Volume : 9 Number : 1 2018

IJERs

International Journal of Educational Research

An interactive journal sponsored
by Turkish Educational Research Association

International Journal of Educational Researchers (IJERs)
ISSN: 1308 - 9501

Volume 9(1) 2018

International Journal of Educational Researchers (IJERs)

ISSN: 1308 - 9501

IJERs is refereed journal published every four months.

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Volume 9(1) 2018

International Journal of Educational Researchers (IJERs)
ISSN: 1308 - 9501

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Educational Research Association
The International Journal of
Educational Researchers 2018, 9(1): 1-11
ISSN: 1308-9501

http://ijer.eab.org.tr

The Relation Between Elementary School Students' Science Success and Science Attitude, Anxiety, Interest[1]

Şafak Uluçinar Sağir[2]

Abstract

Science course for students is the first step in science for them. This study has been done to find out the relation between students' success in science lessons and interest, attitude and anxiety towards the science. The correlational survey method was used in this research. The universe of the study is the 4th grade students attending to the elementary schools in Amasya City in 2016-2017 academic year and the sample consists of 211 students. The Unit Light and Sound Achievement Test, The Scale of Interest Towards Science, The Scale of Anxiety Towards Science, The Scale of Attittude Towards Science and the personal information form are the data collecting tools. The data was analysed in the SPSS 20.0 programme. It has been found out in the analyses the students' success, attittudes and interests are over average, their anxiety is low. No meaningful difference in terms of gender has been found out in the student achievement, attittude, anxiety and the interest. It has been concluded that decrasing students' anxiety towards the science will increase their attitude and achievements. Regression equation was developed for the study. The class teachers are suggested that enlarging the students' field of interest by applying different activities during science course can change their anxiety and attittude towards science.

Keywords: Science succes, science attitude, science anxiety, science interest.

[1]Part of this article was presented as a poster at 3rd International Turkic World Conference on Chemical Sciences & Technologies.

[2]Amasya University, Education Faculty, Department of Elemantary School Education, Amasya, TURKEY Tel: +903582526230-3410; E-mail: safak.ulucinar@amasya.edu.tr

Introduction

Science course is an important lesson in almost each level of education. Among the aims of science education are to bring up science literate individuals, to assist in the selection of professions, and to provide positive attitudes and values towards science (Ministry of National Education, 2005). It is well known that both the cognitive and the affective properties in education influence success and that they are variables in the learning environment. In the classroom environment, there are variables that can be directly intervened such as method-technique etc. as well as the ones that cannot be directly intervened such as attitude, perception and anxiety. Developing positive attitudes toward science motivates students to pursue a career in science education and science. There are factors affecting attitudes towards science such as teachers, family, peer group, gender, motivation for success, and anxieties about science activities and science itself (George, 2006).

Attitude is defined as "an emotional preparation or tendency in the form of an individual's acceptance or rejection of a particular person, group, institution, or thought". Attitudes arise from beliefs about the object which is the subject of the attitude. Attitude is not a visible behavior, but a tendency to prepare behavior (Kağıtçıbaşı, 1999). When definitions of interest and attitude are compared, it is interesting to note that interest is a nonobligatory self-attitude towards the person, object or activities. It is based on preferences, and it consists of activities which the person is content with and focuses on. Yet, attitude has a lot of determinants. And the environment, culture, experiences and prejudices of the person affect his/her attitude. Research shows that there is an important relationship between students having positive attitudes towards science lessons and their success in science (Koballa, 1988).

One of the determinants of the success in lessons is the learner's interest in the lesson content. Roe (1964) defines interest as "*something that a person looks at, observes, thinks over and enjoys without making any special effort*" (qtd: Özgüven, 1994). Interest is an important feature and influencing factor in school life as well (Harty& Beall,1984). Students become more successful in lessons, learn faster, and keep the learned things for longer time if they are interested in. According to Koran andLongino (1982)'s research, interested young people are more successful than those with low interest because they are searching for events and objects for a longer time and reason much more. In addition to this, interested young people remember their experiences, understand, and learn more complex concepts better.

It is known that besides the cognitive and affective properties that affect learning, anxiety is also important (Laukenmann, Bileicher, Fu, Glaser-Zikuda, Mayring&Rhöneck, 2003). Atabek (2000) defines anxiety which affects the life of an individual in a negative way as: "*to scare as if there is an objective threat."* Anxiety generally arises when a system or concept is misunderstood or malfunctioning (Connolly, Murphy & Moore, 2009). Anxiety is a condition in which many factors interact. These are lessons, topics and publications related to education and curriculum, family attitudes, values and expectations from lessons (Lazarus, 1974), social support, academic success, family relationships, perfectionism, work skills, focus of supervision (Yıldırım et al, 2008), teacher's characteristics and teaching methods (Daniels, 1983) as well.

It is important to identify and control the emotional characteristics that affect students' success. Science can be difficult lesson for children and so they may fail in exams like PISA held around the world. In this respect, efforts to reveal the influence of affective factors such as attitude, anxiety and interest are important as success indicators. Within the formal education in Turkey, the students experience science lessons at the 1st grade of elementary school for the first time. According to current curriculum, science lessons begin in the 3rd grade in primary school. Attitudes of the students towards the science are beginning to take shape considerably in this process. The purpose of this research is to determine the relationship between the successes of the 4th grade students in science lessons in primary school and the interest, attitude and anxiety.

Research Problem

What is the relationship between the attitudes, anxieties and interests of primary school students and their success in science lessons? Sub problems are below:

1. How do the students' successes in science lesson, their attitudes towards the science and the anxieties and interests about the science change?

2. How are the attitudes, anxieties and changes of interests of the students in relation to successes in science lessons according to their gender?

3. What is the effect of children's parental educational levels on the successes, attitudes, anxieties and the interests in the science lesson?

4. What is the effect of students' having a computer on the successes, attitudes, anxieties and the interests in the science lesson?

5. What is the effect of students' following the science related publications on the successes, attitudes, anxieties and the interests in the science lesson?

6. Is there a relationship between students' successes, attitudes, anxieties and interests?

Research Assumptions

Science success test belongs to "Light and Sound" unit. It is assumed that the success of this test corresponds to the successes in the science lesson in general. It is assumed that the students answer the test and scales sincerely and correctly.

Research Limitations

The study is limited to a total of 211 students in the 4th grade in a primary school in the province of Amasya in 2016-2017 education year.

METHOD

Research Model

Correlational survey method was used in this research. Correlational survey model is a research aiming to determine the views, interests, skills, abilities, attitudes etc. of the participants and generally based on larger samples compared to other researches (Çepni, 2010).

Research Sample

The universe of the study is the 4th grade students attending to the elementary schools in Amasya City in 2016-2017 academic year and the sample consists of 211 students. Sample selection method is purposeful sample selection method. According to purposeful sample selection method, the fact that the 4th grade students have learned “Light and Sound” unit in science class is selected as criterion. 211 students participated in the research, and 106 of them are female students while 105 of them are male students.The demographic characteristics of the students are specified in Table 1.

Table 1. Demografic porperties of research sample

		n	%
Gender	Female	106	50,2
	Male	105	49,8
Mother's educational backround	Unanswered	11	5,2
	Elementary school	57	27,0
	Secondary school	39	18,5
	High school	50	23,7
	University	42	19,9
	Master	12	5,7
Father's educational backround	Unanswered	13	6,2
	Elementaryschool	22	10,4
	Secondaryschool	34	16,1
	High school	63	29,9
	University	59	28,0
	Master	20	9,5

Have you got a computer?	Unanswered	9	4,3
	Yes	135	64,0
	No	67	31,8
Do you read the publications related to science?	Unanswered	14	6,6
	Yes	97	46,0
	No	100	47,4

Data Collecting Tools

A questionnaire is prepared to collect data. Demographic characteristics are included in first part, and then, scales and success tests below are included.

Science Light and Sound Success Test: "Light and Sound unit Success Test" developed by İlhan (2014) is a multiple choice test consisting of 30 questions. The items in assessment instrument were prepared at the level of knowledge, comprehension and application, the reliability was calculated as 0,83 according to the test analysis.

Science Attitude Scale: It is 5 point likert scale, consisting of 15 items, developed byGeban, Ertepınar, Yılmaz, AtlanandŞahbaz (1994). It was formed as "Strongly Agree", "Agree", "Undecided", "Disagree" ve "Strongly Disagree". It was calculated by Başer (1996) and the internal consistency factor was determined as α= 0,83.

Science Anxiety Scale: It is a 5 point likert scale, consisting of 28 items, developed by Doğru and Güzeller (2011). The positive items for anxiety were marked from 1 to 5 points from "Strongly Disagree" to "Strongly Agree"; and negative items for anxiety were marked from 5 points to 1 point. Cronbach alpha internal consistency reliability factor of the scale was 0,96.

Science Interest Scale: It is a 5 point likert scale, consisting of 28 items, developed by Laçin Şimşek ve Nuhoğlu (2009). Interest scale is a scale developed to assess the interest of the individuals in science. Cronbach Alpha relieblity factor of the scale consisting of 27 items, 21 positive and 6 negative items, was determined as α=0,79.

Analyses of Data

Analysis of data was performed by using SPSS 20.0. In descriptive analysis percentage and frequency statics were used. After checking whether the data has a normal distribution or not via Kolmogorov-Smirnov test, analyses were made with nonparametric tests. Mann Witney U test was performed in the comparison of binary groups, Kruskal Wallis H test for more than two and Spearman Brown test was performed for the correlation. The results were determined at the p=0,05 significance level.

FINDINGS

The descriptive analysis of the responses of the sample to Science success test (SST) attitude scale (SAS), interest scale (SIS) and anxiety scale (SAnS) was specified in Table 2.

Table 2. Descriptive statistics of total test scores

	N	Min	Max	$\bar{X}$	s
SST	211	4	30	20,43	5,55
SAS	211	0	75	65,18	11,03
SAnS	211	0	123	43,57	19,63
SIS	211	0	135	112,18	20,09

The arithmetic average of the 211 students who participated in the research was calculated as 20,43; attitude scale arithmetic average was calculated as 65,18; and interest scale arithmetic average was calculated as 112,18 while anxiety scale was calculated as 43,57 according to the Table 2. The successes, attitudes and interests of the students are above the midpoint and the anxiety rates are below.

The differences in the total score of the students according to their gender were analyzed via Man Whitney U test and the results were specified in Table 3.

Table 3. Results of U test according to gender

	Gender	N	Mean of Ranks	Sum of Ranks	U	p
SST	Female	106	106,28	11266,00	5532,00	0,946
	Male	105	105,71	11100,00		
	Total	211				
SAS	Female	106	108,33	11483,50	5317,50	0,576
	Male	105	103,64	10882,50		
	Total	211				
SAnS	Female	106	100,10	10611,00	4940,00	0,157
	Male	105	111,95	11755,00		
	Total	211				
SIS	Female	106	107,29	11372,50	5428,50	0,758
	Male	105	104,70	10993,50		
	Total	211				

It is seen that there is not a significant difference when students averages were compared according to their gender in Table 3 ($p>0,05$).

The comparison of the students' total scores according to their mother's educational background was made via Kruskal Wallis H (K-W test). The results were specified in Table 4.

