



EVALUATION OF PRE-SERVICE SCIENCE TEACHERS' READING MOTIVATION

^aElif BENZER & ^bAhmet BENZER

^aPh.D., Marmara University, Atatürk Education Faculty, Department of Science Education, elif.benzer@marmara.edu.tr

^bAsist.Prof., Marmara University, Atatürk Education Faculty, Department of Turkish Education,
abenzer@marmara.edu.tr

Abstract

In globalizing world, one of the most important ways of transmission from one person to another is to read other writings. Reading is the nature of the science and an important language competence in order to understand it. Reading is not only a physical process that the words are perceived by the eye and being transferred to the brain but also a biological and psychological process that the understanding and so the learning is realized. In science teaching, the reading; is a skill which is used in every area of science like reading the principles and methods, reading theories, reading the observed experiment, reading the results (and so understanding). So, the more this skill is used effectively, the more the science is learnt effectively. In this study it is aimed to determine pre-service science teachers' motivations towards reading, considering the importance of reading in science education. Moving from this, the problem sentences is determined as "how is the motivation of pre-service science teachers towards reading?". This study is a scanning model for describing the current attitude of students towards reading. Sample group of the study was constituted by 3rd and 4th grade students, of University of Marmara Science Teaching Department. "The Motivation for Reading Scale" which was prepared by Schutte and Malouff (2007) and adapted by Davis-Duerr (2010) was applied to these students. Measuring instrument has 21 expressions and 2 open-ended questions. Likert typed expressions in the measuring instrument were analyzed solved by quantitative data analyzing method. The results show that pre-service science teachers' reading motivation is of middle level. However, it is found that students spend more time on required reading than recreational reading.

Keywords: Science education, reading motivation, pre-service science teacher.

INTRODUCTION

The base of language teaching is structured by main language competences which are reading, writing, speaking and listening. These competences allow students not only to express themselves but also reach the information, comment on it and transfer it. Also academic process competences require students' reaching to information, being able to comment on this information by solving it and deducting and offering it to other people. In this stage, science teachers should use the language effectively, should make their students use it and provide the literacy of language importance (Benzer and Şahin, 2008).

According to Rubino (1991) science and language are the disciplines of primary education which

completes one another. While the language is used as a table of feelings, thoughts, communication of experiences and expressions, science uses the language in order to understand the nature, do experiment and observation. In addition to this, one of the moving point of new program which was started to be used in academic year 2004/05 is determined as (MEB, 2005): "learning experiences of students in science and technology lesson; by allowing them offer their find outs and what they understand, by using the opportunity of expressing and writing the terms that they should learn while developing both their language skills and also their understanding the subject better". So in the new program, the relationship between the science and the language and the roles of them towards developing one another is presented. According to McKee and Ogle (2005) language literacy and scientific literacy work together in strengthening skills and strategies in both curricular areas.

One of the basic language skills is reading written texts. According to McKee and Ogle (2005) reading and writing about science help develop and reinforce desired science concepts. In addition to this, Shanahan (2004) points out that scientists read to keep abreast of new developments. Today reading is not only realized through pressed sources but also through some visual sources like internet. In both cases, the person is able to reduce his curiosity about current events, following new developments or about a subject he is interested in through reading. In respect to science which has started with the curiosity process, reading has an importance. According to Wellington (1999) reading is an important strategy for learning in every period of education. By the way, Reading is an ignored activity in science classes. This activity is usually given as homework of reading course books. Teachers' low interest towards reading texts is bad for many reasons; because scientists spend lots of time on reading. Science is learnt by placing of reading besides watching and listening. Lots of students can learn the science widely through books, magazines and newspapers. According to Brill, Falk and Yarden (2004) on the researches about reading it is expressed that the knowledge is not only transferred to the reader by writer, but also there are reader's understanding the text and also a complex interactive reaction with the text. Novello (1999) also emphasized that reading texts create a very effective role for students' developing their reading and stepping up their knowledge through reading.

According to Bullock (1975) since reading is a major strategy for learning in virtually every aspect of education, it is the responsibility of every teacher to develop it (Quoted by Wellington and Osborn, 2001). In the science education where the reading is important, determining the motivation of the teachers who will give this education towards reading, will give us clues about their attitudes towards their students when they become teachers. In this case, determining the attitudes of pre-service science teachers is important. The problem sentence was determined as "How is the reading motivation of pre-service science teachers?" and for this, it is aimed to determine the pre-service science teacher's reading motivation.

