to Science. *International Journal of Science Education, 31*(14), 1975-1998.

Can, M., & Şahin, Ç. (2015). Investigating Prospective Kindergarten Teachers' Science and Science Teaching Attitudes. *Abant İzzet Baysal University Journal of Faculty of Education, 15*(2), 13-26.

Çamlıbel Ç. Ö. (2012). Examining the Relationship Between Pre-School Teacher Candidates' Attitudes Towards Science Education and Understanding Levels of Science Concepts. Journal of Turkish Science Education, *9*(3), 40-51.

Davies, D., & Howe, A. (2003). Teaching Science and Design and Technology in the Early Years, London: David Fulton Publishers.

Denizoğlu, P. (2008). The Assessment of the Relation Between Self-Efficacy Belief Levels, Learning Styles of Science Teacher Candidates Towards Science Teaching and Their Attitudes Towards Science Teaching (Unpublished Master's Thesis). Çukurova University, Adana.

Erden. F. T., & Sönmez, S. (2011). Study of Turkish Preschool Teachers' Attitudes Toward Science Teaching. *International Journal of Science Education, 33*(8), 1149-1168.

Ersoy, Ö., & Ergün, M. (2014). A Study of Elementary Teachers Candidates Attitudes Towards Science: Turkey, The Netherlands and Romania samples. *Journal of Turkish Science Education, 11*(2), 85-109.

Geban, Ö., Ertepınar, H., Yılmaz, G., Altın, A., & Şahbaz, F. (1994). The Effect of Computer Based Education on Science Achievement and Science Knowledge. National Science Education Symposium, 15-17.

Olgan, R., Alpaslan G. Z., & Öztekin, C. (2014). Factors Influencing Pre-Service Early Childhood Teachers' Outcome Expectancy Beliefs Regarding Science Teaching, *Education and Science, 39*(173), 288-300.

Özbaş, S. (2016). High School Students' Attitudes Toward Biology Course. *Turkish Studies, 11*(9), 659-668.

Özen Uyar, R. & Ormancı, Ü. (2016). Science Education Research In preschool Period and Current Trends: A Thematic Analysis Study in Turkey, Ö. Demirel, Ö. & S. Dinçer (Ed.). Quality in Educational Science and Search for Innovation, Ankara: Pegem Akademi.

Potvin, P., & Hasni, A. (2014). Interest, Motivation and Attitude Towards Science and Technology at K-12 Levels: A Systematic Review of 12 Years of Educational Research. *Studies in Science Education, 50*(1), 85-129.

Sansar, S. B. (2010). Analysis of the Relationship Between the Attitudes of Pre-School Education Teachers Towards Science Education and Methods Used in Science Education Activities. (Unpublished Master's Thesis). Abant İzzet Baysal University, Bolu.

Saka, A. Z., & Kıyıcı, F. B. (2004). Determining the Factors Affecting Students' Attitudes Towards Science Education, *Sakarya University Journal of Education Faculty, 8*, 376-397.

Sarıkaya, H. (2004). Preservice Elementary Teachers' Science Knowledge, Attitude Towards Science Teaching And Their Efficacy Beliefs Regarding Science Teaching. (Unpublished master's thesis). METU, The Graduate School of Social Sciences, Ankara.

Sinan, O., Şardağ, M., Salifoğlu, A., Çakır, C., & Karabacak, Ü. (2014). Investigation of Primary School Students' Science Attitudes and Self-Efficacy. *Necatibey Faculty of Education Electronic Journal of Science and Mathematics Education, 8(*1), 68-100.

Şener, N., & Taş, E. (2016). A Scale Development Study to Determine the Attitude of Students' Towards Science. *ODÜ Journal of Social Science, (ODÜSOBİAD), 6*(14), 278-300.

Yıldırım, İ. H., & Kansız, F. (2017). Investigation Of Secondary School Students' Attitudes Towards Science Course According to Some Variables-2. Turkish Studies, *12*(25), 779-806.

Yıldız Duban, N. & Gökçakan, N. (2012). Science Teaching Self-Efficacy Beliefs of Primary School Teacher Candidates and Attitudes Towards Science Teaching, Ç.U. Journal of Social Science, 21(1), 267-280.

Watters, J. J., & Ginns, I.S. (2000). Developing Motivation to Teach Elementary Science: Effect Of Collaborative And Authentic Learning Practices in Preservice Education. *Journal of Science Teacher Education, 11*(4), 277-313.

Watts, M., Salehjee, S., & Essex, J. (2017). But is It Science? *Early Child Development and Care, 187*(2), 274-283.

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