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The Influence of Personalization of Online Texts on Elementary School Students' Reading Comprehension and Attitudes toward Reading

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Abstract
The purpose of this research was to examine the role of personalized and non-personalized online texts on elementary school fifth grade students' comprehension and their attitudes toward reading. Participants were 47 fifth-grade students from a rural elementary school in north Florida. The subjects were randomly assigned into two (personalized online text and non-personalized online text) groups. Prior to reading online texts, each students completed personal interest inventory for use in personalizing the online texts. Reading comprehension scores were measured by using multiple choice questions and an attitude survey was administrated to measure subjects' motivation, enjoyment and interestingness. Although the mean score of the personalized text group was slightly higher than non-personalized text group and in contrast to patterns found within research on online reading environments, independent *t*-test showed that the differences in the comprehension scores between two groups were not significant. According to attitude survey results personalized text group showed higher motivation, interestingness and enjoyment than the other group.

Keywords: personalization, online text, reading comprehension, motivation, elementary school

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Introduction

Technology is becoming more significant as a teaching and learning instrument both at home and in our schools. Classrooms today are different from the classrooms of 30 years ago, primarly because of the improved use of technology. The students are more skilled than ever before in using technology to explore for information, and to answer questions about various topics. Many students find technology mediated reading to be very motivating and interesting. Technology has the prospective to signifcantly increase access to text, opportunities for self-selection, and social interaction about text. With technology on the enhance, it is important that teacher become more aware of positive impact technology can have on students' literacy engagement, motivation, and achievement (Gambrell, 2006).

Literacy has been altered fundementally by the develop of computer-based and Internet technologies. The role of educators includes teaching children to challenge with whole new set of texts and contexs for reading. Comprehension is also developing new meanings and new prominences. Many texts in electronic environment have unique characteritics, many activities carried out in electronic environments are distinct, and each reader brings to the comprehension process experience with technology and reading (Duke, Schmar-Dobler, & Zhang, 2006). One of the unique characteristics of texts in electronic environment is personalization.

Personalization

Personalization refers to understand individual needs, habits and lifestyle, attitudes, preferences, likes and dislikes of customers, and addressing customers' individual needs and preferences. Şimşek and Çakır (2009) defined personalization –as an educational meaning- "embedding students' past experiences and interests into the educational content" (p.278). Taylor and Adelman (1999) defined similarly the personalization as accounting for individual differences in both capacity and motivation. Personalization symbolizes an application of the principles of normalization and least intervention needed. Personalization can be treated as a psychological construct by viewing the learner's perception as a critical factor in defining whether the environment appropriately accounts for the learner's interests and abilities. In defining personalization as a psychological construct, learners' perceptions of how well teaching and learning environments match their interests and abilities become a basic assessment concern.

Researchers claimed that appropriately designed and carried out, personalized programs reduce the need for remediation related to literacy. Maximizing motivation and matching developmental ability can be an adequate condition for learning among ordinary level students. Personalized programs also represent the type of program regular classrooms might implement in order to significantly improve the efficacy of inclusion. Teachers should know the importance of designing interventions to be a good fit with the current potentials of their students (Taylor, & Adelman, 1999).

If the customers of online text are students, we need to consider their needs, attitudes, preferences, like and dislikes. Electronic books mostly focus on attractiveness, rich color, sound, animation, zoom, size, changeable font, moving graphics, feedback, interactive, headings, introduction, highlight, style, name, and encouragement as a common character. The discovered benefits of personalization are: Children's curiosity is enhanced; interests are maximized, and enhance a child's motivation to read. Personalization provides to the kid with an engaging and enjoyable experience, enhance the believability of characters, and personalization allow easy understand and remembering the story (DeMoulin, 2001). Miller and Kulhavy (as cited in Lopez, 1990) claimed that personalized representations develop

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recall by increasing the associative strenght during encoding of personalized material and related information in a text.

Reading Comprehension

Anderson and Pearson (1984) define comprehension as the process of constructing meaning by interacting with text. This definition has highlighted the constructive and interactive process of reading comprehension. Understanding the meanings of words and texts is the main function of literacy that enables people to communicate messages across time and distance, express themselves, and generate and share ideas. Without comprehension, reading word is reduced to mimicking the sounds of language, repeating text is nothing more than memorization and oral drill. There are many definitions of comprehension, but little agreement, because the boundaries of the subject are so broad. Reading comprehension is interaction among the intensions of the author, the content of the text, the abilities and purposes of reader and context of the inter action (Paris & Hamilton, 2009). The understanding readers obtain from reading comes from their prior knowledge, experiences that are activated as they read the author's words, sentences, and paragraph. Through the procedure of comprehending, readers associate the new information written by the author to old information already stored in their minds (Doty, 1999).