The answers for the questions below have been questioned in this study:

1. What is the level of reading motivation of pre-service science teachers?
2. Do the pre-service science teachers spare more time on required or recreational reading?
3. Does the students' spending more time whether on required or recreational reading influence

their reading motivation?

4. Is the gender of pre-service science teachers effective on their reading motivation?

5. Does the level of pleasure taken from reading effect the reading motivation of pre-science teachers?

6. Does the frequency of pre-service science teachers' reading effect their motivation for reading?

METHOD

This study is a survey model for describing the current attitude of students towards reading.

Sample group of the study

The sample group was consisted 3rd and 4th grade students from Marmara University, Atatürk Faculty of Education, Department of Science Education. 32% (27 students) of the students were boys and 68% (58 students) of the students were girls.

Data Collection Tool

At this study 'The Motivation for Reading Scale' prepared by Schutte and Malouff (2007) and adapted by Davis-Duerr was applied as the data collection tool. Measuring instrument is constituted by 21 expressions, 2 close ended and 2 open-ended questions. The close ended questions of the measuring instrument are in 5-grade likert scale. The measuring instrument was translated into Turkish following the steps below:

1. The measuring instrument was firstly translated into Turkish and its language adequacy was controlled by three language experts.
2. After the control of its Turkish version, both the original English text and its Turkish translation were controlled by 2 English Language and Literature experts and its Turkish version was re-translated into English.
3. After determining its appropriateness to Turkish, its content analysis was made by the assistance of three language teachers, one educational scientist and one science education expert.
4. Finally, the measuring instrument was applied on 377 students studying at various departments of Faculty of Education and its reliability coefficient was checked. Using the program SPSS 17 for this analysis, alpha was calculated as 0.78.

After validity and reliability studies, the data collection tool was applied on the sample group at the first half of academic year 2010/2011.

Data Analysis

While analysing the data different analyzing methods were used according to the sub-problems of the research. Within this respect, for determining the reading motivation of students and on which reading (recreational or required) they spend more time (the first and the second sub-problems), context analysis through percentage calculation was used. In order to determine the influence of gender and time spent on required/recreational reading (the third and the fourth sub-problem) independent samples t test was used. For evaluating the pleasure taken from reading and the influence of reading frequency on motivation one-sided variance analysis (ANOVA) was used. To

find out whether there is a significant difference in all quantitative data analysis or not was tested at 05 level and p significance value was used.

FINDINGS

Findings for the first sub-problem

Findings through the answers of students to Reading Motivation Measurement can be seen below:

Table 1. General Average Findings of Reading Motivation Measurement

	Articles	General averages
1	If a text (i.e., book, article, webpage, etc.) is interesting, I don't care how hard it is to read.	4,05
2	Without reading, my life would not be the same.	3,95
3	My friends sometimes are surprised at how much I read.	2,66
4	My friends and I like to exchange books or articles we particularly enjoy.	3,56
5	It is very important to me to spend time reading.	3,85
6	In comparison to other activities, reading is important to me.	3,14
7	If I am going to need information from material I read, I finish the reading well in advance of when I must know the material.	4,13
8	Work performance or university grades are an indicator of the effectiveness of my reading.	3,11
9	I set a good model for others through reading.	3,73
10	I read rapidly.	3,78
11	Reading helps make my life meaningful.	4,06
12	It is important to me to get compliments for the knowledge I gather from reading.	2,88
13	I like others to question me on what I read so that I can show my knowledge.	3,6
14	I don't like reading technical material.	3,2
15	It is important to me to have others remark on how much I read.	2,27
16	I like hard, challenging texts (i.e., books, articles, webpages, etc.).	3,05
17	I don't like reading material with difficult vocabulary.	2,95
18	I do all the expected reading for work or university courses.	3,33
19	I am confident I can understand difficult texts (i.e books, article, webpages, etc.).	3,32
20	I am a good reader.	3,66
21	I read to improve my work or university performance.	3,64

The table 1 shows the average points that all the students got from each article. Since the 5-grade likert scale was used, a result around three means medium, a lower one than three means low, a result around and over four is considered as high. Taking the general averages into consideration it was seen that commonly medium points were taken from the articles (4, 6, 8, 13, 14, 16, 18, 19, 20, 21). However, students got higher points from the articles, 2, 5, 7, 9, 10 and 11 and lower points from the articles 3, 12, 15 and 17.

