THE EFFECTS OF READING FROM THE SCREEN ON THE READING MOTIVATION LEVELS OF ELEMENTARY 5TH GRADERS[*]

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ABSTRACT
This study aims to explore the effects of reading from the screen on elementary 5th grade students' reading motivation levels. It used the randomized control-group pretest-posttest model, which is a true experimental design. The study group consisted of 60 students, 30 experimental and 30 control, who were attending the 5th grade of a public elementary school in Sakarya during the second term of the 2010-2011 school year. Three narrative and three expository texts were selected from the 6th and 7th themes of the Turkish text book which was used in this school. The texts were typed on the computer to be used with the experimental group. Data were collected by using the reading motivation scale designed by the researcher. The results showed that the reading motivation levels of students who read the texts from the screen were significantly lower than those of students who read the printed material, both in the subscales and the overall scale.
Keywords: Reading, Reading from the Screen, Motivation, Reading Motivation.

INTRODUCTION

The main goal of reading instruction in elementary education is to equip children with the skills of using the language of writing and drawing effectively for communication purposes (Akyol, 2006). Individuals should use the reading skill obtained in this way and improve it to keep up with the demands of the age. The significance of reading and its associations with other skills makes it necessary to understand its definition. Reading is a complex skill that requires the coordination of several relevant sources of information and meaning construction from the text. Reading affects people of all ages and enables them to improve their thinking, understand social events, and enter a healthy process of communication (Sever, 2000). People who read within a society want to share their views and opinions on everyday events. In recent years, technological advances and the spread of the internet have made it possible to share readings or obtain information via the computer, telephone, and TV. Students in our day are growing up in an environment that is radically different from that of the previous generations. They mature with the internet and many instant communication devices that could not be imagined 20 years ago (Wagner, 2008). Also, new technologies caused a changed certain issues such as all of the existing learning-instruction theories, instruction methods, environmental design in parallel to the technology (İşman & İşbulan, 2010).

These technological changes point to a change in literacy from paper to the screen. Thus it is important to understand the role that digital technologies play in the education of current and future generations. Clemmitt (2008) stated that while reading books lay the foundations of 20th century literacy, it is possible that 21st century literacy will involve instant messaging and obtaining information by blogging and following online images and sounds in addition to using text. In other words, today's readers need to go beyond old reading habits based on traditional publication, and explore and acquire novel and progressive approaches that explain the nature of electronic texts. In line with the rising popularity of digital libraries, the act of digital reading forces students to change their beliefs about reading from paper (Brown, 2001; Parrot, 2003).

The act of digital reading brings to mind the concept of reading from the screen. This concept is a skill that needs to be defined by referring to the digital culture. Reading from the screen is an act of reading electronically or digitally texts viewed from a screen such as a computer monitor. The most distinct characteristic of reading from the screen is the presentation of a certain portion of printed text from a screen (Güneş, 2009a; 2009b). As readers are familiar with computers, they efficiently obtain information from and read screen-based presentations (Meyer & Poon, 1997).

A direct relationship cannot be established between new skills concerning technology-related literacy methods and habits and whether these will affect people's reading education positively or negatively. This is because reading instruction cannot be treated in isolation. As a whole, reading instruction includes factors that affect reading such as comprehension or motivation. Reading is a skill that requires effort and forces students to make a

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[*] This research is a part of first author's Master Thesis.

choice between doing and not doing. This requires motivation. An understanding of the concept of reading motivation first requires a definition of the concept of motivation. Owing to its complex structure, motivation is hard to explain in one dimension. It is thus difficult to agree on a single definition of motivation. It has been defined as a stimulus that triggers purposeful behaviors and intentions (Harmer, 2001; Ryan & Deci, 2000), willingness and a desire to reach a goal (Ames, 1990); the degree of people's efforts and their choices (Keller & Song, 2001); and fuel for the tools that people use for learning and information (Atkinson, 2000). Reading motivation includes people's reading-related behaviors.

Previous research shows that motivated children at the level of elementary education spend more time on reading (Guthrie, Wigfield, Metsala & Cox, 1999; Wigfield & Guthrie, 1997). At the same time, children who are motivated to read and spend more time on it were found to be better readers than other children. Motivation seems to affect students' views about reading positively. Readers are motivated to read in different ways, and construct new understanding by making use of their knowledge from previous experiences. They thus engage in different social interactions by reading. People who are motivated to read will be more interested in reading (Guthrie, Van Meter, Mccann, Wigfield, Bennett, Poundstone, Rice, Faibisch, Hunt & Mitchell, 1996) and have more positive ideas about reading (Mathewson, 1994; Mckenna, Kear & Ellsworth, 1995).