Motivation and attitude are important factors involved incomprehension process. Attitudes influence motivation and motivation influences our thinking about why we are successful or not. Reading failure frequently leads to negative attitudes toward reading. When children constantly experience reading difficulty, they may lose their eagerness and motivation for reading (Rasinski & Padak, 2004). Guthrie and Wigfield (2000) emphasized that "A less motivated reader spends less time reading, exerts lower cognitive effort, and is less dedicated to full comprehension than a highly motivated reader" (p. 406).

Reading comprehension is also influenced by new technology. Utilizing the computer to text can aid children improve their comprehension because technological features of the computer allow control of text. Readers of computer-mediated texts (electronic texts) are able to easily gain word meanings. This feature can affect children to explore the meanings of words they find difficult. Comprehension can improve if the computer can be reduced the pressure and motivate students to be more active in monitoring their reading comprehension (Dotty, 1999). Multimodal, nonlinear, dynamic, and multilayered features of digital texts changed traditional conceptions of reading comprehension, online reading comprehension (Shinas, 2012). Rand Group (2002) pointed out "an explosion of alternative texts" and "electronic texts that incorporate hyperlinks and hypermedia introduce some complications in defining comprehension because they require skills and abilities beyond those required for the comprehension of conventional, linear print" (p. 14).

Online Text

In this research, online text refers to mean compositions for the computer screen. Different textual formats present configure new spaces and possibilities so students may achieve a more level comprehension. Online texts make possible to the reader the means and dynamic tools to actively construct knowledge representations (Alvarez, 2006). Online texts possess new characteristics that require different types of comprehension processes and a different set of instructional strategies. Online texts provide new supports as well as new challenges that can have a great impact on an individual's ability of reading comprehension (Coiro, 2003).

With the advancement of technology there is a controversy about the printed page being replaced by online text. Online texts are not meant to replace traditional texts, but to

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provide an alternate reading media. There are strengths and weaknesses of using an online text. The strengths of online text are that they are fresh and original works that readers often cannot find in a bookstore. You can save costs, speed and storage with online text. In addition, they are the new wave because there is no waiting. They are updated and up to date, and there is no need for ink, paper. Some e-books even allow the children to add comments, notes, or post ideas. Strength of online text that they are faster, cheaper, and more searchable compared to paper texts.

Online text has some weaknesses. For example, reading on a screen sometimes could be a challenge. The children tend to lose place and to shut down the computer for other necessities These are some of weaknesses we have to consider about electronic texts. Another weakness is that when you search Internet there are limited number of free online stories to read because of copyright issue, so the children can't always read the story when they want.

Review of Related Studies

Lack of interest in reading and reluctance to reading are common problems among students (Dwyer, 1996). Personalization would be one of possible solutions for this common problem because personalized materials provide more motivation, enjoyment, interestigness for reading. Researchers have studied on personalization since the beginning of 1980s. However, there is a limited number of study on the use of personalization on reading comprehension and online texts.

Some of research findings showed that personalization of instructional materials increase reading comprehension and motivation (Dwyer, 1996; Lopez, 1990; Anand & Ross, 1987). For example, Dwyer (1996) examined the effects of three level of personalized reading materials on the comperehsion of high school students. The results of the study explained that low ability students indicated a significantly higher overall preference for the stories on the attitude test than high ability students. Also, results of the same study showed that personalization can be useful as a motivator to support low ability students to read more, which could increase their reading achievement (p. iv). In another study, Bracken (1982) found that personalized stories were more useful for reading comprehension of fourt-grade level poor students than average students. However, all of researcher do not agree on the positive effects of personalization in the students success. Several reserachers claimed no significant increase in students achievement when the personalization was used (Bates & Wiest, 2004; Andre, Mueller, Womack, Smid, & Tuttle, 1980; Ryan, 1974).

Some of studies conducted in the area of mathematics (Lopez, 1990; Anand & Ross, 1987; Davis-Dorsey, 1989; Şimşek & Çakır, 2009). Lopez (1990) examined role of three levels of personalization of seventh grade Hispanic students on mathematic word problems. She found that personalization had a significant outcome on student achievement on problems and attitude data favored individualized personalization. Anand and Ross (1987) conducted a study that using computer-assisted instruction to personalize arithmetic materials on 96 fifth- and sixth-grade children. Personalization was made possible to change referents in story problems to personal information, such as personally favored people, places and activities. The personalized treatment was shown overall to be the most successful method in the study. With regard to attitudes, the personalized group showed a significant achieve over the other group. Davis-Dorsey (1989) investigated whether personalization of mathematics word problems would benefit elementary school children. According to study, second graders benefited from the combined intervention of personalization and problem rewording. Suggestions of this study were that older children can benefit more from personalized context of mathematics story problems.