Table 4. Results of K-W test for comparison of the students' total scores according to their mother's educational background

		N	Means of Ranks	df	X^2	p	Source of Significance
SST	1-Elementary sc	57	80,33	4	16,24	0,003	1-3
	2- Secondarysc	39	99,09				1-4
	3- High school	50	105,44				
	4- University	42	126,44				
	5- Master	12	89,50				
	Total	200					
SAS	1-Elementary sc	57	93,42	4	4,79	0,310	
	2- Secondarysc	39	108,95				
	3- High school	50	106,47				
	4- University	42	102,68				
	5- Master	12	74,17				
	Total	200					
SAnS	1-Elementary s.	57	107,83	4	3,95	0,412	
	2- Secondary s.	39	96,82				
	3- High school	50	100,93				
	4- University	42	88,54				
	5- Master	12	117,71				
	Total	200					
SIS	1-Elementary s.	57	91,35	4	8,34	0,08	
	2- Secondary s.	39	107,46				
	3- High school	50	106,14				
	4- University	42	110,11				
	5- Master	12	64,21				
	Total	200					

The significant difference was determined in only success test when their total scores are compared according to their mothers' educational background ($X^2=16,24$ $p<0,05$). A significant difference was determined among the successes of the students whose mothers graduated from elementary school and

high school, and elementary school and university according to their educational background. In the science attitude, science anxiety and science interest, a significant differences weren't determined according to mother's educational backround of participant students.

The K-W test results of the comparison of the students' total scores according to their father's educational background were specified in Table 5.

Table 5. Results of K-W test for the comparison of the students' total scores according to their father's educational background

		N	Means of Ranks	df	X^2	p	Source of Significance
SST	1-Elementary s.	22	95,11	4	13,89	0,008	1-4
	2- Secondary s.	34	88,49				2-4
	3- High school	63	85,39				3-4
	4- University	59	121,32				
	5- Master	20	103,13				
	Total	198					
SAS	1-Elementary s.	22	86,91	4	3,81	0,432	
	2- Secondary s.	34	97,62				
	3- High school	63	110,07				
	4- University	59	96,78				
	5- Master	20	91,28				
	Total	198					
SAnS	1-Elementary s.	22	97,43	4	6,71	0,152	
	2- Secondary s.	34	107,28				
	3- High school	63	87,48				
	4- University	59	100,85				
	5- Master	20	122,45				
	Total	198					
SIS	1-Elementary s.	22	83,16	4	10,11	0,039	1-3
	2- Secondary s.	34	93,22				3-5
	3- High school	63	113,60				4-5
	4- University	59	102,73				
	5- Master	20	74,20				
	Total	198					

When the total scores of the students were compared according to their father's educational background, significant differences were determined in success and interest. The significant differences were determined in the success tests of the students whose fathers graduated from elementary school and university, secondary school and university, high school and university (X^2=13,89 p<0,05). In the science attitude and anxiety attitude, a significant difference was not determined according to their father's background. In interest scale, significant difference was determined between the students whose fathers graduated from elementary school and high school, high school and master, university and master (X^2=10,11 p<0,05).

The total scores were compared according to the fact whether they have computers at their home or not, and the results were specified in the Table 6.

Table 6. Results of U test according to the fact whether they have computers at their home or not

		N	Mean of Ranks	Sum of Ranks	U	p
SST	Yes	135	104,21	14068,00	4157,00	0,349
	No	67	96,04	6435,00		
	Total	202				
SAS	Yes	135	103,77	14009,50	4215,50	0,431
	No	67	96,92	6493,50		
	Total	202				
SAnS	Yes	135	98,39	13283,00	4103,00	0,282
	No	67	107,76	7220,00		
	Total	202				
SIS	Yes	135	101,42	13692,00	4512,00	0,979
	No	67	101,66	6811,00		
	Total	202				

When students' scores were compared according to the fact whether they have computers at their home or not, significant difference was determined (p>0,05). The science success arithmetic average (20,71) of the students who have computer was higher than the students who do not have (19,97), while the difference was not significant statistically.

The comparison of the total scores of the participating students who read the publications relating to the science and the ones who do not read was specified in Table 7.

Table 7. Results of U test according to participants who read publications relating to the science

		N	Mean of Ranks	Sum of Ranks	U	p
SST	Yes	97	106,51	10331,00	4122,00	0,068
	No	100	91,72	9172,00		
	Total	197				
SAS	Yes	97	108,93	10566,50	3886,50	0,016
	No	100	89,37	8936,50		
	Total	211				
SAnS	Yes	97	84,96	8241,00	3488,00	0,001
	No	100	112,62	11262,00		
	Total	211				
SIS	Yes	97	115,84	11236,00	3217,00	0,000
	No	100	82,67	8267,00		
	Total	211				

According to the comparison, a significant difference was not determined in the success test's total scores. While the attitudes and interests mean rate of the students who read the publications related to science was higher and the difference was significant, the anxiety related to science was lower and the difference was significant (p<0,05).

The relationships among the SST, SAS, SIS, SAnS were determined according to the Spearman Brown correlation analysis. The results were specified in Table 8.

Table 8. Results of correlation analysis for total scores

		SST	SAS	SAnS	SIS
SST	r	1	0,133	-0,243**	0,162
	p		0,054	0,000	0,019
	N		211	211	211
SAS	r		1	-0,346**	0,526**
	p			0,000	0,000
	N			211	211
SAnS	r			1	-0,498**
	p				0,000
	N				211

There is not a significant relationship between the science success and the attitudes of the students toward Science (p>0,05). There is a significant relationship in negative direction at a low level between the anxiety relating to Science and the success (r=-0,243; p<0,05). There is a significant relationship in positive direction at a low level between the Science success and their interests relating to Science (r=0,162; p<0,05). There is a significant relation in negative direction at medium-level between attitudes toward Science and the anxiety (r=-0,346; p<0,05). There is a significant difference in negative direction at a low level between Science anxieties and interests of the students (r=-0,498; p<0,05).

Regression analysis was conducted to determine the effects of science attitude, science anxiety, interest in science, mothers' and fathers' educational backgrounds on science achievement. Regression results were given in Table 9.

Table 9. Regression analysis results on the prediction of science achievement

Variable	B	Std. Error	β	t	p	Duo r	Partial R
Constant	20,219	3,419		5,913	0,000		
SAS	0,040	0,036	0,079	1,109	0,269	0,143	0,077
SAnS	-0,071	0,022	-0,250	-3,269	0,001	-0,265	-0,223
SIS	-0,005	0,021	-0,016	-0,210	0,834	0,128	-0,015
MotherEB	0,622	0,349	0,152	1,781	0,076	0,142	0,123
Father EB	-0,113	0,360	-0,027	-0,314	0,754	0,050	-0,022

There is an intermadiate level significant relationship between students' achievements and SAS, SAnS, SIS, parents educational background (R=0,309 R^2= 0,096 $F_{5\text{-}205}$=4,333 p=0,001). These variables explain the 10 % of the variance success. Depending on the standardized regresioncofficiency (β), the importance sequence of interpretiating variables on success are anxiety, attitude and interest. It can be said that anxiety variable has a meaninful interpreting on success according to the t-test results with regression cofficiency. The other variables have no effect on success. Developed regression equation is below.

SST= 20,219 + 0,040SAS -0,071SAnS-0,005SIS+0,622 MotherEB-0,113FatherEB

DISCUSSION AND CONSLUSION

In the research, the success of students, the interests and attitudes toward Science was determined to be higher than the medium level and anxiety was low. It is seen that there is not any significant difference in these variables according to the gender. It can be expressed that the educational background of the mothers and fathers of the students is an effective factor in the success of students in Science. The children of the mothers and fathers who graduated from high school and university are more successful than the others. The educational background of the fathers is an effective factor in their interest relating to Science. Having a computer does not have a significant effect in terms of these variables. Reading the publications related to Science caused a significant difference in the total scores of attitude, interest and anxiety. While relationship between the success in Science and attitude was not significant, there was negative relationship between success in Science and anxiety, and there was

a positive relationship between success in Science and interest at a low level. It was determined that there was a negative relationship between anxiety and attitude toward Science, and there was a positive relationship between interest and attitude toward Science at a medium level and there was a significant relationship between anxiety and interest in negative direction at a medium level.

One of the most effective factors in increasing the success in Science class is the attitudes and interests. Also the anxieties related to this lesson are other important factors in success. According to the researches, the interests, the experiences and families' interest of the students in Science are the factors affecting the student's attitudes toward Science and Technology class (Laçin Şimşek & Nuhoğlu 2009). The researches done in Science reveal that the success and attitude are related. The students who have a high attitude in Science are successful (Altınok, 2005; Balım, Sucuoğlu & Aydın, 2009; Yalvaç & Sungur, 2000); and it is indicated that this condition affects the developing scientific attitudes and interesting (Dieck, 1997; Martinez, 2002) in Science. In the research done by Özyalçın Oskay, Erdem and Yılmaz (2009) in chemistry laboratory lesson, a relationship between the attitude toward chemistry lesson and success at a low level was determined. In the same research, when they examined the attitude according to the gender, a significant difference was determined in favor of girls. They bear resemblance to the findings in Salta and Tzougraki (2004) researches.

Generally anxiety and success affect each other negatively. Also in this research, a negative relationship was determined between Science anxiety and success. It was observed that the students who have a lower Science anxiety are more successful in Science lesson and the students who have a higher anxiety are not successful like others (Doğru & Güzeller, 2012). Uluçınar Sağır (2012) specified that the gender does not result in a significant difference in Science attitude and anxiety of primary education students; the anxiety increases while the grade level increases. Gömleksiz and Yüksel's (2003) research on 4th and 5th grade primary education students, it was determined that they have anxieties including failing in Science and are interested in class.

In the researches done by Yaman and Öner (2006) it was seen that primary education students have high attitudes and interests in Science. There are similar findings in literature (Durmaz & Özyıldırım, 2005; Eke, 2010). Güven Yıldırım and Köklükaya (2016) found that the primary and secondary education students' interests in Science are high and there is a significant difference in favor of level of grade and male students. Laçin Şimşek (2007) indicates that the students' interests in biology topics are higher. These results are similar to the present research findings.

In this research, it was determined that the educational background of mothers and fathers leads to significant difference in the student's success and interests. As parents' educational level increases, the amount of the attention they pay and the opportunities they provide for their children's education increase. Thus, it is expected that the students who have scientific publications and their own computers and the students whose parents are interested in their children's education can be more successful. In Sarıer's (2016) metaanalysis research it was specified that the effect size of the factors related to family is 0,271 and this is important. In assessment study of PISA 2006, Anıl (2009) found a positive relationship between parents' educational background and cultural richness, and students' success. There are studies that reveal the families' social economic level have an effect on the students' success (Arıcı, 2007; Kocaman, 2008; Özer ve Anıl, 2011; Polat, 2009; Wang, 2004).

The success test applied on the students in there search was about light and sound unit. It was seen that attitude, anxiety and interest were no effect on success related to the regression equality. These variables together explain 10% on success. Anxiety towards science was meaningfull.

SUGGESTIONS

The attitudes of students toward Science can be developed by using different methods and techniques in application of Science lessons. Participating in different activities and examining the applications of sciences in the daily life will also improve the students' interest in Science. The students whose science attitudes and interests increase will experience less anxiety in the science lesson. On the condition that the attitudes of the class teachers who teach Science in primary education improve, the changes in the emotional behaviors of the students can be controlled. A teacher, who does not love the lesson, undoubtedly can not be a good model for the students in terms of attitude and motivation. Students can also make this kind of practices and activities at different levels.

Acknowledgement: Thanks to my student Elifnur Pelitli due to contrubution to collecting data.