Pintrich and Schunk (1996) conceptualized the questions students asked themselves: "Can I become a good reader?" and "Why do I want to be a good reader?", and stated the skills, values and beliefs studied by motivation theorists in the dimension of reading. These questions are directly related to motivation. Competence and skills are not enough to maximize success. The question "Do I want this?" is a part of intrinsic and extrinsic motivation. "Intrinsic motivation" triggers personal curiosity for an activity. From a different perspective, when faced with the question why they read, individuals with intrinsic motivation respond as "I read to learn". "Extrinsic motivation" on the other hand, refers to being motivated to see through an activity for a reward or with someone's support (Ryan & Deci, 2000). In other words, students with extrinsic motivation read because their teachers want them to read, they want good grades, the text is easy, or they want to act in unison with their friends. As grade level proceeds, the reasons for decreasing amounts of reading need to be explored and students' reading motivation needs to be accurately evaluated so that their needs for reading instruction can be met. By evaluating reading motivation, students' individual differences in reading may be understood better.

It is essential to identify elementary students' reading motivation because it is through such work that they can be turned into effectively literate individuals in the future (Atkinson, 2000). This can also enable intervention into their reading success. Research on motivation and reading motivation has shown that students' intrinsic motivation is more strongly related to the amount of reading than other motivation types (self-efficacy, extrinsic motivation and social motivation) (Lau, 2009). Guthrie and Alao (1997) studied the design process to increase reading motivation. They found that the following were necessary for this environment: including elements that motivate reading, appealing to cognition, being integrated, systematically interrelated, practical, easy to implement in the long run, useful for students, cost-effective, and appropriate for the class and school environment. Edmunds and Tancock (2003) studied the effects of incentive on elementary 4th graders' reading motivation. According to the findings of this study, no significant difference was observed between the students who received incentives and others. Marinak and Gambrell (2008) studied the effects of award possibility and selection on the reading motivation of 3rd grade students. The most noteworthy finding of the study was that carefully selected awards can increase reading motivation. Ülper (2011) studied the affective side of reading, and asked students factors that motivate reading. The results showed that the determining factors for motivating students to read, were the teacher, family, friends, book, the environment and activity. It was also found that factors other than the book and activity were more influential on girls than boys.

Similarly, Grimshaw, Dungworth, Mcknight and Morris (2007) stated that different types of electronic storybooks did not have an effect on children's reading comprehension levels or reading pleasure, and that reading took longer in the electronic environment. Conversely, Ertem (2010) found that electronic storybooks caused a significant difference in students' reading comprehension levels. Şahin's (2011) study revealed no statistically significant difference in students' reading comprehension levels when reading occurred on the screen or from paper. Greenlee-Moore and Smith (1996) found higher reading desire and reading comprehension scores among children who read long and difficult texts electronically. As can be seen, comprehension and motivation studies seem to be intertwined and mutually supportive when reading from the screen is concerned. Thus, starting from the link between motivation and reading comprehension, the studies reviewed here also contain reading comprehension studies. As no Turkish study has yet explored the effects of reading from the screen on student motivation, the possible results are open to debate. This study was necessitated by the fact that the effects of reading from the screen on reading motivation had not been studied.

The purpose of this study was to identify "The effects of texts read from the screen at elementary 5th grade on reading motivation levels". In line with this purpose, an answer to the following question was sought.
Is there a difference between the reading motivation levels of experimental and control group students?

METHOD
Research Model
This study used the experimental model. Experimental models are the most valid and reliable model that tests the causal relationship between variables (Fraenkel and Wallen, 2006). The true experimental model of randomized pretest-posttest control group model was preferred. One group was assigned randomly as the experimental group and the other one as the control group. In order to compare the two groups before and after the trial, pretest and posttest measurements were made.

Study Group
The study group consisted of 60 students attending the 5th grade of an elementary school located in Sakarya during the 2nd term of 2010-2011 school year. The experimental and control children were selected randomly. The school where the trial was to take place had continuous internet access, and a computer lab or classroom with enough number of computers. It was also ensured that the students to take place in the trial had basic computer literacy.

Table 1. Computer Use Levels of Experimental and Control Group Students

			Computer Use		
			Yes	No	Total
Group	Experimental	N	30	0	30
		%	100	0	100
	Control	N	27	3	30
		%	90	10	100
Total		N	57	3	60
		%	95	5	100

Table 1 shows that the selected students knew how to use a computer.