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There are also lots of researches about online texts. Reinking (1988) examined comprehension of paper text and electronic text. Electronic text comprehension was higher for both good and poor readers. In this study, the electronic enhancements also improved reading comprehension. Digital learning environments, through good quality of flexibility of the medium, have the potential of scaffold instruction in a rich variety of ways (Bus, De Jong, & Verhallen, 2006). The research on online texts demonstrated that online texts increase reading comprehension of students. For instance, digital storybooks improve reading motivation for children with reading difficulties (Glasgow, 1997), story comprehension (Doty, Popplewell, & Byers, 2001). Matthew (1997) compared the reading comprehension of students who read the printed storybook and the interactive CD-ROM storybook. The participants included 30 third grade students. Matthew's research supported that electronic texts significantly enhanced students' reading comprehension scores. All those studies show that the influence of online text depends on the types and quality of texts, and the characteristics of the students.

Purpose of the Study and Research Questions

The purpose of this study was to understand how the use of personalization on the online texts affect the students' reading comprehension, attitude (motivation, interest, enjoyment and belief) toward reading. In this study, personalization refers to adaptation of online texts according to each student's information, and interest (name, favorite objects, place, events) and choices of color, font style, picture by each student on the computer screen. This research sought to answer the following research questions:

- Does personalization of online texts affect reading comprehension of students?
- Are students' attitudes (enjoyment, motivation, interest and belief) toward reading affected by the use of personalization on the online texts?

Method

Participants

Participants consisted of 47 children who were fifth grade in Elementary School which is located in a small, rural community in north Florida. Children are the age range of 11-13. The students belong to low-socio economic level Eighty-six percent of the students participated in the federally funded free or reduced priced lunch program. The mobility rate for students was approximately 55% and the turnover rate for teachers was approximately 4%.

Data Collection

Each child was presented with one of two conditions: (a) computer presentation of the texts with choice background color, picture, font style (personalized group) (b) computer presentation of the texts with no choice background color, font style, picture (non-personalized group) In experiment, the students were randomly assigned to one of two groups. All students read two different online texts in two sessions and after reading each of students completed total 12-item multiple choice comprehension questions, and 10-item attitude survey. The time limit was 15 minutes for each text. Students received one point for correct responses, and zero points for an incorrect or missing response. The highest total possible score was 12 points for this reading assessment. The students' responses were scored by the researcher. In this study, online texts include the short stories, entitled Nellie's Journey (first), and A Taste of Freedom (second).

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These short stories and reading comprehension questions were chosen from fifth grade text book but not used by this elementary school. Both texts were approved by experts and the teachers as being suitable for the age group being tested. The books are approximately the same length and have a fifth grade readability level. Three weeks prior to study, each students completed the personal inventory for use in personalizing the online texts. According to inventory result, if students had previously read the text were eliminated from the study. It was important that the texts were previously unknown to subjects. The personal inventory and attitude survey had been developed by researcher after that these inventory and attitude survey were evaluated, corrected and approved by two experts.

Data Analysis

This research was a quantitative data analysis of the influence of personalized and non-personalized online texts on elementary school fifth-grade level students' reading comprehension and their attitude toward reading. The data of research consist of the results of a standadized test of reading comprehension (12-item multiple choice reading comprehension questions) and an 10-item attitude survey. This quantitative data was analyzed by researcher focusing on reading comprehension, and attitudes such as motivation, enjoyment, interestigness, and beliveabity. The Statistical Package for Social Sciences (SPSS) used for the purpose of data entry, manipulation, and analysis. Independent t-test was performed to compare the groups' reading comprehension scores at the .05 level of significance using a two-tailed test. Descriptive statistics (frequency and percentage) were calculated to summarize attitude survey results.

Results

According to personal inventory results 90 percent of children answered that they have computer at home. The children are familiar with computer and they use computer at least once week at the computer lab in the school. Mostly they use computer for playing game, entertainment (watching cartoon, music listening), searching, reading, and class work.

Comprehension

The mean score for the personalized group was (M=9.60, SD=3.8) and for non-personalized group was (M=8.34, SD= 4.3). Mean scores for the number of questions answered correctly out of twelve showed a difference of 1.26 points between personalized and non-personalized online texts (see Table 1). An independent t-test showed that the difference in the scores between the two groups were not statistically significant, t=1.063, df=45, p=0.294 (p < 05, two tailed).

Table 1. *Independent t-test Results for Comprehension*

Groups	*N*	*M*	*SD*	*t*	*df*	*P*
Personalized	23	9.60	3.8			
				1.063	45	.294
Non-personalized	24	8.34	4.3			

p < .05, two tailed.

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Enjoyment

A significant difference was found for enjoyment, indicating that students reported personalized online text as more enjoyable than non-personalized online text. Question was about whether they did like story or not? All members of personalization group enjoyed the story (100 %), this ratio was 88 % (*f* = 21) for non-personalized group.