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Educational Research Association
The International Journal of
Educational Researchers 2018, 9(1): 12-17
ISSN: 1308-9501

http://ijer.eab.org.tr

Using Wikis to Increase Writing Skills in Writing Classes

Sezgin Ballidag[1]

Abstract

It's an undeniable fact that the majority of the teenagers today are keen on technology, and they tend to use it for various purposes. This research attempted to see how using a wiki page in a writing lesson could affect students' success. The research lasted for two months. Each week, students handed in an assignment, either as a hard copy or online. Data was collected using two different instruments. First of all, Pre and post questionnaires were applied in order to see the student's attitudes towards the use of internet for educational purposes specifically for writing lesson and peer edit. Besides this, the midterm results of the students, which served as a determiner for success, were analyzed by dependent samples t-test. Results showed that there was not a significant difference in the results of the two groups in terms of their grades, besides this, the percentage of the students who thought wiki was a valuable source for a writing class in the pre-questionnaire decreased in the post-questionnaire. That's to say, integrating a wiki into the writing classroom was of no help to increase students' writing skills.

Keywords: Collaborative learning, using Wikis for writing classes, peer-editing, constructivism.

[1] Lecturer, Yildiz Technical University, School Of Foreign Languages. sballidag@gmail.com

Introduction

Effective written communication is fundamental part of learning a foreign language, and it is a key factor in students' academic development. Learning to write is a long-term process and, in order to discover more effective ways to help students to be better writers in a foreign language, quite a lot of researches have been implemented on how to make students more motivated to write.

Developments in the writing curriculum during the past two decades have resulted in an increased emphasis on the process of composing and sharing a message with an audience, and of learning specific structural skills with this communicative context (Bos, 1988). With the increasing trend towards the use of technology in education, wiki pages provided a convenient place to hand in writing assignments and sharing them. This paper describes an attempt to see the effectiveness of using wikis for a writing class in an EFL classroom.

2. Literature Review

According to social constructivism, students learn through collaboration, and peer review gives learners the ground to exchange their ideas. The type of approaches to peer review depends on the teachers' instructions; it might be open-ended, guided or directed (Rieber, 2006). In an open-ended review, students are seen as experts and teachers offer no or little guidance in how to review their peers' papers. They are assumed to know the assignment requirements. This approach is mainly used in advanced level classes. The other approach, guided peer review, as the name suggests, teachers guide reviewers with a list of general questions to consider while they are reviewing the papers. In the final approach, directed peer review, teachers give reviewers a complete checklist covering all assignment guidelines. This is best when students have limited experience in the subject and do not have enough writing skills. It is always good to have a checklist because; first, all papers are reviewed with the same criteria, second, you cannot miss any point, and last, it really helps weak learners working with strong learners.

There are different reasons for using peer review in writing classes in literature. Firstly, students like it. For example, in Eschenbach's (2001) study, there were 12 students in the class, and 11 of them liked the peer review sessions and they wanted to continue the same application. Students' reaction to the comments done by their peers are more positive than it is to their teachers (Rieber, 2006). When a teacher reads papers, he comments as "right" or "wrong". But when a peer reads the paper, he or she mostly comments about how the paper does or doesn't need the assignment guidelines, which leads to an improvement in the papers of both reviewer and reader.

Secondly, students write more carefully when they are communicating with peers and do better because of the peer pressure than when they are evaluated by their teachers. Students do not want to appear unintelligent to their peers, when they know their work will be read and commented on by another student during a peer review, they are successful to produce a more polished draft for review (Rieber 2006). In their research, Plutsky and Wilson (2004) also indicated students became better writers with the help of peer review.

Finally, peer feedback seems to lead a better academic achievement. In his research, Richer(1992) researched how college students benefitted from peer feedback in their writing classes. The results revealed that better grades were obtained from peer feedback group. They also showed lower writing anxiety (Stanley, 1992) and became to support each other more. Furthermore, one-to-one context may also encourage students to ask questions that they might be reluctant to ask in larger classes.

To prevent unevenness, Kerr (1995) suggests multiple reviewers or using anonymous pairs. This way the anxiety level of the students will be relatively low because they don't know whose papers they are reading. In the literature, one can conclude that the most important side of having anonymous peer review is that it provokes more critical feedback because they are relieved from social pressure. According to Robinson (1999) and MacLeod (1999) being anonymous makes learners more critical of their peers. There is a nice study by Zhao (1998). In order to explore the effects of anonymous feedback, Zhao conducted two studies on first and second year students at a college. They reviewed journals in two conditions. In the first condition reviewers knew that authors would be given their information whereas in the other condition, they were made sure that their names will be removed

before authors receive their reviews. The results indicated that the grades assigned by ones whose names were anonymous to the authors were more critical than the ones who thought they would be identifiable to the authors. In spite of many benefits of anonymous peer review, it has some disadvantages in the literature, too. According to the research by Kerr & Bruun (1981), students showed better efforts when they are identified to authors. They did not really do their best because they were hiding from the crowd (Lu and Bol, 2007).

With the advances in technology over years, teachers and researchers have started to make use of technology in education, too. A wiki is a powerful online writing tool with revising and editing functions**.** They are great tools for learners, as Ben-Zvi (2007) also states, in that learners can reach the papers from different locations as long as they can go online. Therefore, it was hypothesized that students working on the wiki page would read and respond to papers in a shorter time. In the constructivist approach, students are actively involved in creating knowledge and Holzinger (2008) states that we create knowledge by editing a web page. Franco (2008) supports this idea adding that wikis enable students to create knowledge in a stimulating and exciting environment. Unlike the classroom, the students can enjoy the convenience of their own environment, which reduces the anxiety and stress that they could have in an actual classroom. Wikis give students a floor to integrate their knowledge and technology and share their ideas with public. Once they have posted their work, it will be available to everybody in their group.

2. Methodology

2.1 Research Question & Hypothesis

This research is looking for answers to following question;

Research Question: Does using wikis with the help of peer feedback in writing classes increase students' grades?

Hypothesis: Using wikis with the help of peer feedback in the writing class will increase students' grades.

2.2 Research Context and Participants

This research was conducted in a preparatory class at a state university. The medium of instruction at the university is %30 English. There are total 14 classes in the department. The classrooms are composed of students with different majors. As the instructor of the writing lesson, the researcher was a participant observer in the class. The student sample was composed of 24 elementary level students, 17 boys and 7 girls aged between 17- 20. The first languages of all the students are Turkish. They studied English for total 25 hours a week, and 5 hours of which are devoted to the writing class. The material used for the classroom is Weaving it Together 1. During one semester, students are expected to be able to learn how to compose a paragraph.

2.3 Data collection

Closed Pre-questionnaire and post-questionnaires with multiple choice items were applied to see how students thought about peer editing and using a wiki page for educational purposes at the outset and the end of the research. Field notes were taken while the students were on task. Finally, students' work and the peers' comments on the wiki pages were read and given feedback by the teacher. In order to see the progress, two exams, which were seen an indicator of the success, were given to the students.

2.4 Procedures

At the beginning of the term, students were informed about the research and volunteer students who would be handing in and editing their homework online were asked, and eight people volunteered. The experiment started on the second week. During classroom time, both group had the same instruction. When they needed to write, the classical group wrote at home and brought their papers into the class. Having been edited by their peers, the papers were collected and given feedback by the teacher. During peer editing section which lasted about 10 minutes, the online group were allowed to leave the classroom. The classical group were observed by the teacher while they were on task. The online group, on the other hand, were expected to upload their first drafts online, and those papers were

edited by peers online by following the same peer editing checklists in threads. Then students, after doing any corrections they wanted to do, uploaded the final version of the paper. Finally, those papers were given feedback by the teacher on the same wiki page. With both groups, students did not use their actual names on their papers or on the wiki page they were using in order to see how anonymity would work within this research setting.

2.5 Analysis

To analyze the data, a dependent t-test was used. The results of the students working online from the first quiz were compared with the results of the second one to see how much difference posting homework to a wiki page made on students' learning, and thus on their grades.

Results

The data was analyzed by using the **S**tatistical **P**ackage for the **S**ocial **S**ciences (SPSS) and are presented below.

Table 1: First Midterm Statistics

	Mean	N	Std.Deviation	Std.Error Mean
Online Group	11,87	8	2,41	0,85
Classical Group	10,52	17	4,38	1,06

Table 2: Second Midterm Statistics

	Mean	N	Std.Deviation	Std.Error Mean
Online Group	11,57	7	2,14	0,81
Classical Group	9,94	18	5,11	1,20

Table 1 and ***Table 2*** above shows the students' results from two midterm exams after the research started. As it was shown in the *Table 1* and *Table 2*, ***the means*** for both the online group and the classical group was lower in the second midterm.

Table 3: Dependent Samples T-test

	t	df	sig. (2 tailed)
Midterm Results	0,513	29,88	0,623

Sig.=0,05

The results of the dependent t-test showed that there was not a significant difference (p= 0,623 > p=0,05) between the exam grades of the two groups. Therefore, the participants did not benefit from using a wiki page to improve their writing skills in writing classes.

5. Discussion and Conclusions

In this research, the researcher tried to see how effective peer editing with the help of a wiki page is for a preparatory writing class at a state university in Turkey. In reference to the research question, if we look at the results obtained from midterms (Tables 1 and 2), it is hard to say that posting homework and peer editing online was of a significant help, as it was thought to be at the beginning of the research. Talking about the average, it may not seem that the class advanced so much; however if we take individual students into account, we can see that improvement may be more than 5 points for some students. Just like (Allaei & Connor, 1990) claimed in their paper, there were mixed degrees of

success in this research, too. Similar to what they found out in their study, weaker students in this classroom had difficulty in spotting the mistakes even though they were asked to do a directed review. Out of 8 students; only 2 improved their grades, 2 have shown no difference and 4 students received worse grades in the second midterm. This result is actually consistent with the post questionnaire results. Although %70 of the students initially thought that it was a good idea to hand in assignments online, it was only %30 in the post questionnaire. Unlike what Robinson (1999) and Macleod (1999) found out, anonymity did not work in this class since they did not want to proceed without knowing whose papers they were reading and who was reading theirs both in the lesson and online.

5.1 Implications

We tend to think that technology is of great help in education in all cases, and do our best to integrate it into our classes, yet this research showed that it is not always beneficial. Unlike what Ben-Zvi (2007) states, students did not enjoy the freedom of being able to reach their papers or read their friends papers wherever they are. The results of this research revealed that although students seemed enthusiastic towards using online sources in their writing class at the outset, they lost interest and started to find it tiresome, therefore they did not benefit from it at the desired level. That's to say, as long as students are provided with correct instruction and given a chance to exchange ideas in the classroom, teachers should not be in search of ways to make use of wiki pages in their writing classes.

5.2 Limitations and Suggestions for Future Research

Obviously this research is limited by its small sample size. Only 24 students participated in the research, so a larger sample may give better data to rely on. Another limitation of this study is the level of the students who took part in the research. For this study, the participants were chosen from an elementary class, therefore, another study with participants from higher levels may reveal different results. In addition to the limitations above, this research was conducted within one classroom composed of two groups; that's two different applications within one group, which made the online writers think that they were putting more effort than their classmates, so they got bored and lost interest. Therefore; this research may be repeated with two different classes having a different application in each.

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Educational Research Association
The International Journal of
Educational Researchers 2018, 9(1): 18-31
ISSN: 1308-9501

http://ijer.eab.org.tr

Yilugnta and other Predictors of Class Participation and Achievement in Selected Courses at Addis Ababa University

Darge Wole[1]

Abstract

The study investigated the effect of *yilugnta* (synonymous with public self-consciousness, or PSC) and other selected factors on class participation and course grade in Math for Finance and Communicative English at Addis Ababa University. Other factors considered as potential predictors included sex, self-esteem and English proficiency. Path analysis using Amos was used to examine model fit and direct as well as indirect effects. *Yilugnta* was found to have a direct negative and significant effect on class participation and a similar indirect effect on course grade. The factors which reliably predicted class participation were yilugnta and English proficiency. The results underscore the importance of *yilugnta* in determining class participation and achievement. The concept of *yilugnta* and the findings pertaining to it also point to the importance of examining the PSC construct and its impact on student academic engagement and achievement from the cultural perspective.

