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Gamified E-Reading Experiences and Their Impact on Reading Comprehension and Attitude in EFL Classes

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ABSTRACT

The use of computers and electronic devices for recreational reading and for reading in educational settings has gone up significantly in recent years. Whereas the digital revolution is rapidly changing the world, it is also changing education. This study examined the perceptions of secondary school EFL learners in Turkey of their e-reading experiences based on their gamified electronic reading practices in school and their influence on reading comprehension performance in an EFL class. The findings revealed that the implementation of e-book reading resulted in higher comprehension levels and more positive reading attitudes. Participant students showed a preference for printed books rather than electronic books for leisure due to the sense of ownership that the printed text storybooks offered. However, the results indicate that EFL learners' use of screen reading has the potential to improve students' attitudes towards reading in educational settings.

KEYWORDS

EFL, Electronic Reading, Gamification, Gamified E-Reading, Reading Attitude

INTRODUCTION

A technologically literate population is a hallmark of any nation in pursuit of sustainable and successful growth, and reading plays an essential role in this context as it is vital to anyone who wishes to learn a skill; it allows individuals to remain on top of current affairs and this steers life trajectory and empowers the wider community to participate in civic engagement (Mullis et al., 2011). Scholars in the field of education hold this vision. They never stop studying and discovering ways to improve one's reading ability in their effort to extend the area of their expertise (Mckee, 2012; Mokhtari & Richard, 2002; Mullis, et al., 2011).

Gamification has become a trending topic in education because of its impact on student learning (Göksün & Gürsoy, 2019). Gamification is the technique of adding game elements to non-game contexts (Deterding et al., 2011). The goal of gamification is not to create a new game-like environment, but to move the elements of the game into the real world to catch similar senses without leaving the truth (Arkün-Kocadere & Samur, 2016, pp. 397–414). Gamification in education is a way of playing imaginative games in the classroom without endangering a curriculum's scientific nature (Nolan & McBride, 2014). Gamification helps the individuals in an educational setting to develop critical thinking and multi-tasking by educating effective digital natives of the 21st century (Kapp, 2012; Prensky, 2014). Gamification also turns the learning experience into a more enjoyable one and increases the students' motivation to learn and study (Muntean, 2011). Moreover, gamification

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offers student learning data by allowing more accessible, reliable, and timely information for students, parents, administrators, and policymakers (Darling-Hammond, 2010).

Gamified e-books offer incentives to young readers to explore the world of literature. The power of gamification to incentivize engagement has not been recognized by most educators. Khan Academy, a free to use learning resource containing lectures on subjects from mathematics to music, utilizes the badge system to illustrate subject mastery. It also encourages the "students" of Khan Academy to return daily, by awarding achievements for logging in to the website over a certain period. Public schools and universities are also following suit. Teachers are incorporating badge systems into the classroom to reward performance achievements. McGraw Hill Publishing's "Connect" platform has online activities to accompany textbooks; these activities often display a score and leaderboard, so students can compare the points they've earned to their classmates' scores or their own personal best. The use of achievements has been shown to improve student performance by allowing them to reach tangible goals before the end of the course (Ames, 1992). The literature of gamification in EFL classes is limited and there is not enough research about the influences of gamification in education to increase learning outcomes, particularly in reading skill. Therefore, the current study seeks to identify the potential effects of gamification on Turkish EFL sixth-grade students' reading comprehension and digital attitudes.

GAMIFICATION IN EDUCATION

Secondary school learners' reading abilities are at risk as they have experienced repeated struggles and tend to adopt a passive role during instruction all around the world (Zimmerman & Schunk, 2006). In contrast, when the literature is analyzed, gamification has been used for numerous motives in educational backgrounds with positive learning results (Millis et al., 2017; Noroozi, McAlister, et al., 2016).

Learners frequently conveyed that having gamified EFL settings is pleasing, enjoyable, interactive, and stimulating (Baldauf, Brandner, & Wimmer, 2017; Guaqueta & Castro-Garces, 2018; Homer, Hew, & Tan, 2018; Medina & Hurtado, 2017; Sun & Hsieh, 2018), as it gives the students a chance to get involved in the learning process (Guaqueta & Castro-Garces, 2018). According to Morford et al. (2014), elements of game playing (e.g., a player's direct impact on the game's results, clear end goals, rules for play, and development of strategies to complete the tasks) can serve to motivate students in three different ways. First, these gaming elements can be socially motivating by offering opportunities for collaboration with team members or competition with other players. Second, academic games are emotionally motivating when students earn rewards and receive feedback because they become immersed in the game's tasks. Finally, to instantiate these properties, the game must be sufficiently challenging to engage students without frustrating them.