Data Collection Tools
The "Reading Motivation Scale for Texts" designed by the researchers were used in order to identify the reading motivation of students. When the scale was being developed, the researcher examined certain motivation scales in the literature to identify reading motivations of fifth grade students.

The scale development process started with a literature survey and a 60-item pool was formed. During validity studies, expert views were obtained for content validity (4 lecturers from the educational sciences department, 5 from the elementary education department, 1 from the computer education and instructional technology department, and 3 from the Turkish education department). Twenty teachers were given teacher opinion forms to collect their views about the scale, and 40 students were given student opinion forms. For construct validity, confirmatory factor analysis was undertaken. The results revealed a valid and reliable scale with 22 items in the following four factors: "Perception of Reading Difficulty", "Reading Competence", "Effort/Recognition for Reading" and "Social Aspects of Reading". The factor loading value in the "Perception of Reading Difficulty" subdimension varied between .62-.80; that in the "Reading Competence" subdimension varied between .41-.67; that in the "Effort/Recognition for Reading" subdimension varied between .54-.74; and that in the "Social Aspects of Reading" subdimension varied between .56-.70; the factor loading value of the 22-item scale varied between .41-.80; the four factors of the scale explained 46.23% of the total variance. Total internal consistency coefficient was .81. These values show that the scale explained 5th grade students' text-based reading motivation well.

The Trial
Prior to the trial, pretests were performed to see whether students' reading motivation would change after the experiment. In the experimental group, each student read from the screen unedited expository and narrative texts chosen from the text book. Examples of these expository and narrative texts are presented below (Image 1). In the control group, class teachers were contacted and the same texts that were read weekly in the experimental

group were read from the book. The reading motivation scale was used as a posttest in order to explore the effects of reading from the screen on reading motivation.

Image 1. Sample Experimental Group Screens

Findings

The experimental and control groups undertook pre and posttests so that the effects of the trial on reading motivation could be established. Two-factor ANOVA was used to ascertain whether the pre and posttest results differed meaningfully. The subdimensions were studied first in order to explore whether they had changed significantly.

Table 2. Pre and Posttest Mean and Standard Deviation Values of Experimental and Control Groups in the Perception of Reading Difficulty Subdimension

Group	P.R.D. PRETEST			P.R.D. POSTTEST		
	N	$\bar{x}$	S	N	$\bar{x}$	S
Experimental	30	23.50	4.03	30	21.67	4.44
Control	30	21.97	5.83	30	20.07	5.32
Total	60	22.73	5.03	60	20.87	4.92

The pre and posttest values of experimental and control groups in the dimension mentioned are presented in Table 2, and show a decline in the mean values of both groups.

ANOVA Results of Experimental and Control Groups in the Perception of Reading Difficulty Subdimension

Source of Variance	Sum of Squares	df	Mean Square	f	p
Between groups	2227.20	59			
Group(Experimental/Control)	73.63	1	73.63	1.98	.164
Error	2153.57	58	37.13		

	Sum of Squares	df	Mean Square	f	p
Within groups	797.99	60			
Measurement(Pre-Posttest)	104.53	1	104.53	8.74	.004
Group*Measurement	**0.03**	**1**	**0.03**	**0.03**	**.958**
Error	693.43	58	11.96		
Total	3025.19	119			

Table 3 reveals that no statistically meaningful difference existed in the scores of the two groups obtained in the subdimensions of the scale ($F_{(1, 58)}$= 0.03, p.>.05).

Table 4.
Pre and Posttest Mean and Standard Deviation Values of Experimental and Control Groups in the Reading Competence Subdimension

Group	R.C. PRETEST			R.C. POSTTEST		
	N	$\overline{x}$	S	N	$\overline{x}$	S
Experimental	30	44.17	3.78	30	43.67	3.46
Control	30	43.23	4.65	30	41.17	8.04
Total	60	43.70	4.23	60	20.87	6.26

Table 4 offers pre and posttest data of experimental and control students in the abovementioned subdimension and reveals a decline in the mean values of both groups.

ANOVA Results of Experimental and Control Groups in the Reading Competence Subdimension

Source of Variance	Sum of Squares	df	Mean Square	f	p
Between groups	2421.09	59			
Group (Experimental/Control)	88.41	1	88.41	2.20	.144
Error	2332.68	58	40.22		
Within groups	997.50	60			
Measurement (Pre-Posttest)	49.41	1	49.41	3.08	.084
Group*Measurement	**18.41**	**1**	**18.41**	**1.15**	**.288**
Error	929.68	58	16.03		
Total	3218.59	119			

Table 5 shows that no meaningful statistical difference existed between the scores obtained by the two groups in the subdimension mentioned ($F_{(1, 58)}$= 1.15, p.>.05).