Keywords: *Yilugnta*, public-self consciousness, class participation, achievement

[1] Darge Wole, Professor of Educational Psychology, School of Psychology, Addis Ababa University, E-mail: dargewolem@yahoo.com dargewolem@yahoo.com

Introduction

Research (e.g. Howard & Baird, 2000; Howard & Henny, 1998) portrays a distressfully low level of student participation in university classes with a host of intertwined factors at play. The epithet 'consolidation of responsibility' (Karp & Yoels,1976, cited in Howard, 2002), which encapsulates a condition whereby only a few students play a dominant role in classroom interaction, embodies neither solace nor solution; the authors of the designation actually conceived it to signify a troublesome academic rift. Evidently, the situation in local (Ethiopian) universities suffers from this same aberration (Filaba, 2009; Yosef, 2016). Thus investigation of the factors that impede student class participation from different angles continues to be an important though involved task. One such factor from the cultural perspective concerns *yilugnta*.

Yilugnta, a term which in Amharic (a widely used local language), literally means "How would others judge my behavior" is very similar to public self-consciousness (PSC). It refers to an inordinate concern about evaluation of one's behavior by others. It takes two main forms: Refraining from doing something that is beneficial to oneself for fear of criticism, or going out of one's way to do something that is socially commendable simply to avoid reproach (without personal conviction about the appropriateness of the action). Thus *yilugnta* impels someone towards unfavorable outcome for himself (e.g. refraining from expressing one's lack of knowledge on a subject for being considered ignorant, or it may inspire an individual towards a socially positive outcome (such as helping others in need). If one were to focus on its negative aspect in academia, an undergraduate may refrain from asking a question in class for fear of making a mistake and exposing himself to ridicule or disparagement. Another student may obligingly nod his head in total agreement with an instructor who says "That is clear, isn't it?" although he is at a complete loss about the point the instructor was trying to make. In brief, *yilugnta* can play a viciously suppressing or deceptive role in student classroom interaction.

In the Amhara culture, there is a persistent outlook which confers omniscience to the teacher and extols passiveness or silence before mentors. In this connection, a high-profile traditional mentor offered the Amharic maxim which can be rendered in English as "Be quick to see and to listen, but keep your mouth tightly shut". (Hiruy, 2000, p. 90). In addition, committing a mistake in public is a dreadful source of embarrassment. *Yilugnta* and various other factors, including deficiency in the English language and poor academic status in general, can lower students' self-esteem which in turn render them confirmed subjects of *yilugnta* with its unfathomed implications for learning.

Empirical evidence regarding the impact of *yilugnta* on classroom participation and achievement is apparently non-existent. Yet both theory (Skinner, 2014; Bandura, 1977; Vygotsky, 1978) and empirical studies (e.g. Fakaye, 2013; Pratton & Hales, 1986) consider student participation in the teaching process as an essential mediator of learning outcomes. Thus, on account of intuition and theory, it is imperative to investigate *yilugnta* and other pertinent factors with a view to detect their relative impact on student classroom participation and achievement. Such an investigation does not only provide additional evidence regarding factors impinging on classroom interaction and academic achievement but also add cultural dimension to the conception of PSC.

Problem Statement

The present study investigates the level of *yilugnta* among university students and its effect on class participation and course grade using a model which involves sex, *yilugnta*, self-esteem, English proficiency, class participation and course grade.

Yilugnta is generally understood to be "the tendency to direct attention toward the self as a social object" (Fenigstein, 1987: 545). It the present context, it refers to refraining from expressing one's observations, ideas, observations, opinions, feelings or queries to instructors or classmates during class session for fear of negative evaluation by the audience. Self-esteem refers to one's self-regard or self-respect from the point of view of his ideal self. Class Participation is defined as with-in- class oral communications or activities by students regarding the course under study with the instructor and/or

classmates. English proficiency is taken to mean competency in the English language as measured by the English Score on the Ethiopian University Entrance Examination (UEE). Course grade refers to achievement on a five-point scale (0 to 4) based on letter grade at the end of the first semester 2016/17 for the selected courses (Math or English) which the participants took at the time.

Literature

Characteristics of PSC as they apply to *Yilugnta*

As indicated above, PSC is a preoccupation with creating a positive impression of oneself on others and/or avoiding denigration in public. Individuals with high PSC, i.e., individuals who are obsessed with creating a positive impression on others, tend to show relatively higher level of conformity, social desirability, anxiety, and lower level of self-esteem and risk taking behavior (Tunnell, 1984; Scandell & Scandell, 1998). In addition, compared to those with low PSC, those with high public self consciousness tend to show less competition (Abrams & Brown, 1989). They also seem to be more inclined to change their views to suit social expectations (Chang, 2001).

Relative to those with low PSC, those with high PSC are more likely to think that communications in social situations are directed to them personally (Fengstein, 1984). Scheier's study (1980) further suggests that those low in PSC are more consistent in expressing their attitudes than those with high PSC. Furthermore it appears that those with high PSC show greater tendency to conform to social expectation (Abrams & Brown, 1989).

The above brief characterization of PSC is applicable to *yilugnta*. Their basic similarity is that both indicate pre-occupation with the opinion of others regarding their behavior, although this kind of concern may be more salient in the case of *yilugnta* than in the case of PSC. Apparently too no research seems to have been done on the relationship of *yilugnta* to other psychological attributes.

The theoretical bases of PSC are not sufficiently established. However, some of possible theoretical underpinnings, which can also apply to *yilugnta*, can be identified. Thus Psychoanalytic theory proposes that expectations by caregivers that are beyond the reach of the growing person encourage the individual to focus more on presenting himself/herself according to the expectations rather than showing his "true" self (Kohurt & Wolf, 1978, cited in Tunnel, 1984). The Behaviorist tradition recognizes the importance of reinforcement in the development of individual behavior which implies that in as much as society rewards that particular behavior. The Social-learning (or Modeling) perspective (Bandura, 1977) postulates that individuals tend to imitate behaviors that they see to be rewarding. Guthrie's conception of habit formation (Hill, 1963) appears to be pertinent in understanding the persistence of fear of criticism in public forums (such as classrooms) which, as a set of stimuli, evoke specific forms of behavior such as keeping quiet.

Factors impacting on class participation

Behaviorism posits that the learner's observable physical or verbal action in response to some stimulus, if followed by the proper feedback, becomes instrumental in the acquisition of knowledge and skills. (Skinner, 2014). The Information Processing model of the Cognitive perspective recognizes the importance of interpersonal communication (or sensory input) as one basis of intellectual and attitudinal development. The Socio-cultural or Constructivist perspective (Vygotsky, 1978) takes social interaction as a cornerstone in the development of knowledge via more knowledgeable others, thereby addressing the Zone of Proximal Development. These perspectives suggest that student learning and retention can be enhanced through appropriate class participation.

Empirically, Weaver and Qi (2005) found that high PSC is negatively related to class participation. Dawit & Demis (2014) conducted a study on class participation in English as a Foreign Language (EFL) classes in five Ethiopian universities and found, among others, that fear of criticism by classmates negatively affects participation. A study with college students (Morrison & Thomas, 1975) has also found that students with low self-esteem (SE) contribute less to discussions than those with high SE when SE is assessed by Coopersmith School-oriented Inventory. With subjects from EFL classes, Azmand (2014) found a positive relationship between self-esteem and class participation.

Concerning the influence of sex on class participation, some studies suggest that males are more inclined to participate than females. (Wade, 1994; Jaasma, 1997). Others find no such difference (Cornelius, *et al*, 1990). The greater participation by males could partly be due to relatively lower self-esteem among females (Kling, *et al*, 1999).

Language proficiency bears importantly on class participation. Kao & Gansneder (1984) found that non-native speakers of English show less class participation than speakers of the native language attending the same class. Similarly, Sayadi's study (2007) showed that Malaysian first year engineering students who were more proficient in English (the medium of instruction) showed greater class participation than those less proficient in the language. Liu & Kao (1996) concluded that English proficiency is a predictor of class participation. Dawit & Demis (2014) also found that low English proficiency has a detrimental effect on class participation.

Factors affecting academic performance

The factors that affect academic performance include: Sex (Erten, 2009; Abubaker & Oguguo, 2011; Jabor, *et al*, 2011; Aina, 2013; Yazachew, 2013; Ajai & Imako, 2015; Reddy & Reddy, 2016; Sam, 2016); class participation (Voekl, 1995; Fakaye, 2013; Gunuc, 2014); language proficiency (Matirosyan, *et al*, 2015); previous achievement (Mekenzie & Schweitzer, 2010; Mutangi, 2016); and self-esteem (Priyadharshini & Relton, 2014; Pullman & Allik, 2008; Arshad, Zaidi & Mahmood, 2015).

For instance, in Erten's study third year female teacher trainees obtained significantly higher GPA than their male counterparts in a university English Language Teaching program. Sam found that males outperformed females in financial accounting subjects among 'senior' high school students. Martirosyan, *et al* conducted their study among university students and found that English language proficiency is positively related to overall performance of students. In the study by Gunuc, class engagement (participation) explained 10% of the variance in the GPA of first year university students.

The above account highlights various predictors of class participation and academic performance. The factors include PSC (probably *yilugnta* too), sex, self-esteem, and language proficiency. However, some complexity may exist in the relationship between the predictor factors and the two dependent variables (i.e., class participation and academic achievement). For instance, there are studies (e.g. Kearney-Cooke, 1999; Bleidorn, *et al*, 2016) which suggest that females have lower self-esteem than males.

Sex differences in academic achievement favor females over males in some studies (e.g. Erten, 2009) while in other studies (e.g. Aina, 2013) the reverse appears to be the case. Such inconsistencies emanate perhaps from the subject-area under the study, or individual /group differences in cultural orientation, self-efficacy beliefs, or teacher bias. For example, in Erten's study, the differences in achievement related to an English language teaching program while Aina's study dealt with differences in achievement in 'practical physics'.

In spite of complexities involved, however, the account presented above suggests that *yilugnta* has an important bearing on academic activities and outcomes. In addition to *yilugnta*, the variables that impinge on class participation and academic achievement include sex, self-esteem and language proficiency. It further appears that some of the variables can have an indirect effect on class participation and achievement (e.g. indirect effects of *yilugnta* on achievement and sex on achievement (via class participation).

Examining the effect of *yilugnta* on academic activities and outcome is particularly useful, specially because *yilugnta* is potentially damaging to academic achievement. Also, given the above review, the effect of class participation on academic performance is better understood when other potential predictors of performance are included in a prediction model. The following conceptual model is generated based on the considerations just mentioned.