Gamification has also been used for assessment. The primary purpose of adding game elements is to better engage the test taker (Armstrong et al, 2016), but by changing students' attitudes and behaviors, gamification could affect assessment outcomes in ways not well understood by the test developers (Landers, 2014). This may be why gamified assessments tend to be simpler and use basic game elements such as 2-D graphics and sound effects; whereas training games are more likely to resemble high-tech, commercial video games such as 3-D graphics and role-playing (Armstrong et al., 2016).

Researchers have advised test developers to add game elements iteratively, starting with a few and gradually increasing or refining them (Landers, 2014). This allows investigating how the elements are affecting test takers—including those with disabilities—and the test's validity. Previous studies have focused on quantitative factors that mediate or moderate students' performance on computerized assessments such as grade or age, gender, special education, attitudinal ratings, and categorical designations for computer features.

GAMIFICATION IN FOREIGN LANGUAGE CLASSES

When it is compared with traditional electronic books, learning with gamified electronic books has become a gradually more striking alternative, which can attract the interest of learners. Gamification is a term that has acquired ample attention (Deterding et al. 2011; Kapp, 2012; Lee & Hammer, 2011). Game mechanics can be defined as the rules that control the player's moves and the game's response to the players. According to Kapp (2012), points, levels, challenges, feedback and leaderboards are the most common game mechanics.

Points / levels: Instead of giving concrete rewards, when players perform the challenges in the game successfully, they receive points, they think they are rewarded. Gamified electronic books generally have interactive point systems. The reward systems which are integrated in digital games are one of the significant reasons for player interaction (Reeves & Read 2009). Zagal et al. (2005) categorize points and levels as goal metrics, they keep track of the game and show progress on player performance.

Challenges (with badges, achievements, and trophies): The introduction of challenges in an activity makes students (users) feel like they are working toward a goal. Csikszentmihalyi (1990) claims that challenges should be organized according to the user's ability, they should not be too hard or too easy. If the challenge is lower than the ability of the player, it results in boredom and detachment, whereas when it is much higher than the player's ability, it creates anxiety, stress and ultimately resignation (Csikszentmihalyi, 1975). If the challenge is high but within the capacity of the player, the result is a state of flow - extreme absorption, enjoyment and feelings of achievement (Csikszentmihalyi, 1990).

Feedback: Feedback plays an essential role in improving and sustaining the cognitive engagement of learners (Gresalfi & Barnes, 2016). Receiving feedback reduces the cognitive load of the player and decreases the uncertainty condition inside of the game (Chang et al. 2017).

Leader boards or "high-score tables": Leaderboards not only motivate certain players to continue to illustrate honor over achievement (Werbach & Hunter, 2012; Yee, 2006), these game elements also cause competition, and fear (Mekler et al., 2013).

In educational settings, scoring, stars, and points have always been used by educators in classes. As a results, points, levels, badges, achievements, feedback, and leaderboards are the most commonly employed game elements in game and non-game contexts.

The use of gamified reading in EFL classes might increase the inner motivation of the learner (Liman Kaban & Karadeniz, 2021). Zhu et al. (2018) also examined the consequence of using gamification on reading literacy. There were twenty-nine students from the elementary stage. The results revealed that gamification influenced learners' reading comprehension positively. On the other hand, Chen et al., (2019) examined the influences of using gamification on fifty-five fifth grade students' reading performance. According to the study, there were no statistically significant differences between groups. Yavuz, Ozdemir, and Celik (2020) claimed that the students who had gamified treatment showed statistically lower anxiety levels than the students using the traditional methods. According to Phuong (2020), students' attitudes towards a gamified learning environment in an EFL class was positive.