The articles of lower points are generally about whether students care about others' ideas on their level and interest in reading or not. Although students took higher points from the articles at which they described themselves as good readers, they remained at medium level at the articles regarding the properties of good readers.

Findings for the second sub-problem

The students were requested to answer how much time they spend on required and recreational reading by two open-ended questions. Findings for this is below.

Table 2. Findings about the time spent on required and recreational reading

	Required reading	Recreational reading
Average hour per week	6,51	5,13

As it can be seen on the table 2 the students spend more time on required reading than recreational reading per week. In doing so, some students expressed that they are annoyed as they cannot spare enough time on recreational reading due to excessive required reading e.g. KPSS exam).

Findings for the third sub-problem

Below, findings of reading types which has more effect or not on the motivation for reading is allowed more time. In order to do this evaluation, firstly, it was determined that which reading type students allow time for. For that students who allow time for recreational reading were given the group number "1" and the students who allow time for required reading were given the group number "2".

Table 3. t-test results on the effect of table reading types on reading motivation

Reading type	N	X	S	df	t	p
recreational reading (1)	28	72,07	8,51	83	.104	.918
required (2)	57	71,84	10,06			

As it is seen on the table above to read the motivations of the students do not differ significantly according to the type of reading ($p > .05$).

In the evaluation about the effect of the augmenting required reading on the reading motivation, students' reading periods which they gave, were divided into 4-hour periods and in this direction it was found that students who allow mid-level time for required reading has more reading motivation when compared with the students who allow less or hyper time for required reading. This finding is not statically significant and it was interpreted according to the averages of the students. Average points are given below.

Table 4. Reading motivation average points according to required reading period

Group (Weekly hours interval)	N	X
1 (1-4 hours)	43	69,19
2 (5-8 hours)	21	75,91
3 (9-over)	21	73,52

In recreational reading by the rise of the reading time it is understood that the motivation of reading increases. The averages are given below.

Table 5. Reading motivation average points according to recreational reading period

Group (Weekly hours interval)	N	X
1 (1-4 hours)	51	70,24
2 (5-8 hours)	15	72,93
3 (9-over)	19	75,63

Findings for the forth sub-problem

It is searched that if the gender of students have an impact on their reading motivations at below.

Table 6. t-test findings on the impact of gender on reading motivation.

gender	N	X	S	df	t	p
male	27	71,00	10,34	83	.604	.55
female	58	72,35	9,18			

As can be seen from the table 6 above the motivations of the students do not differ significantly by gender ($p > .05$). Looking at averages, although there is not a statistically significant difference between female students and male students females were found to have higher reading motivation average ($X_{(female=72,35)} > X_{(male=71,00)}$).

Findings for the fifth sub-problem

In the table below the findings of pre-service science teachers' motivation to read about how much pleasure they received is given.

Table 7. Reading averages according to pleasure from reading.

Pleasure degree from reading	N	X	S
Not at all (1)	2	55,50	2,12
A little (2)	5	62,98	3,74
Indifferent (3)	11	62,27	10,49
Mostly (4)	48	73,10	7,16
Very much (5)	19	78,58	8,11
Total	85	71,92	9,53

It can be seen from the table as the students enjoy reading the mean scores for reading motivation is increased. Therefore, the highest score belongs to a group of students that enjoyed reading. If there is no significant difference between the groups mentioned for the one-way analysis of variance findings are presented below.

Table 8. Effect of reading pleasure on reading motivation according to findings of the ANOVA

Variation source	Sum of squares	df	Mean square	f	p	difference
Between groups	2870,631	4	717,66	12,08	.00	1-4, 2-4, 3-4, 1-
Within groups	4751,79	80	59,40			5, 2-5, 3-5.
Total	7622,42	84				

As a result of reading motivation of vary according to table. According to this mostly (4), and very much (5) stating that they enjoyed reading the two groups of students in the other groups (not at all, a little, indifferent), reading motivation vary in a meaningful way. This shows as the enjoyment increases students' reading motivation increase.

Findings for the sixth sub-problem

The following findings shows effect of reading frequencies on pre-service science teachers' reading motivation.