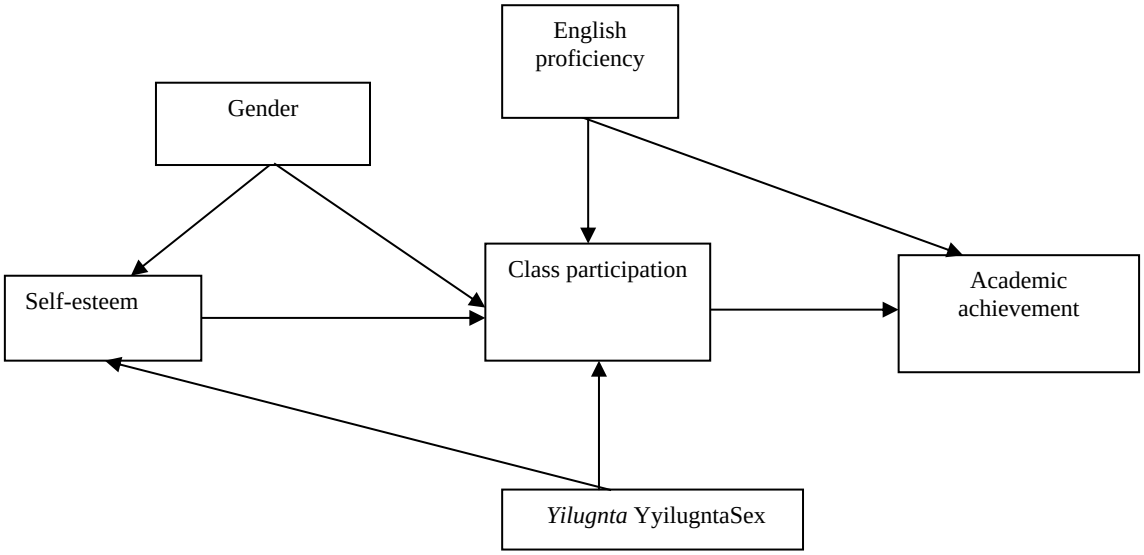

Fig.1. Conceptual framework regarding the effects of *yilugnta* and other selected factors on class participation and academic achievement.

Method

The study is quantitative involving information obtained from participants through a researcher-developed instrument, another commonly used instrument in similar research, a form for assessing class participation, and student academic records.

Sample

The study focused on courses/classes in Addis Ababa University that require a good deal of participation for success. Thus it was decided to include classes in Math and English. The classes that were included in the study were the ones where the concerned departments, instructors and students showed cooperation. Two classes, one in Math and another in English were selected. The courses were: Math for Finanace (Actn 1041) offered by the Department of Accounting and Finance, and Communicative English (Enla 1011) given by the Department of Foreign languages and Literature. Both classes were in their First year First Semester in the 2016/17 academic year. The Math class was attended by Accounting students and the English class by history students.

The two classes were taken intact after securing the cooperation of the students and the concerned instructors. There were 73 students (27 females and 46 males) in the Math class and 38 students (17 females and 21 males) in the English class.

Data Collection

Data regarding sex and English proficiency were collected from the Registrar's office of the respective colleges (i.e., the College of Business and Economics and the College of Social Sciences). Regarding the measurement of *yilugnta,* a 22-item instrument was developed by the researcher and amended based on feedback provided by two psychology instructors. Self-esteem was measured using the Rosenberg Self-esteem Scale. The instruments were first prepared in Amharic and pilot tested. Their reliabilities (Cronbach alpha) were 0.79 for *yilugnta* and 0.84 for self-esteem. Concerning class participation, for each class, the instructor as well as a knowledgeable team of students (selected by the instructor) assigned a score for each student. In the case of discrepancy between the instructor's and the team's assessment, the average score was used in the analysis.

Method of Analysis

Descriptive statistics, Pearson Product Moment correlation and path analysis were employed to analyze the data. Before proceeding to analysis, the inter-correlations of scores on the various predictor variables were examined to detect relationships. Normality of distribution was also checked by inspecting skewness and kurtosis indices as well as residual plots. In addition, Leven's test of equality of variance was used to help in deciding if it was advisable to transform the combined data (of the Math and English classes) for analysis. SSPS program 24 was used to compute descriptive data, and path analysis using Amos program was employed to test the model and the effects of variables.

Findings

Descriptive and Correlational Data

Out of the 38 students from the English class to whom the scales were administered, three were returned incomplete. Similarly, nine students from the Math class were either absent during the administration of the data collection instruments or did not properly complete the data collection instruments. So the analysis included 35 students from the English class and 64 students from the Math class. A summary of the composition of the respondents is presented in Table1, below.

Table1. Number of Respondents by Type of Class and Sex

Type of Class	No. of respondents by sex		
	Males	Females	Total
English	19	16	35
Math	45	19	64
Total	64	35	99

Descriptive data concerning the scores of respondents on the variables considered in the study are as follows.

Table 2. Descriptive Statistics by Subject Area and Sex

Variable	Mean & SD by Subject Area		Both Subject Areas	Mean & SD by Sex	
	English (N= 35) Mean (SD)	Math (N= 64) Mean (SD)	Mean (SD)	Male (N= 64) Mean (SD)	Female (N= 35) Mean (SD)
Yilugnta	46.5 (11.78)	51.2 (13.27)	49.58 (12.90)	51.1 (12.39)	46.86 (13.53)
S-Est.	25.4 (6.22)	19.64** (4.46)	21.68 (5.82)	21.55 (5.65)	21.91 (6.20)
EGrade	41.63 (8.34)	61.64** (6.65)	54.57 (12.04)	54.89 (11.81)	53.97 (12.61)
CGrade	2.49 (0.44)	2.61 (1.21)	2.57 (1.01)	2.81 (0.89)	2.11** (1.07)
Particip.	2.00 (0.84)	2.33 (1.10)	2.21 (1.02)	2.22 (0.98)	2.20 (1.11)

** $p < 0.01$ (t-test) for mean differences between the groups (i.e., English versus Math, or Male versus Female). $p > 0.05$ for all other t-tests.

According to Table 2, given the maximum possible scores for *yilugnta* (110), self-esteem (30), class participation (4.0), and course grade (4.0), generally the participants showed weak-to-moderate status on all four variables. The English group had a significantly higher score than the Math group in the case of self- esteem, but the reverse was true in the case of English proficiency. Regarding differences between males and females, the only statistically significant result was observed in the case of course grade whereby males scored higher than females.

Inter-correlations among the variables for the combined English and Math classes are provided below.

Table 3. Inter-correlations among Variables for the Combined Group

Variables	Variables					
	1	2	3	4	5	6
Sex (1)	-	-0.158	0.030	-0.037	-0.332**	-0.009
Yilugnta (2)		-	-0.383**	0.192	0.013	-0.236*
S-Est.(3)			-	-0.318**	-0.038	0.060
EGrade (4)				-	0.88	0.215*
CGrade (5)					-	0.303**
Particip. (6)						-

**p<0.01 *p<0.05, two-tailed test

Specially interesting findings in the combined data include the statistically significant negative associations between *yilugnta* and self-esteem, and *yilugnta* and class participation. Positive and statistically significant correlations were observed, among others, between class participation and course grade.

Results of Path Analysis

Before proceeding to path analysis, a check was made on the tenability of assumptions concerning such analysis. Residual plots in relation to the variables included in the study did not show any serious departure from normality. For each variable, the skewness ranged from -0. 779 to + 0.378. and kurtosis from -0.972 to +0.921. However, as indicated in Table 3, statistically significant correlations were evident among the different variables. In preparation for the analysis of the data for the information from two subject areas together, Levene's test of homogeneity of variance between the scores of the groups on the variables were conducted, and the results indicated significant differences in some cases (participation scores, LS (Levene's Statistics) = 11.46, p<.01; course grade, LS=21.1, p < .01). These results coupled with the good possibility that the marking system of the concerned instructors could be different prompted the use of transformed data (via log transformation) in carrying out the path analysis.

Model Fit

Chi-square indicated a poor fit of the model (Chi-square, df7= 20.20, p=0.005). GFI was at an acceptable level (i.e. 0.937), but AGFI was lower (0.811). CFI was much lower than 0.90 (0.694) and RAMSEA (0.139) was above 0.05. A look at the Modification Indices suggested two additional paths , namely English to Self-esteem (MI=5.193; expected parameter change (EPC)= - 0.262, and Sex to course grade (MI= 7.012, EXP= -0.06). Theoretically, it could be argued that among non-native speakers of a language like English, proficiency in the language enhances self-esteem. It was also plausible that there could be a relationship between sex and grade from the point of view of the cultural milieu (such as the context of this study) in which female students are *not* expected to be as

good as males academically. The model which was revised according to the MI looked like the following.

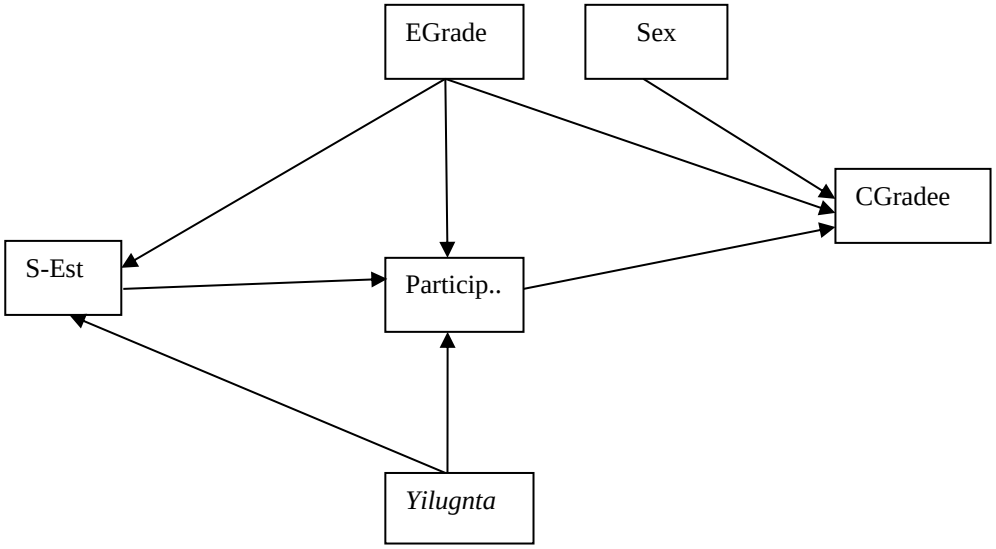

Fig.2. Revised model

Results of the Revised Model

The revised model fit theobserved data well. The chi-square for the model was 8.267 (df= 7; p= 0.310). Both RESEA and RMR were below 0.05. GFI, AGFI and CFI were all above 0.90. Judging from the GFI, the model explains a high proportion of the variance in the sample (variance-covariance). The RMR indicates that the variances and covariances approximated by the model are close to the observed values. The fit statistics are presented in the following table.

Table 4. Model Fit Summary

Model	NPAR	CMIN	DF	P	CMIN /DF	GFI	AGFI	CFI	RAMSEA	RMR
Default model	14	8.267	7	0.310	1.181	.973	0.918	0.971	0.043	.002
Saturated model	21	.000	0			1.000		1.000		.000
Independence model	6	58.091	15	.000	3.873	.836	0.770	0.0	0.171	.005

Effect of Variables

The direct, indirect and total effects in terms of standardized regression weights (betas) were as follows.

Table 5. Standardized Regression Weights

Parameter (Path)		Direct Effects	Indirect Effects	Total Effects
Ind. variable	Dep. Variable	Estimate (B)	Estimate	Estimate
Yilugnta	S-Est	-0. 319**	-	-0.319**
Yilugnta	Particip	-0.246*	-0.012	-0.258*
S-Est.	Particip	0.037	-	0.037
EGrade	Particip	0.223*	-0.008	0.214*
Particip	CGrade	0.296*	-	0.296*
EGrade	CGrade	0.155*	0.063*	0.218**
EGrade	S-Est	-0.224	-	-0.224
Sex	CGrade	-0.250**	-	-0.250**
Yilugnta	CGrade	-	-0.077*	-0.077*
S-Est	CGrade	-	0.011	0.011

****p <0.01; *p<0.05**

Explained variances

Regarding the endogenous variables in the model (namely, Self-esteem, class participation and course grade, the proportions of variance explained by predictor variables were 15.2, 11.4, and 19.4, respectively. The total explained variance is thus 46%.