"Reading Battle" a gamified activity to strengthen student's reading comprehension, supported active reading practices in students who used the gamified reading, improved their academic performance, enhanced their reading competence, and boosted their reading motivation (Li, Mok, Cheng & Chu, 2018). Liman Kaban and Karadeniz, (2021) could not find statistically significant differences in the reading comprehension scores of sixth grade EFL students in a state school between groups, but they found students who took gamified treatment increased their motivation. It is possible to conclude from these studies that gamified reading can increase the motivation of reading but may have less influence on reading comprehension.

READING ATTITUDE IN THE DIGITAL AGE

Reading attitude can be defined as the mood about reading that affects the embracing or avoidance of positive reading habits. Research consistently highlights a worsening of students' reading attitudes as they move through school (McKenna et al., 1995). In fact, many students self-identify as nonreaders or resistant readers (Lenters, 2006). It is possible to state that when students label themselves as a non-reader, they also show a digital attitude against reading. It is necessary to contemplate students' digital attitudes for various reasons. Reading in digital mode means the comprehension of codes illustrated digitally. Different from reading on traditional paper, reading electronic texts helps the reader make choices of entry points into a text and the selection of paths to follow (Rhodes & Robnolt, 2009). Research on the relationships between the increased use of electronic reading and outcomes is in the early stages. The purpose of this paper is to investigate adolescents' reading by investigating four modes of reading: 1) academic paper mode, 2) academic digital mode, 3) recreation paper mode and 4) recreation digital mode.

METHODS

The main purpose of this study is to determine the influences of gamified electronic book reading on reading attitude levels of sixth grade EFL students at a private school in Istanbul, Turkey. The secondary purpose of the study is to analyze secondary school English teachers' opinions about their experience in using a gamified electronic book platform. In this study, both quantitative and qualitative data collection instruments were used. In this quasi-experimental study, data were gathered through a 5 point Likert-type Adolescent Reading Attitudes Survey (ARAS) and teacher / student focus group interviews. Random sampling was not used in this design due to feasibility reasons. The groups that were present were matched for certain features and participants were randomly assigned to the groups. However, this still did not guarantee that these groups were equivalent.

RESEARCH QUESTION

The question "What are the effects of using gamified reading applications on students' reading attitudes in EFL Classes?" forms the basis of the research.

The sub-questions investigated within the framework of the basic question of the study are as follows:

1. What is the impact of gamified reading comprehension activities on students' reading attitude?
2. What are the professional and personal views of teachers on gamification?
    a. What are the views and recommendations of teachers who participated in activities in the gamified linear electronic reading program?
    b. What are the views and recommendations of teachers who participated in activities in the gamified non-linear electronic reading program?
3. What are the perceptions of the students about gamified e-reading?

This study scrutinized these subjects through the data gathered from the tests and scales taken by the participating young learners who had been exposed to gamified online reading lessons and from the perceptions of these students and of their teachers who had implemented the lessons. With the aim of investigating the above questions, this study involved 70 young learners, who were currently sixth graders, and three EFL teachers at a private secondary school in Istanbul, Turkey, and included a qualitative analysis of student and teacher focused interviews and teacher journals to form a solid student and teacher based views on applying gamified reading in and outside the classroom.

RESEARCH DESIGN

The quantitative part of the study was composed of a reading comprehension placement test that was applied before the implementation to determine the English reading comprehension levels of the participants as a pre-test, a reading comprehension as a post-test, and a Likert-scale Adolescent Reading Attitudes Survey (ARAS) by the student participants both as a pre-test and post-test. As for qualitative data, they were composed of the interviews of the participant teachers conducted by the researcher online and interviews with 15 students chosen randomly among the participants.

As the implementation of gamified online reading lessons in 2 sixth grade classrooms was designed as a specific instance in action to illustrate more general grounds in a real context and its effect was gauged and explored with a control group, the present study can be described as a case study with a quasi-experimental study. To determine the current English proficiency levels of the participant students, a four-skill placement test was conducted in 3 classes simultaneously at the very beginning of the study. To find out whether the treatments lead to increased reading comprehension of the 72 participants, two sets of pre- and post-tests were performed at the beginning and the end of the four-week teaching intervention. Finally, to complement the findings from quantitative tests and questionnaires, interviews with the teachers along with the answers provided by the participant students in the focus group interviews were analyzed qualitatively (Table 1).