Table 9. ANOVA Reading motivation averages according to reading frequencies

Reading frequencies degree	N	X	S
Never (1)	0	0	0
Rarely (2)	4	56,50	5,26
Some times (3)	22	65,41	7,48
Often (4)	47	73,92	7,75
Very often (5)	12	81,17	6,75
total	85	71,92	9,53

The motivation of students increases as the reading frequencies increase. The highest point belongs to a group of students that very often read. There is nobody in the group of students who have never read. It is shown below if there is no significant difference between the groups mentioned for the one-way analysis of variance findings.

Table 10. Findings of ANOVA about Reading motivation according to reading frequencies

Variation source	Sum of squares	df	Mean square	f	p	difference
Between groups	3096,779	3	1032,260	18,48	.00	2-4, 3-4, 2-5, 3-5, 4-5.
Within groups	4525,644	81	55,872			
Total	7622,424	84				

As a result of the analysis found that students' reading motivation differ according to their frequency of reading. Accordingly, often (4), and very often (5) indicating that between the two groups of students as well as in the other groups (rarely, sometimes), reading motivation changed in a meaningful way. This shows that the frequency of reading has an important effect on the students' reading motivation.

DISCUSSION and CONCLUSION

In this study the following results are listed:

1. While The students think they have a higher motivation of reading they have lower interest in others reading motivations. Reading is an individual activity, at the same time it is also a social activity where learning are shared. It is learned that there is lack of environment that they can share what they learned.
2. It is found that they read by obligatory rather than they read for themselves
3. No effect was found on gender for reading motivation.
4. Read more what type (mandatory or arbitrary) there was no effect on the time you leave the reading motivation. However, compulsory reading increases motivation, but long-lasting compulsory readings decreases motivation. As the time allocated to reading in pleasure, reading motivation increased in parallel.
5. Reading motivation has changed with the student's reading pleasure. High level of reading pleasure students have more motivation than low-level students and not pleasure students.
6. Students reading motivation differs by the reading frequency. If reading frequency increases the motivation increases.

In the results, science teaching students have moderate reading motivation, having pleasure from reading; required reading and reading frequency have positive effect on reading motivation.

Attention should be given to the students reading enjoyment and reading frequency, the positive impact such readings should not be overlooked. Required readings should be taken in the limit.

REFERENCES

- Benzer, E., & Şahin, F. (2008). An investigation concerned with importance of the basic language skills in the science teaching. *Marmara University Atatürk Education Faculty Journal of Educational Sciences*, 28, 11-31.
- Brill, G., Falk, H., & Yarden, A. (2004). The Learning Processes Of Two High-School Biology Students When Reading Primary Literature. *International Journal of Science Education*. 26(4), 497-512.
- Davis-Duerr, J. (2010). *Qualitative and quantitative inquiry into the affective domain of preservice teachers enrolled in children's literature courses*. Unpublished Phd Thesis, University of Northern Colorado.
- McKee, J. & Ogle, D. (2005). *Integrating instruction: literacy and science*. New York: Guilford Press.
- (MEB) Ministry of Education Head of the Board of Education. (2005). Teaching Elementary Science and Technology (4 and 5th Grades) Curriculum. Ankara, Turkey.
- Novello, M, K. (1999). Recent Research in Math, Science, Language Arts, Social Studies and the Arts ERIC: (ED433244) <http://eric.ed.gov>.
- Rubino, A. (1991). The Science/Language Connection: Why to make it... how to do it. *The Reading Teacher*, 45(3), 248-249.
- Schutte, N. S., & Malouff, J. M. (2007). Dimensions of reading motivation: Development of an adult reading motivation scale. *Reading Psychology*, 28, 469-489.
- Shanahan, C. (2004). *Teaching science through literacy. Adolescent Literacy Research and Practice*. Tamara L. Jetton and Janice A. Dole (Ed.), pp. 75-93. New York: The Guilford Press,.
- Wellington, J. & Osborne, J. (2001). *Language and Literacy in Science Education*. Buckingham, Philadelphia: Open University Press.
- Wellington, J. (1999). Teaching and Learning Secondary Science: Contemporary Issues and Practical Approaches, *Language in Science Teaching and Learning* Routledge Falmer. Chapter: 9. (166-189). EBSCO: (Academic Search Elite) <http://www.ebsco.com>.