Discussion

The State of *Yilugnta*

The descriptive data suggest that the prevalence of *yilugnta* among first year AAU Ethiopian students is moderate (among the current sample, Mean= 46.5% for males and 42.6% for females). The difference in the scores of males and females was not significant. Given the fact that the students had substantial schooling which could have enabled them to appreciate the benefits of active participation, one would have expected the pervasiveness of *yilugnta* among university students to be low.

The persistence of *yilugnta* among students could be due to strong cultural influences. These influences probably involve processes espoused by the Behaviorist and Constructivist perspectives of learning. Traditionally, the tendency in many local nationalities (particularly the Amhara) is to follow the trodden path, in attitude and practice, which posits high value on "silence". Divergence often results in castigation or negative criticism. So individuals are very alert to the behaviors and opinions of others and they seek to minimize criticism. A related problem is the inclination to take criticism as personal or as a means of attack on the target person's overall competence or personality, and not as an observation concerning a specific idea or conduct in a particular context.

Another relevant point in terms of explaining the pervasiveness of *yilugnta* among the students is that at least some of the local cultures (e.g. those of the Amhara and the Gurage) have a collective orientation in which an individual is expected to give substantial weight to the consequences of his/her behavior for his group such that if a person does something that turns out to be embarrassing, the

embarrassment or the condemnation applies to all those closely related to the person, i.e., parents, siblings, etc. Students brought up in such an environment do not want to risk castigation or alienation by close ones. They also find it hard to change their mentality, particularly because they normally receive appreciation for avoiding self-exposure.

Students' experiences in school apparently contribute little or none to reduce *yilugnta* since their teachers are most likely products of the inhibitive mental set and tend to encourage passiveness in class. (Yalew, 2004; Seime, 1998).

The Model

Although the initial model was developed on the basis of sound reasoning, it did not fit the obtained data, which prompted the use of a revised model. The revised model was satisfactory, but the fact that it was based on Modification Index may have increased chance results to some degree. This is something that needs to be checked and verified in subsequent research.

Regarding the proportion of variance explained by the model with regard to the endogenous variables (self-esteem, class participation and course grade) it was relatively higher in the case of course grade (19.4%). This is understandable because unlike the other two variables, the prediction of course grade included both direct and indirect effects. As the standardized regression weights indicate, the change in class participation due to *yilugnta* is greater than the changes due to English proficiency or self-esteem, which is indicative of its importance in the model.

The total variance explained by the model (46%) is substantial. Still it is evident that there are other variables such as pre-university achievement and self-regulation or self-discipline and achievement (e.g. Wolfe & Johnson, 1995; Duckworth & Seligman, 2005; Mekenzie & Schweitzer, 2010) that need to be considered to account more fully variation in university achievement.

Effects of *Yilugnta* and other Variables

The beta weights concerning *yilugnta*'s direct and indirect effects on class participation are both significant and negative (B=-0.246, p= 0.042; B= -0.077, p=0.017, respectively), but the direct effect is more pronounced. The negative effect of *yilugnta* on self-esteem is also considerable and reliable. (B= -0.319).

The indirect effect of *yilugnta* on class participation (as mediated by self-esteem) does not contribute importantly to *yilugnta*'s total effect, but the total effect is significant and noticeable. (B= -0.258, p=0.021).

English proficiency also seems to affect class participation directly. This result agrees with previous findings (e.g. Sayadi, 2001; Dawit & Demis, 2014) and highlights the importance of ability in the medium of instruction in encouraging student class participation. In the Ethiopian context, English is the third language for the majority of the students. This fact coupled with the deleterious effect of *yilugnta* poses a serious problem.

There was no a priori rationale to include *yilugnta* as a direct predictor of grade. However, as proposed in the model, *yilugnta* has an indirect negative and appreciable effect on grade (via class participation). English and class participation also showed significant direct positive and reliable effect on grade, but the effect was more prominent in the case of class participation. In addition, English proficiency had a positive indirect effect on grade (through self-esteem and class participation). (B=0.063, p=0.012).

The importance of English proficiency in college achievement has been detected in earlier studies (e.g. Matirosyan, *et al*., 2015; Wolfe & Johnson, 1995). Matirosyan, *et al*. conducted their study among international students, i.e. students for whom English (which was at least their second language) served as medium of instruction. In the case of the present study, aside from being a third language for most of the school children, it is not well-taught in schools. Another plausible explanation for the effect of English proficiency relates to the admission requirements for admission to Ethiopian universities which, by way of affirmative action, are more lenient in UAE results (including their score in English) for 'Emerging' (relatively less developed) regions", students with disability, and others.

Conclusion

The revised model fits the data well. The importance of *yilugnta* in academic interaction and achievement features noticeably in the results. The same applies to class participation and English proficiency. The study shows the importance of socio-cultural factors in model testing. However, the use of the Modification Index to amend the model could have introduced some bias (error) in the results. Other studies will help to check on this matter. Such studies will benefit from a delineation of the psychometric identity of *yilugnta* by increasing the items in the measuring instruments.

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http://www.eab.org.tr

Educational Research Association
The International Journal of
Educational Researchers 2018, 9(1): 32-43
ISSN: 1308-9501

http://ijer.eab.org.tr

Examining The Effect of The Storyline Method of Education on The Level of Elementary School Preparedness of Five Year-Old Children

Elif Özsarı[1]
Havise Çakmak Güleç[2]

Abstract

This study examined the effect of the storyline method of education on the level of elementary school preparedness of five year-old children. The study was of experimental research design and used the pretest/posttest with control group experimental model. The universe of the study constituted 5 year-old children attending a pre-school program in the district of Edremit, Balıkesir during the 2015-2016 academic year. The study sample comprised 23 experimental, 23 control group children, a total of 46 children, who were afternoon attendees of the Sarıkız Preschool located in the district of Edremit in Balıkesir, Turkey. The Marmara Elementary School Preparedness Scale was used to collect data for the research and the data analysis was performed with the non-parametric Wilcoxon Signed Rank Test. The research entailed conducting activities with the experimental group every day for 7 weeks during the hours of 3 p.m. - 5:30 p.m., according to an activity plan based on the storyline method. The research results revealed a significant difference in the five year-olds who were taught with the Storyline method in terms of their Mathematical skills, Science Skills, Mental and Language Development, Socio-emotional Development and Self-care Skills. The storyline method is not an approach that is widely used in Turkey and because of this, there is only a scant number of studies that have been conducted on this technique. Since this study entails a comprehensive examination of the effects of the storyline method of children's education, it is believed that it will make a significant contribution to the literature. At the same time, the study includes a recommendation that the method of storyline education should be improved in the light of its findings and be more widely employed in the school system.

Keywords: Storyline method, elementary school preparedness, constructivist approach, pre-school education, mathematical skills, science skills, mental and language development.

[1] Teacher, Turkey Ministry of Education. elif89899@hotmail.com
[2] Prof. Dr., Canakkale Onsekiz Mart University. havisegulec@yahoo.com

Introduction

The ages 0-6 are a time in which brain development has been largely concluded and during which extensive contributions are made to development and growth in all domains. The skills learned in this period prepare the child for the future. In Turkey, the age of 6 is accepted as the age to start school. Kutluca, Canbulat and Tuncel (2012) have stated that the readiness of a child in all domains of development does not necessarily mean that the child is ready for elementary school; a child must actually be ready to learn. In terms of acquiring the skills that prepare the child to learn, the child should be a level where speaking skills and the ability to use language have developed, no audial problems are present and there is adequate visual perception, the child's muscle coordination is at the desired level, and motor skills, number awareness, the ability to follow directions and the willingness to participate in group activities are present. According to Oktay and PolatUnutkan (2003), the meaningfulness of pre-school education is not in teaching children how to read and write but to provide children with a period in which they can reach a sufficient level of maturity that will enable them to hone their skills in becoming prepared for learning to read and write and to continue on into their elementary school years. Moreover, the Pre-school Education Program (2013) published by the Ministry of National Education does not include the teaching of reading and writing in its pre-school syllabus. Demonstrations of the alphabet or attempts to write down the letters are also not a part of the program. A pre-school education program aims at facilitating the transition into elementary school and increasing children's preparedness in this process.

Many approaches have been introduced recently to ensure change and development during a child's journey through school. While previously, these approaches placed the teacher at the forefront of teaching, with changing and developing technologies and investigations into human science, approaches that put emphasis on the student have started to take hold. The most commonly employed of these latter approaches is the constructivist educational approach. Thanks to constructivist education, students are at the vanguard of education and it is not the knowledge provided by the teacher but what the student learns through his/her own efforts that characterizes this approach to education. Studies report that the constructivist approach to education has a positive impact on ensuring the preparedness of pre-school children for elementary school.

Many new techniques have been developed in the world in the context of constructivism. Montessori education, Waldorf education, the Reggio Emilia approach are some of the methods that are the most widely recognized and used in pre-school education in Turkey. On the other hand, towards the end of the 1980's, a new method based on constructivism was introduced in Scotland. This was called the storyline educational method and was first investigated in Turkey by Güney (2003) and later adapted into the Turkish language by Güney (2003) as "Story-based learning." Yiğit (2007) and Tepetaş (2011) called this approach the "Storyline Approach." This study has used the term "Storyline Method."

Yiğit (2007) asserts that the most basic characteristic of the storyline method that differentiates it from other methods is that children are urged to use their own knowledge and develop new hypotheses by means of key questions, adding new knowledge to their prior knowledge through the method of trial and error. According to Bell (2007), a good story constitutes a plot, characters, and an event that starts off the story, which continues to a climax and lastly to a point where the story is resolved. At the beginning, a plot is created together with the children by stimulating the children's creativity through key questions. Then the characters in the story are created and described.The key questions are used to expand the plot and the children suggest new developments that may be experienced in the story. Finally, a celebration or an exhibit of the work done is carried out to finish off the story. After the end of the story, the children are asked what they learned in this activity and how the story could have been further developed as they are led into a review of their work. Barrett (2010) has said that the storyline method considers the whole of these activities. Children's creativity, as well as their decision-making skills are developed through the use of the storyline method. The method helps the child to fill up mental gaps between what the child knows and does not know, thus leading to new learning. Moreover, the storyline method provides children with the opportunity to make connections between the past and the future. It has been found that educators trained in the storyline method are more

creative in setting up their classroom plans. The storyline method considers the syllabus as a whole and places the responsibility of learning on the students themselves. That this method is abundantly used in Scotland, the United States and in Europe readily points to the positive aspects of the approach. Providing the means for developing creativity, the approach will help in building a bridge between outdated educational programs and allowing creative skills to develop and grow as part of an unknown future curriculum.

Bell and Harkness (2006) assert that the storyline method offers teachers a structured and conscious path to use in teaching their students knowledge, skills and behavior. Additionally, because the storyline method is open to both individual and group work, it has the potential of incorporating many other methods and techniques. Teachers employing the storyline method need to develop new strategies for activities. Using different techniques and strategies in this process will give students the opportunity to live through different learning experiences. Because the storyline method comprises a series of events, children are able to progress in the story by providing their own answers. The flexibility of the method at the same time gives teachers the chance to be comfortable in their guidance. Since both the teachers and the students are parts of the same process in the storyline method, they share new experiences and wisdom. On the other hand, in the storyline method, the teacher not only needs to know what to teach but how to teach it. The teacher must motivate the student in the process and help children adopt and accept the products of their work. In the storyline method, the teacher is a trainer, a facilitator, and an educational designer (Bell and Harkness, 2006).The storyline method challenges the role of traditional teacher, bringing forth the characteristics of a role that manages the course of events, provides information as needed, and plans the learning theme (Bell, 2007). The teacher and the students construct the storyline collaboratively and the students are autonomous in their learning (Bell and Harkness, 2006).