SETTING AND PARTICIPANTS

This study was conducted at a private secondary school in Turkey, İstanbul. The EFL program which the sixth graders of the school – the participants of the present study – were exposed to is a four-skill integrated curriculum with 2 lesson hours each week. A private school which had at least three sixth graders class and 24 students in each classroom was found, in which this study was carried out. Two teachers stayed in each class: one Turkish EFL teacher as an observer and the researcher who is also an experienced EFL teacher. The experiment was conducted as an after school online activity and 40 minutes was allocated for each book every week. The ages of the students varied between 11 and 12.

Table 1. Design groups in the study

Groups	Pre- Test	Treatment	Post-Test
Gamified Linear Electronic Reading Program	Reading Comprehension Test Adolescent Reading Attitudes Survey (ARAS)	Four week reading program was applied with a 40 minute long gamified linear reading session every week. Students read 4 books in total.	Reading Comprehension Test Adolescent Reading Attitudes Survey (ARAS) Structured Interviews with students / teachers
Gamified Non-linear Electronic Reading Program	Reading Comprehension Test Adolescent Reading Attitudes Survey (ARAS)	Four week reading program was applied with a 40 minute long gamified non-linear e-reading session every week. Students read 4 books in total.	Reading Comprehension Test Adolescent Reading Attitudes Survey (ARAS) Structured Interviews with students / teachers
Printed Guided Reading Program	Reading Comprehension Test Adolescent Reading Attitudes Survey (ARAS)	Four week reading program was applied with a 40 minute long printed guided reading session every week. Students read 4 books in total.	Reading Comprehension Test Adolescent Reading Attitudes Survey (ARAS) Structured Interviews with students / teachers

PROCEDURES

No names were used throughout the report to ensure confidentiality. Written permission was obtained from the principal. We also received written consent from each of the seventy-two students' parents. The informed consent also gave contact information for the researcher and research advisor.

Part of the data collection instruments includes in-depth analytical procedures that clarify and analyze quantitative and qualitative methods; data collection procedures that illustrate data sources, sampling, method of implementation, and guidance. At the end of the four-week reading program, a post-test was given to see if there was any significant difference in reading attitude of the three groups of EFL students. Students and teachers were interviewed individually with videoconferencing by a trained research team member.

Both the pre-test and the post-test were in the same format of multiple-choice questions from the reading comprehension texts which were created by field experts. For triangulation, a qualitative interview from the respondents had been done to support the results from the statistical findings after the post-test. To answer the research question, an independent and a paired sample t-tests were carried out to study the effects of the employment of the digital reading program on students' reading comprehension of English short prose texts before and after the program. ANCOVA analysis with pretest as a covariate was also employed to check if there is any significant difference in the comprehension pretest and post-test of the EFL readers of the two groups.

MEASURES

Reading Comprehension Tests and Gamified Electronic Reading Platform

Reading comprehension tests were used to assess the students' level of comprehension before and after the study as a pre-test and post-test. Reading comprehension tests were developed to compare reading comprehension of the students on the content of the four weeks of the electronic reading course by field experts. "Raz-Kids" was the platform used for reading online. Access to the program was granted by the GLOBED Company for the study to the sixth graders in the school. The program was initiated in 2004 and it is an internet-based computer program for young readers around the world (http://www.raz-kids.com). The program's features let students listen to fluent reading, record their own practice reading, and take a quiz at the end of reading. It also encourages teachers to set up individual accounts for each student so that an individual student can engage on their own level in independent reading. Points are given as a reward to listen to and read the story and take the quiz. Such points can be used to buy items that are included in the software as a game option for a learner's Raz Rocket. When leveling their books, the software used qualitative and quantitative data. It used a system of letters to describe each level of the book. The level of the book was associated with other common leveling programs like Developmental Reading Assessment, Lexile, and Reading Recovery.

The features of the gamified e-book platform are progress bar, leaderboard, badges, customizing the avatar/environment, fixed reward schedule, and immediate feedback. Participants used the platform at school in their EFL lessons.