Table 6.
Pre and Posttest Mean and Standard Deviation Values of Experimental and Control Groups in the Effort/Recognition for Reading Subdimension

Group	E/R.R. PRETEST			E/R.R. POSTTEST		
	N	$\overline{x}$	S	N	$\overline{x}$	S
Experimental	30	18.67	1.37	30	18.40	1.57
Control	30	18.50	1.80	30	17.40	3.06
Total	60	18.58	1.59	60	17.90	2.46

Table 6 presents pre and posttest data of experimental and control students in the abovementioned subdimension, and shows a decrease in the mean values of both groups.

ANOVA Results of Experimental and Control Groups in the Effort/Recognition for Reading Subdimension

Source of Variance	Sum of	df	Mean	f	p

	Squares		Square		
Between groups	320.49	59			
Group (Experimental/Control)	10.21	1	10.21	1.91	.172
Error	310.28	58	5.35		
Within groups	199.49	60			
Measurement (Pre-Posttest)	14.00	1	14.00	4.51	.038
Group*Measurement	**5.21**	**1**	**5.21**	**1.68**	**.201**
Error	180.28	58	3.11		
Total	519.98	119			

Table 7 shows that a statistically meaningful difference did not exist between the scores of the two groups in the subdimension specified ($F_{(1, 58)}$= 1.68, p.>.05).

Table 8.
Pre and Posttest Mean and Standard Deviation Values of Experimental and Control Groups in the Social Aspects of Reading Subdimension

Group	S.A.R. PRETEST			S.A.R. POSTTEST		
	N	$\bar{x}$	S	N	$\bar{x}$	S
Experimental	30	8.23	1.36	30	8.20	1.40
Control	30	8.00	1.66	30	7.40	1.73
Total	60	8.12	1.51	60	7.80	1.61

A decline in the mean values of both groups can be seen in the pre and posttest data of the Social Aspects of Reading subdimension given in Table 8.

ANOVA Results of Experimental and Control Groups in the Social Aspects of Reading Subdimension

Source of Variance	Sum of Squares	df	Mean Square	f	p
Between groups	185.28	59			
Group (Experimental/Control)	8.00	1	8.00	2.62	.111
Error	177.28	58	177.28		
Within groups	105.49	60			
Measurement (Pre-Posttest)	3.00	1	3.00	1.74	.192
Group*Measurement	**2.41**	**1**	**2.41**	**1.40**	**.242**
Error	100.08	58	1.73		
Total	290.77	119			

The findings in Table 9 show that a statistically meaningful difference did not exist between the two groups of students in this dimension ($F_{(1, 58)}$= 1.40, p.>.05).

Data from the subdimensions of the scale reveal no meaningful difference between the experimental and control students, and a decline in the mean values of each subdimension.

Table 10.
Pre and Posttest Mean and Standard Deviation Values of Experimental and Control Groups in the Reading Motivation Scale

Group	R.M. PRETEST			R.M. POSTTEST		
	N	$\bar{x}$	S	N	$\bar{x}$	S
Experimental	30	94.57	8.09	30	91.93	7.82
Control	30	91.70	9.48	30	86.03	12.91

Total	60	93.13	8.86	60	88.99	10.99

The pre and posttest data of the two groups given in Table 10 show a decline in the mean values of both groups. Two-factor ANOVA was used to identify whether the changes that occurred in the reading motivation of experimental and control students who read the same texts were statistically meaningful. The results are presented in Table 11.

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ANOVA Results of the Reading Motivation Levels of Experimental and Control Groups

Source of Variance	Sum of Squares	df	Mean Square	f	p
Between groups	9471.09	59			
Group (Experimental/Control)	576.41	1	576.41	3.76	.057
Error	8894.68	58	153.36		
Within groups	2801.5	60			
Measurement (O.M1/O.M2)	516.67	1	516.67	13.52	.001
Group*Measurement	**69.01**	**1**	**69.01**	**1.81**	**.184**
Error	2215.82	58	38.20		
Total	12272.59	119			

Two-factor ANOVA results given in Table 11 may be analyzed under three main headings. To begin with, measurements between groups should be compared. This shows how different experimental conditions affect students' reading motivation.

Secondly, the table offers a comparison of measurements within groups. Regardless of group, students' reading motivation is given here. The findings show that reading from the screen causes a decline in students' reading motivation.