There are many studies in the international literature about the storyline method. One of these studies was conducted by Creswell (1997). Cresswell (1997) defends the view that the storyline method provides the students with the means to accomplish learning willingly. At the same time, it is striking that the storyline method gives the student the chance to own the story and the progressing events as well. In the first phase of the storyline method, the prior knowledge of the students is brought out as additions are made to what they know and the process slowly begins to unravel. The students are encouraged to use their imaginations to fill in the gaps. Later on, the students discover themselves what it is they do not know and prepare questions to facilitate the answering of these questions by setting out various hypotheses. This cycle ensures that the students learn first-hand what they need to know.

In the research conducted by Barrett-Rhonda (2010), the correlation between the storyline method and student motivation and students' thoughts and experiences about the storyline method were examined and it was observed that the storyline method made a positive impact on student motivation, thoughts and experiences. Because of these positive results, the importance of introducing the storyline method into the elementary school syllabus has been emphasized.

The study by Ahlqhist (2012) on the impact of the storyline method on a class of young students: In a case study conducted in Sweden, the storyline method was used during English class. The findings of the study determined that the storyline method had a positive impact on learning English and also resulted in cooperation between students. It was also observed that through the storyline method, the teaching of new grammar structures was facilitated and listening skills were enhanced.

There have been very few studies conducted in Turkey on storyline methodology. Only two pieces of research, in fact, appear in the literature on the use of the storyline method in the preschool period. The first of these was conducted by Tepetaş (2011). In this study, Tepetaş (2011) examined the impact of the storyline method on the development of basic conceptual knowledge levels in 6 year-olds in the province of Kırşehir. A total of 39 children attending preschool-19 in the experimental group and 20 in the control group-participated in the study. An eight-week storyline syllabus was implemented in the study. Study data were collected with a reviewed version of the "Bracken Basic Concepts Scale." At the end of the study, it was found that the children in the experimental group scored higher in achievement than their control group counterparts in terms of the subscales of color, letters, numbers,

dimensions, comparisons, form, academic maturity, individual social awareness and structural materials as well as in terms of their overall scale scores.

A study conducted by Eren (2015) in the city of Ankara explored whether or not there was any difference in the level of learning respect for differences among children who were taught using the storyline method and those who did not benefit from this experience. The "Respect for Differences Scale" was employed in the data collection. It was observed as an outcome of the study that children in the experimental group exhibited a significant increase in their respect for differences score and that this was due to the positive effect of the schooling they received using the storyline method.

One of the fundamental goals of preschool is to prepare pupils for elementary school. Various approaches are implemented in Turkey in order to enhance the level of preparedness of preschool children for elementary school. Such approaches are child-centered but have been designed according to the constructivist education model. The storyline method approach was also designed for constructivist education but relies on having children learn through their own experiences. The Turkish literature however is very limited in terms of research and resources related to the Storyline approach. The present study sought to determine the degree to which the level of preparedness for elementary school would be affected by the Storyline approach, a new method of education that has gained acceptance around the world. Because the scale used examines all the areas of growth affecting preschool children, it will provide a clear picture of the degree of difference the Storyline approach achieves and in which areas this difference is observed. In addition, a review of all domestic and international literature has revealed no study in which the storyline method has been investigated simultaneously with elementary school preparedness. For this reason, we believe that the study will make a significant contribution to the literature in this context.

We have observed that are are many articles in both the national and international field literature about elementary school preparedness. When we looked at studies related to the storyline method however, it was seen that the Turkish literature contains few studies on the storyline approach while there are many different pieces of research on the subject in the international literature. The present study sought to determine the degree to which the level of preparedness for elementary school would be affected by the Storyline approach, a new method of education that has gained acceptance around the world. Toward this aim, answers to the following questions were sought:

1. Is there a significant difference in terms of mental/language development in 5 year-old children receiving education using the storyline method?

2. Is there a significant difference in terms of social-emotional development in 5 year-old children receiving education using the storyline method?

3. Is there a significant difference in terms of self-care skills in 5 year-old children receiving education using the storyline method?

4. Is there a significant difference in terms of mathematical skills in 5 year-old children receiving education using the storyline method?

5. Is there a significant difference in terms of science skills in 5 year-old children receiving education using the storyline method?

Method

Research Model

This research aimed to explore whether or not the storyline method had an impact on the elementary school preparedness of 5 year-old children. In line with this aim, the study was of experimental research design. Büyüköztürk, Çakmak Kılınç, Akgün, Karadeniz and Demirel (2008) report that the most accurate results in scientific research are achieved through experimental studies. This is because this type of study offers the researcher the opportunity to compare data and carry out different procedures, ultimately examining the impact of the research and arriving at definitive interpretations of the study outcome.

Universe and Sample

The universe of the study constituted 5 year-old children who were attending a preschool program in the district of Edremit, Balıkesir during the 2015-2016 academic year. The study sample comprised 23 experimental, 23 control group children, a total of 46 children, who were afternoon attendees of the Sarıkız Preschool located in the district of Edremit in Balıkesir, Turkey.

Study Group

The study group comprised a total of 46 five year-old children--23 in the experimental group and 23 in the control group--who were enrolled in the Balıkesir Province, Edremit District Sarıkız Preschool during the 2015-2016 academic year. The principal reason the researcher chose to work with this group was to test the impact of an educational program built on the storyline method and to eliminate the effects of implicit variables.

In recruiting the study group, the individual portfolios and personal files of the 5 year-old children at Sarıkız Preschool were first reviewed. At the end of the review, it was seen that the children came from quite similar sociocultural backgrounds. The experimental and control groups were selected by the group sampling method. Additionally, whether or not the children had ever experienced the storyline method was queried and it was found that none of the children in the experimental and control groups had been introduced to this method.

Data Collection Instruments

The Personal Information Form developed by the researcher for the purpose of collecting study data was used to obtain information about the families of the children. The Marmara Elementary School Preparedness scale was used to obtain pretest-posttest data.

Personal Information Form

This form, prepared by the researcher to obtain information about the families of the children in the study, was made up of 10 questions. The form served to collect information about the gender, school attendance time, civil status, mother's educational status, father's educational status, number of children, order of birth, family's income level of the children in the experimental and control groups. The personal information form gathered together the demographics of all of the children involved in the study.

Marmara Elementary School Preparedness Scale

Developed by researcher Özgül Polat, the Marmara Elementary School Preparedness Scale was used for the purpose of collecting data for the study. This scale is made up of an implementation form and a progress form. The implementation form has 47 mathematical skills questions, 8 sound exercises questions, 14 science skills questions, 3 drawing questions and 2 labyrinth questions. The progress form contains 74 questions related to mental and language development, 40 questions on socio-emotional development, 23 questions related to physical development and 16 to self-care skills. The implementation form is administered to the children themselves, while the progress form is filled out by classroom teachers. The implementation form contains a total of 72 questions; the progress form a total of 153. All together, there are 225 questions. Made up of a total of 225 questions, this scale was administered to the 46 students first as a pretest and then again as a posttest. The data obtained were statistically analyzed.

The Marmara Preparedness for Elementary School Scale provides the needed developmental and applied information on the child. Although the scale allows for assessing preparedness in every domain, its principal task is to make a total evaluation of the results of all of the domains. Thus, it is possible to follow an integrated approach and draw up both a detailed and a general profile of the child (Unutkan, 2003, pp. 237-240).

Limitations

The study's limitations are described below.

1. The study is limited to the 5 year-olds enrolled at Sarıkız Preschool in the Edremit district of the province of Balıkesir during the 2015-2016 academic year, to the data collected in the 2015-2016 academic year, to the observations collected by the implementer during the data collection process and to the administration of the Marmara Elementary School Preparedness Scale (mathematical skills, science skills, mental and language development, socio-emotional development, self-care skills).

2. The study is limited by its use of a 7-week elementary school preparatory education facilitated by the storyline method.

Experimental Period

The study started in the second semester of the 2015-2016 academic year. Prior plans for the study and an application for the necessary permission was sent to the Çanakkale 18 Mart University senate and to the Balıkesir National Educational Directorate. The study was implemented after the required permissions were obtained. Before beginning the implementation of the pretest, the researcher visited the school and carried out activities to get acquainted with the children there. The researcher observed the children and their dialogues in the classroom for the first two days and then spoke to the pupils about the activity that they would be participating in. In this period, the children were given brief information about the activity and it was seen that they were interested in participating. Later, when the pretest began to be implemented, each student was brought into the school library and administered the test individually. The pretest took an average of 35-40 minutes to complete with each child.

The classroom teacher played a passive role in the educational activity. The classroom teacher carried out routine activities with the children from 12:30 p.m. - 3:00 p.m. after which the researcher conducted the study activity from 3:00 p.m. - 5:30 p.m. A corner of the classroom was arranged to accommodate the students' storyline activities. To prepare to the fullest and set out a plan for the study, a comprehensive scan of both the national and international literature was carried out. Additionally, in order to avoid any errors in the activity plan, the founders of the storyline method, Steve Bell and Sallie Harkness, were contacted in writing and the plan was drawn up on the basis of the worksheets that they sent to the researcher. Moreover, as it had been seen that there were two other studies conducted on the storyline method, contact was made with the authors of those studies as well. The 7-week activity plan was prepared as a result of this fieldwork. To avoid the possibility that the children would distance themselves from the storyline method, different activities were planned for each day. In setting up the program for teaching with the storyline method, various activities were scattered over the different sub-domains of the elementary school preparedness concept. The process of the activities conducted in the light of the research and review is described below.

1. Introduction: The researcher set up the framework for the story. At this stage, the researcher explained to the children how the process would work, how long it would take, and what the activities would be like. For one week, the researcher spoke to the children about the planet we lived on. The children revealed how much they knew about other planets and this served to whet their curiosity.

2. Telling the story: This stage, in which the story was told to the children and the activities were conducted in order, continued for 7 weeks. The plot, characters, events and the climax of the story were structured at this stage.

After spending 1 week on preparing the children for the story in the introduction stage, the researcher started telling the story: Once upon a time, there was a happy Prince who lived on a planet very, very, very far from the Earth. This prince had sparkling blond hair and he always had a smile on his face. The name of the planet the prince lived on was Jupiter." After these sentences, the children were asked some key questions: How do you think people become princes? How do they dress? What would be the differences between princes on other planets and princes on our own planet? What is the difference between the planet of Jupiter and our own planet? Could there be pets living among the living creatures on other planets? This continued for 2 days.

After setting up the idea and the framework for the story, the children cooperated in making up characters outside of the prince who could be in the story. Characters were thought up such as the prince's mother, father, siblings, people living in the palace, as well as different pets that the prince

could have. The children then decided that fairies would be living with the prince in the palace and they made up goodhearted fairies that inhabited the palace. The children decided that the prince would have a sister. Later, a discussion was conducted about the planet Jupiter, which the prince was living on. The children were asked what our own planet, the Earth, was like. They were asked to provide some examples about the types of earth surfaces, the structures and features of the houses on Earth, and the other living creatures that lived with us on the planet. Videos in which other planets were introduced were watched together. The children were told that the Little Prince's planet had a large desert on it. The children were then asked key questions about how one could live in the desert, what was needed to be able to live in the desert, and which animals could live in the desert. In addition, ideas were thrown about as to why the Little Prince had come to our classroom. Based on these ideas, a consensus was reached that the Prince had come to our classroom to help us and that there were all kinds of different problems on other planets. The children were taught that there were 7 planets including our Earth. Starting off from this point, the activities for the next weeks were planned. Each week a problem on a planet was solved and thus for 6 weeks, learning was achieved on the basis of 6 different problems and on information about 6 different planets. These activities had been exhibited on the boards in the classroom prior to the activity. In the last week, a party was organized to see the Little Prince off and after the party, the activities were exhibited in school for all to see.