SURVEY OF ADOLESCENT READING ATTITUDES

The Adolescent Reading Attitudes Survey (ARAS), developed by McKenna et al., (1995) determines the reading attitudes of adolescents regarding recreational and academic content in either print or digital format, and is scored to reveal positive, somewhat positive, neutral/indifferent, somewhat negative or negative attitude about recreational reading in print settings, recreational reading in digital settings, academic reading in print settings, and academic reading in digital settings. Bastug and Keskin (2013) adapted the questionnaire to the Turkish setting and permission to use the questionnaire was received

from them. Bastug and Keskin (2013) tested the adaptation of the Adolescent Reading Attitudes Survey on 702 sixth, seventh, and eighth-grade students in Konya - 343 of them being female and the remaining 359 being male. The exploratory factor analysis and confirmatory factor analysis revealed that the four original sub-dimensions were retained when two items were omitted. Cronbach's alpha coefficients were 0.691, 0.802, 0.690, 0.606, and 0.623 for the overall scale, RD, RP, AP, and AD respectively, suggesting that the adapted scale was reliable and valid.

One of the preferred methods within the scope of the reliability of the scale was to examine internal reliability. Cronbach-Alpha values were examined to examine internal reliability. The data obtained from the pilot study were analyzed descriptively via SPSS 22 and the alpha value of the related Cronbach was shown to be .94, which indicated that the test was statistically sufficiently accurate.

STRUCTURED INTERVIEWS

Structured interviews were conducted with the teachers in the chosen secondary school. The participants were asked four questions in the interviews, which were applied as a method of data collection to gather qualitative data. These questions were included in the interviews aimed at assessing the views of teachers on the positive/negative effects of the strategies used in gamified reading with regard to learning, peer engagement, learner-teacher interaction, and problems encountered during implementation and resolution of these problems and provided feedback. The researcher and two field experts in the field coded the data separately to supply interrater reliability. Miles and Huberman's (1994) formula which requires 80% agreement between the coders was used, and it indicated interrater reliability ($P > 92\%$).

Instruction Procedure

Treatment Group 1: Gamified Linear Electronic Reading Program

The gamified linear electronic reading program (Figure 1) was implemented for 4 weeks with 40-minute sessions each week. All 24 students were required to log in to the program during each session. Each student had their own username and password, and the software was set to their level of reading. The timer was set at 40 minutes for students to listen, read, and take quizzes on the books identified for their level. During these lessons, students were not allowed to control other features of the program and students were given training and instructions by the researcher to develop their reading fluency and comprehension skills before the experiment started for guided reading. The researcher decided on the order of the books to be read by the learners.

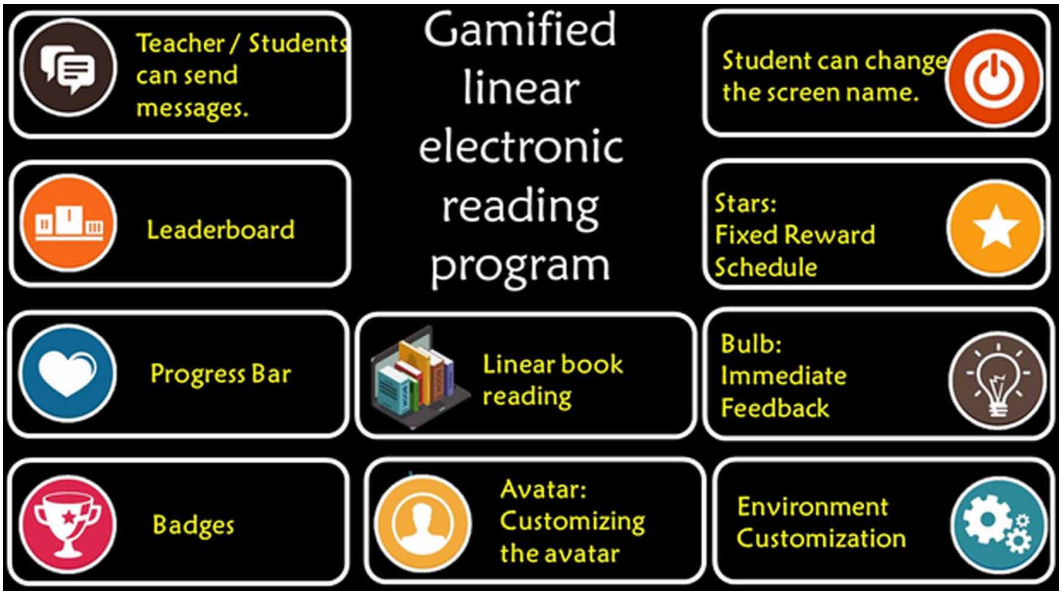
Treatment Group 2: Gamified Non-linear Electronic Reading Program

The gamified non-linear electronic reading program (Figure 2) was also implemented for 4 weeks with 40-minute sessions each week. All 24 students were required to log in to the program during each session. Each student had their own username and password, and the software was set to their level of reading. The timer was set at 40 minutes for students to listen, read, and take quizzes on the books identified for their level. During these lessons, students were not allowed to control other features of the program and students were given training and instructions by the researcher to develop their reading fluency and comprehension skills before the experiment started for guided reading. The researcher decided on the order of the books to be read by the learners.