Believability

Another important result in this study is believability. The students generally found that short stories in the online text were believable (*f* =19), (83 %) for personalized group and (*f* =19), (80 %) for non personalized group. Personalized group has the highest percent.

Interestingness

For fifth graders, a significant main effect was found for presentation type, survey results indicated that the simultaneous presentation was rated significantly more interesting than the other group; (*f* =13), (57 %) for personalized group and (*f* =8), (33 %) for non personalized group.

Perception

This part of survey questions was including their perception about themselves as a reader. The questions include such as are you a good reader, do you like challenge books, do you usually learn difficult things by reading, do you like reading something when the words are difficult? There were similarity between groups (Table 2). 91 % percent of first group of students and 92 % percent of second group students answered positively these questions. (I am good reader, I like challenge books, and I like to read new things). Results illustrated that they had had positive perception about themselves and they had had positive attitude to reading. Students explained that they did not like complicated stories, reading something when the words are difficult, and vocabulary questions. There were no significant differences between both groups.

Motivation

For fifth graders, survey results revealed that there were differences for personalized group in regard to motivation. As we can see on the Table 2, effect of personalization on motivation was significant; (*f* =21), (91 %) for personalized group and (*f* =14), (58 %) for non personalized group. Survey results indicated that the students reported significantly higher motivation for the personalized online texts than for the simultaneous non-personalized online texts.

Survey question 9 and 10 were open-ended questions (what did you like and did not you like about online text?). The students thought that computer did good job. This result is similar to finding of previous researches. While all students (100 %) thought Computer was successful. The students want to read another online text. We can separate into two groups their answers. While non-personalized group liked theme and context, personalized group liked mostly choosing color, changing writing. They wrote, “You can read at your own page”, “faster”, “it does not correct reading mistakes”, “It help you get smart”, “reading fast” and so on. Some of students’ did not like stories. For example context (No food, illness, sad, died mom), too long, sentence too long, too much click, could not track, too short etc.

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Table 2. *Attitude Survey Results*

	Personalized Group		Non-personalized Group	
	f	%	*f*	%
Enjoyment	23	100	21	88
Believability	19	83	19	80
Interestingness	13	57	8	33
Perception	21	91	22	92
Motivation	21	91	14	58

Discussion

This research presented a window on children's use of online text for reading. The research did not show statistically significant differences of reading comprehension ($p=.294 > .05$, with two tailed) while the students read personalized online text. However, the mean of reading comprehension score of personalized online text group (M=9.60) was higher than the reading comprehension score of on the personalized online text group (M=8.34). The result of the study is similar to finding of studies conducted by Bates and Wiest (2004), Andre, Mueller, Womack, Smid, and Tuttle, (1980) and Ryan (1974) that they could not find any significant effects of personalization. Although the finding of research could not show any significant effect of personalization on the children's comprehension, personalization of online text still might be an effective instructional design strategy for improving children's reading comprehension achievement. This study advocates that personalized or non-personalized online texts and online storybooks can be used successfully for instructional purposes in classroom. Online texts in the classroom also can be more economically advantageous than printed texts. Through the use of online text, teachers have a promising solution for very limited availability of children books.

The results of Attitude Survey demonstrate that the respondents thought personalized online texts provided more positive attitudes (enjoyment, believability, interestingness and motivation) toward reading than non-personalized online texts except perception. Robb (2000) claimed that children's interest in reading for pleasure and motivation to read was being reduced. Personalized online texts can help these unmotivated and uninterested children. Personalization can make reading more enjoyable and interesting to students. The students in this study were highly motivated to read the personalized online texts and were on task continually. Findings from this research suggest that personalization of online text increased engagement of elementary students. These results support outcome of previous studies (Dwyer, 1996; Lopez, 1990; Anand & Ross, 1987). Possible reason of this result was that the students could able to control and choose some of features of online texts such as picture, color, and font.

Teachers can use vary personalization types in their classroom to enhance students' motivation and reading achievement. We need to carry on to assess online text technologies and to make efforts to integrate personalization, psychology and human computer interaction principles.

Future studies, relating experimental and correlational design, will assist us to gather more information about the effects of personalization on the elementary school students'

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comprehension and motivation and will enable us to make more detailed finding about causality. Researchers should continue to seek ways to integrate and customize available online texts and technologies to meet the diverse of needs of the students.

Ultimately, this study has limited to use the personalization as adapting online text according to students' personal informations (name, objects, place, events) and choosing color, font style, picture by students on the computer screen. Future research can expand to other age groups and skill areas to examine the other kind of personalization implications (supplemented with sound effects, animations etc.) on the electronic text. Future studies should include a larger sample, more sensitive measures of personalization.

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