Data Analysis

The SPSS 18.00 program was our choice for analyzing the data obtained in the study. The data resulting from the experimental research were analyzed using the non-parametric Wilcoxon signed ranks test. The reason we chose to use a non-parametric test was because the groups did not display normal distribution and also because the group total was less than 60 children. In the analysis of the data, it was found that in the posttest of the experimental and control groups, the children in the experimental group performed better than the control group in the subscales of socio-emotional development, science skills, mathematical skills, self-care skills and mental-language development.

Results

As a requirement of the study model, the experimental and control group were administered a pretest; the results of this pretest can be seen in Table 1:

Table 1. *Comparison of Pretest Results of Experimental and Control Group Children on the subtests of the Marmara Elementary School Preparedness Scale*

		n	Rank Means	Rank Total	z	p
Socio-emotional Development	Negative Ranks	18	11.06	199.00	2.355	0.19
	Positive Ranks	4	13.50	54.00		
	Equal	1				
Science Skills	Negative Ranks	15	10.87	163.00	1.670	0.95
	Positive Ranks	6	11.33	68.00		
	Equal	2				
Mathematical Skills	Negative Ranks	13	10.81	140.50	.870	.384
	Positive Ranks	8	11.31	90.50		
	Equal	2				
Self-care Skills	Negative Ranks	17	12.18	207.00	2.100	.036
	Positive Ranks	6	11.50	69.00		
	Equal	0				
Mental-Language Development	Negative Ranks	19	11.58	220.00	2.494	0.13
	Positive Ranks	4	14.00	56.00		
	Equal	0				

$p<0.05$

The non-parametric Wilcoxon signed ranks test was preferred in the comparison of the results of the pretest. According to the results of the pretest administered to the experimental and control groups prior to the study, it was found that the children in the control group performed better in the subscales

of socio-emotional development, self-care skills and mental-language development ($p<0.05$). Since it would not have been appropriate to subject preschool children to an intelligence test or other type of test, the study was conducted with a group that yielded a lower statistical outcome in the pretest. According to the results of the pretest applied to the experimental and control groups, no significant difference was observed between the two groups in terms of science skills or mathematical skills ($p>0.05$). The lack of a significant difference in these results indicates that the children in the experimental and control group exhibited similar characteristics in the subscales of science skills and mathematical skills.

As a requirement of the study model, the experimental and control group were administered a posttest at the end of the study; the results of this posttest can be seen in Table 2:

Table 2. *Comparison of Posttest Results of Experimental and Control Group Children on the subtests of the Marmara Elementary School Preparedness Scale*

Sub-tests		n	Rank Means	Rank Total	z	p
Socio-emotional Development	Negative Ranks	2	1.75	3.50	4.099	0.00
	Positive Ranks	21	12.98	272.50		
	Equal	0				
Science Skills	Negative Ranks	0	0.00	0.00	4.202	0.000
	Positive Ranks	23	12.00	276.00		
	Equal	0				
Mathematical Skills	Negative Ranks	14	13.18	184.50	1.887	.059
	Positive Ranks	8	8.56	68.50		
	Equal	1				
Self-care Skills	Negative Ranks	17	12.18	207.00	2.100	.036
	Positive Ranks	6	11.50	69.00		
	Equal	0				
Mental-Language Development	Negative Ranks	0	0.00	0.00	4.199	0.00
	Positive Ranks	23	12.00	276.00		
	Equal	0				

$p<0.05$

When the posttest of the experimental and control group children were evaluated in terms of the difference in their preparedness for elementary school, it was found that the difference was significant in favor of the experimental group of children in mathematical skills, science skills, socio-emotional, mental and language development and in terms of their self-care skills ($p<0.05$). Based on these results, it can be said that the storyline method had a positive effect on the mathematical skills, science skills, mental and language development, and self-care skills of the students in the experimental group.

Discussion and Results

Tepetaş (2011) carried out a study to measure the improvement in the basic conceptual knowledge levels of 6 year olds who had been exposed to the storyline method. It was observed in this study that the students exposed to the storyline method were more successful in terms of school preparedness and from the perspective of individual social awareness. The storyline method implemented by Avcı and Yüksel (2013) aimed to measure the impact of the technique on students in a 4th grade science and technology class. It was reported that the students taught using the storyline method were more dedicated to the learning process and exhibited an improvement in their motivation. Eren (2015) conducted a study to measure differences among students being taught with the storyline method in their outlook on respecting differences. It was found in the study that students being taught with the storyline method were more productive in learning respect for differences compared to students following the current curriculum. In a study by Barrett (2010), it was observed that children's motivations as well as their thoughts and experiences showed a notable improvement under the storyline method. Ahlqhist (2012) in Sweden attempted to use the storyline method in teaching English. The results of this study pointed to increased cooperation among the students being taught

with the storyline method. In 2007, Mcblain conducted a study to examine the impact of the storyline method on creativity. The results pointed to the observation that the storyline method made a positive contribution to creativity.

In a study by Demircioğlu, Dinç and Çelik (2013), the researchers explored the impact of the storyline method on 6th grade students' understanding of the concepts of physical and chemical changes. According to the study outcome, it was concluded that the method helped the students to build a meaningful bridge between chemistry education and their skills of daily living. It was stated however that the storyline method was not by itself sufficient in chemistry education. We found in our study that education enhanced by the storyline method made science skills more concrete for preschool children and in this way made learning more permanent. Akman, Akman, Üstün and Güler (2003) aimed in their study to determine whether 6 year-old children in preschool used basic scientific processes in learning science. It was found at the end of the study that there was a correlation between the education given at the schools the children attended and their scientific process skills, this correlation stemming from the different ways the teachers taught the various subjects. In a study by İnan (2007), children taught using the Reggio Emilia approach were found to have greater interest in learning science. Ayvacı (2010) reported that a planned schedule of science activities could have a positive effect on the scientific process skills of preschool children. In a study by Bilaloğlu (2006), it was determined that teaching the subject of the immune system to preschool children using the method of analogy was more effective than teaching with traditional methods. Nuhoğlu and Ceylan (2012) assert that carrying out more activities in the preschool program to improve children's skills of estimation and deduction is more useful in helping children develop their scientific process skills. Büyüktaşkapu, Çeliköz and Akman (2012) studied the Effect of a Constructivist Science Education Program on the Scientific Process Skills of 6 year-old Children and found that teaching scientific process skills using a constructivist approach centered on the student and consequently achieved permanent learning while increasing motivation.

Coşkun (2013) examined the impact of the storyline method in teaching mathematical concepts on attitude and achievement. The storyline method was used to teach whole numbers and absolute numbers and at the end of the process, it was determined that children taught with the storyline method had a higher level of achievement but that the method applied to mathematics education did not have any impact on their attitude toward mathematics. Yılmaz-Bulat and Dikici-Sığırtmaç (2006) attempted a study of 6 year-olds to observe the effect of musical games on their learning numbers and numerical concepts. The study outcome was that children who learned the concept of numbers and mathematical operations with the help of music were more successful than children following a regular syllabus. The concept of shape is one of the important concepts children must learn. "Shape lies at the base of algebra, geometry, calculus and other fields of mathematics." In early childhood, children learn that all substances and entities around them each have a shape and that this is an important characteristic that differentiates one substance or entity from another. Thanks to art, children can learn to recognize the shapes they see around them (Eliason and Jenkins, 2003). Clements and Samara (2009) report that teaching geometry to preschool children sets a foundation for learning geometry later on and actually affects a child's performance in the discipline.

In a study by Creswell (2007) in which the ideas of John Dewey are compared with the 6 main points of the Storyline method, it is stated that children who are taught with the storyline technique are more able to recognize phenomena in daily life and are better poised to make use of their daily living skills. Gazezoğlu (2007) explored the impact of children learning by playing games at preschool on the self-care skills of 6 year-old children. The study's conclusion was that the children in the program were ahead of the control group in terms of being able to follow the rules of cleanliness, to put on and be aware of their own clothes, to rest, and to protect themselves from accidents.

Yiğit (2007) used the storyline method to teach the subject of "Our Country's Resources" in the 6th-grade Social Studies class. At the end of the process, it was seen that the students' achievement levels had risen. Similarly, in a study in which Bacak (2008) used the Storyline method in a 5th-grade Social Studies class, it was observed that pupils who had been exposed to the method displayed an increase in creativity and academic achievement. Moreover, Gürol and Kerimgil (2012) in another study found that the storyline method enhanced children's creativity but also noted that the productivity of the

storyline method was dependent upon the student's willingness. In a study by Andrew S. Gordon and Nicholas V. Iuppa (2006), the storyline method was used in a drama class where it was seen that the method improved creativity. It was seen in the drama work carried out as part of the storyline method that the participants felt more comfortable and did not feel challenged in trying to express themselves. McBlain (2007), in a study titled "The Storyline Method-A Creative Approach," found that the method helped children develop their creativity.

In the present study, conducted in the Edremit district of Balıkesir during the 2015 - 2016 academic year with 5 year-olds attending Sarıkız Preschool, a program of education based on the Storyline Method was carried out for the purpose of measuring the children's level of preparedness for elementary school. Using the Marmara Elementary School Preparedness Scale, the children's readiness for elementary school was assessed and the results of the study based on the research questions were as set out below:

1.According to the pretest data obtained from the children in the experimental and control groups on the Marmara Elementary School Preparedness scale, it was found that there was no significant difference in the pretests in terms of the pupils' work in science and mathematics.

2.According to the pretest data obtained from the children in the experimental and control groups on the Marmara Elementary School Preparedness scale, it was found that there was a significant difference in the pretests in favor of the control group in terms of the pupils' socio-emotional development, self-care skills, and mental and language skills.

3.In terms of the level of preparedness for elementary school of the children in the experimental and control groups, the difference in their posttests displayed a significant difference in favor of the experimental group in the areas of mathematical skills, science skills, socio-emotional, mental and language skills as well as self-care skills.

Recommendations

This study made it clear that teaching using the storyline method has a positive impact on children. Children taught with the storyline method are given the opportunity to actively participate in class and to achieve permanent learning. Since the program of education prepared by the researcher was specifically tailored for activities in mathematics and science, an extremely positive improvement was seen in mathematical and science activities. It is therefore believed that using the storyline method in order to contribute to the development of mathematical and science skills in preschool children will be a very productive endeavor. It was observed throughout the study that education using the storyline method made a positive contribution to children's socio-emotional, mental-language and self-care skills. This may suggest that the storyline method encouraged the students to work cooperatively, giving them the opportunity to learn by doing and experiencing.The observations of the children's interaction with their classroom teacher and the researcher's own insight into the study indicated that the storyline method made a positive impact on the children's creative development. No study however has been conducted in this context. It might be suggested that further research be carried out to explore the effect of education using the storyline method on children's creative capabilities. Although there are many examples of the storyline method around the world, there is only a limited number of studies on the technique in the Turkish literature. These studies may be propagated through the work of academics and teachers.

Acknowledgment

In bringing this work to its completion, I am thankful for the endless amount of support provided by Assoc. Prof. Dr. Havise GÜLEÇ, the analysis and support that was always provided to me by Research Assistant Dr. Serdar ARCAGÖK and I thank Asst. Prof. Dr. Özgül POLAT, who allotted me the time to share and learn. I am also grateful for the guidance and wisdom of Prof. Dr. Çavuş ŞAHİN and Asst. Prof. Dr. Haydar DURKAN.

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