Control Group: Printed Guided Book Reading Program

The printed guided book reading program (Figure 3) was presented for 4 weeks in each class with 40-minute sessions. All 24 students were required to read printed books during each session. Each child had their own printed book and the books appropriate for their level of reading were chosen. The timer was set at 40 minutes for students to read and take quizzes on the books identified for

Figure 1. Features of the Gamified Linear Electronic Reading Program



their level. During these lessons, the teacher acted as a guide for them and were given training and instructions by the researcher to develop their reading fluency and comprehension skills before the experiment started for guided reading. The researcher decided on the order of the books to be read by the learners.

Figure 2. Features of Features of the Gamified Non-linear Electronic Book Reading Program

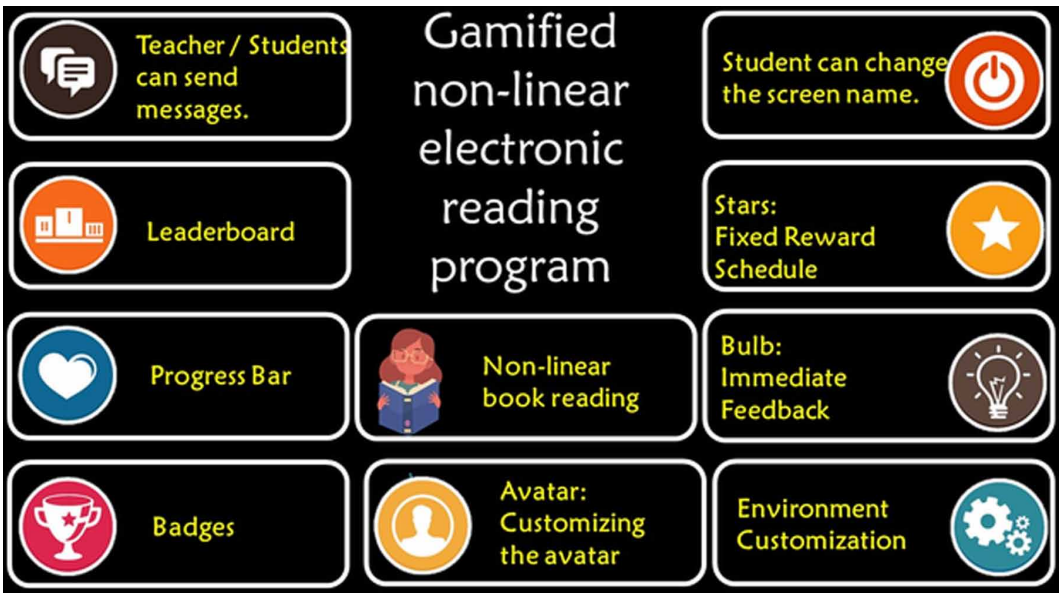
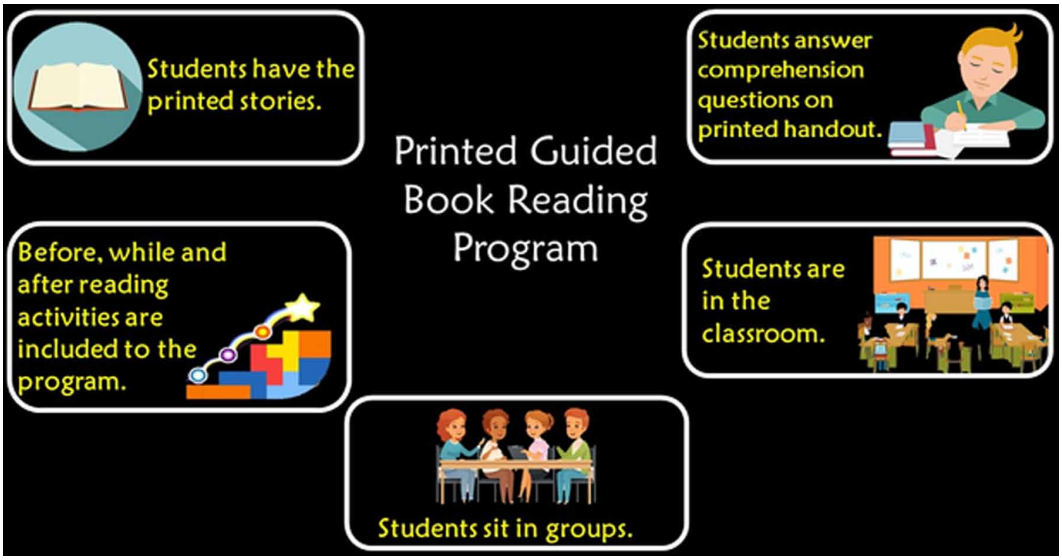