Findings shown in the ANOVA Table reveal no statistically meaningful difference between the reading motivation of students in the two groups ($F_{(1, 58)}$= 1.81, p.>.05). Accordingly, it was concluded that reading from the screen did not have a meaningful effect on students' reading motivation.
Healthier data can be obtained by reconsidering findings obtained by using a graph. Figure 1 below shows the graph regarding the ANOVA test.
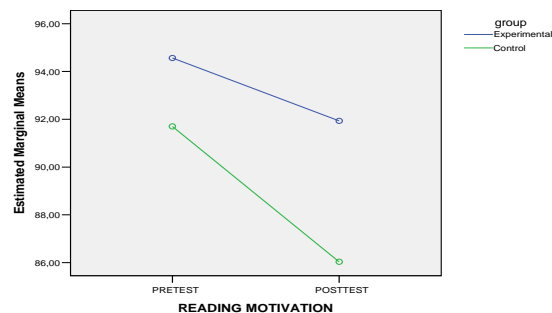

Figure 1. Reading Motivation Levels of Experimental and Control Groups

Figure 1 shows a decline in the reading motivation of experimental students, though not statistically meaningful. It may thus be argued that the training was not effective. Similarly, control students' reading motivation also seemed to decline. However, this decline was steeper than the one in the experimental group.

DISCUSSION AND CONCLUSION

The findings obtained from the exploration of the question "*Is there a difference between the reading motivation levels of experimental and control group students?*" reveal that reading from the screen adversely affects the reading motivation of experimental group students. However, when compared to the control group, the decline in the experimental group was less. Wigfield and Guthrie (1997) explored reading motivation under 3 main headings, the second of which is related to children's aims in reading and the value they attach to it. In other words, this dimension regards student interest in reading and the pleasure derived from it. Thus, lack of pleasure in reading may be attributed to low reading motivation among students. The findings of Grimshaw et al. (2007) also corroborate these findings. They argue that different presentation types did not significantly affect the pleasure that children derive from books. This may have been because this was the first time children experienced such an activity or texts were not animated. Guthrie and Wigfield attributed the decline in reading motivation to the unexpected changes in the reading experiences of students at school. These changes include isolating reading instruction from content, a significant lack of training in reading strategy, use of different materials, non-personal reaction-response expectations, limited student choice, students isolating themselves from teachers, advancing grade level, and alienation from reading due to real-life interactions.

Edmunds and Tancock (2003) studied the effects of incentives on the reading motivation of fourth grade students, and found no meaningful difference between the reading motivation of students who did and did not receive incentives. This finding is in accord with the findings of the current study. Motivation is not a single dimensional concept and the type of motivation used can affect individuals directly. As any change in motivation requires a process, incentives may not have caused a change in students' reading motivation in these studies. In addition, extrinsic elements have mostly been used to raise reading motivation. However, researchers state that intrinsic motivation is mostly accepted as the best type of motivation for learning (Ryan& Deci, 2000; Wigfield & Guthrie, 1997). At the same time, they also emphasize that extrinsic motivation is not as effective as intrinsic motivation in increasing the amount of reading that students do. Thus, it is important to reconsider what changes are to take place in reading instruction planning, ranging from rewarding students to developing intrinsic interest in students for reading. Marinak and Gambrell (2008) found in their study that carefully selected rewards can increase reading motivation. An inclination for rewards is an important factor in improving reading motivation. Thus, different results may have been obtained by giving computer-related rewards to students after reading from the screen. Also, student motivation may have been low because extrinsic motivation was used. The participants in this study were 5th graders who, according to Harmer, can only focus on the same subject for a limited amount of time, get bored when faced with activities that do not interest them, and lose their interest in 10 minutes. Therefore, an 8-week trial of reading from the screen may also have lowered students' reading motivation.

On the other hand, Greenlee-Moore and Smith (1996) found contrary findings to those above. They found that experimental students were more enthusiastic about their activity. This difference may have been due to the cd-rom and interactive texts used. Also, some authors claim that digital texts, particularly hypertexts, motivate students for individual and comprehensive reading (Coiro, 2003). E-books including stories, memoirs, tales, novels, poetry, magazines and newspapers at the children's level may also be used. These materials may be particularly beneficial as free reading and motivate students to read more. Previous research also suggests this (Nicholls, Cheung, Lauer & Patashnick, 1989). Following this study, quantitative and qualitative studies may be conducted to explore the reasons behind these findings. The study was limited to merely reading from the screen. Future studies may use sound effects, moving objects or other visual elements. The study was also limited to 60 fifth-graders. Future researchers may study other grade levels with different sample size. This study took eight weeks. This time frame may be shortened or lengthened by using different materials and purposes. The study used expository and narrative texts. Future studies may involve poetry or other genres.

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