Figure 3. Features of the Printed Guided Reading Program



RESULTS AND DISCUSSION

Findings of the Influence of Linear Gamified Reading, Non-Linear Gamified Reading and Printed Book Reading on Reading Comprehension Levels

Data analysis showed a significant difference between the reading performance of EFL experimental and control groups in terms of their prose comprehension in pre- and post-tests. The comparison between these groups is shown in the Table 2. The table makes the comparison by using the mean score and standard deviation of the three groups.

The analysis shown in Table 2 suggests similar findings with previous research. The findings of the current study show that digital reading is effective in improving reading comprehension of the literary texts by EFL readers as the mean score of post-tests after the treatment of exposure to digital reading is higher than the pre-test scores in all cases.

Findings of the Influence of Gamified Linear Reading, a Non-Linear Gamified Reading and Printed Book Reading on Reading Attitude Levels

This analysis shows the overall e-book reading attitude of the experimental and control groups. A comparative analysis was made and the between-group statistics were tabulated to discover whether there was a statistically significant difference between the e-book reading attitude scores of the

Table 2. Comparison of Pre- and Post-Test Reading Comprehension of EFL Experimental and Control Groups

Groups		Mean	SD	F-value	p-value	Effect size
Gamified Non-linear Electronic Reading Group (n=24)	Pre-test Post-test	46.02 51.91	19.17 20.01	44.63 47.82	.000 .000	0.95 0.97
Gamified Non-linear Electronic Reading Group (n=24)	Pre-test Post-test	46.42 53.29	19.67 21.72	42.86 48.41	.000 .000	0.95 0.98
Printed Guided Book Reading Group (n=24)	Pre-test Post-test	46.22 51.84	19.56 20.02	44.85 47.76	.000 .000	0.95 0.97

Table 3. Examination of Reading Attitude Measurement Invariance at Groups

Groups	Gamified Linear Electronic Reading Group (n=24)		Gamified Non-linear Electronic Reading Group (n=24)		Printed Guided Book Reading Group (n=24)		KW	P
	Mean	Sd	Mean	Sd	Mean	Sd		
Pre Academic Digital	3,95	0,76	4,85	0,32	3,45	0,79	13,83	0,00*
Post Academic Digital	5,18	0,54	5,70	0,38	3,60	0,79	29,97	0,00*
Pre Recreative Digital	2,76	0,83	3,15	0,52	2,04	0,26	37,60	0,00*
Post Recreative Digital	2,80	0,88	3,68	0,28	2,38	0,42	49,08	0,00*
Pre Academic Paper	2,26	0,70	2,73	0,64	1,66	0,00	30,06	0,00*
Post Academic Paper	2,25	0,69	2,93	0,45	1,73	0,13	40,49	0,00*
Pre Recreative Paper	3,29	2,03	4,33	2,12	2,45	2,02	8,75	0,03*
Post Recreative Paper	4,79	1,14	5,29	1,16	2,45	2,02	26,98	0,00*
Pre General E-book reading Attitude	4,22	1,13	4,43	1,06	3,64	1,25	9,21	0,02*
Post General E-book reading Attitude	4,75	0,60	4,87	0,71	4,08	1,01	9,77	0,02*

treatment and control groups due to the different reading environments: linear gamified reading, non-linear gamified reading, and printed book reading.

Table 3 shows that there was a statistically significant difference between the groups with regard to the pre academic digital scores and post academic digital scores in the e-book digital reading attitude questionnaire ($\chi^2(3) = 13,83, P = 0,00 < 0.05$). It was observed that pre academic digital scores of the non-linear gamified e-book reading group ($x\boxtimes = 4,85$) were higher compared to the scores of linear gamified e-book reading groups ($x\boxtimes = 3,08$). And a comparison of the pre academic digital scores of non-linear gamified e-book reading groups ($x\boxtimes = 4,85$) and printed book reading groups ($x\boxtimes = 3,45$) indicated the former to be higher than the latter.

Post academic digital scores of the students also differed significantly between the groups ($\chi^2(3) = 29,97, P = 0,00 < 0.05$). Nonlinear gamified e-book reading group's post academic digital scores ($x\boxtimes=5,70$) were higher than linear gamified e-book reading group's post academic digital scores ($x\boxtimes=4,89$). The non-linear gamified e-book reading group's post academic digital scores ($x\boxtimes = 5,70$) were also higher than printed book reading group's post academic digital scores ($x\boxtimes = 5,18$). A comparison of the post academic digital scores of linear gamified e-book reading group ($x\boxtimes = 5,70$) and printed book reading group ($x\boxtimes = 3,45$) also revealed the linear gamified e-book reading group's scores to be higher.

Post recreative digital scores of the students also showed a significant difference among the groups ($\chi^2(3)= 49,08, P = 0,00 < 0.05$). Non-linear gamified e-book reading group's post recreative digital scores ($x\boxtimes = 3,55$) were seen to be higher than printed book reading group's post recreative digital

scores *(x⊠=2,80).* And linear gamified e-book reading group's post recreative digital scores *(x⊠=3,55)* were higher than printed book reading group's post recreative digital scores *(x⊠=2,38).*

Post academic paper scores of the students differed significantly among the groups as well *(χ^2(3)=40,49, P = 0,00 < 0.05).* It was seen that non-linear gamified e-book reading group's post academic paper scores *(x⊠=2,69)* were higher than printed book reading group's post academic paper scores *(x⊠=1,73).* Also, the linear gamified e-book reading group's post academic paper scores *(x⊠=2,93),* were higher than printed book reading group's post academic paper scores *(x⊠=2,25).*

There was a significant difference between the post recreative paper scores of the different groups *(χ^2(3)=26,98, P = 0,0 < 0.05).* When compared to the post recreative paper scores of the printed book reading group *(x⊠=2,45),* the non-linear gamified e-book reading group's post recreative paper scores *(x⊠=5,29)* were seen to be higher. The linear gamified e-book reading group's post recreative paper scores *(x⊠=4,79)* were also higher than the printed book reading group's post recreative paper scores *(x⊠=2,45).*

Finally, the comparison of the groups in terms of their post general reading attitude scores also revealed a significant difference between the groups *(χ^2(3)=9,77, P = 0,00 < 0.05).* The non-linear gamified e-book reading group's post general reading attitude scores *(x⊠=4,87)* were higher than the linear gamified e-book reading group's post general reading attitude scores *(x⊠=4,75).* The non-linear gamified e-book reading group's post general reading attitude scores *(x⊠=4,87),* were also higher than the printed book reading group's post general reading attitude scores *(x⊠=4,08).*

Focus Group Interviews with Participant Students after the Experiment

The interviews were transcribed from the recordings. The analysis and subsequent coding of transcripts revealed some common themes and the findings below are presented under these themes. In order to support the content of the themes, direct quotations of the participants were included.

The qualitative interviews with the respondents after the post-test revealed that most of the EFL students preferred to read on their screens digitally rather than using old-fashioned print reading. In total, 83% of EFL sixth grade students participating in the study showed a preference for digital reading rather than print reading. This high percentage confirms that today's generation, no matter what their native language is, tend to use modern technologies and be up-to-date all the time rather than being immersed in the traditional method of teaching and learning by the use of paper. In the focus group interviews, the students mentioned the reasons for their choice as being able to search online quickly and with no difficulty if they have difficulty in understanding any word or even the whole text, being equipped with audio or visual elements in the written text, or even the exciting pleasure of using the technology itself. However, the little percentage of the rest of the respondents who indicated a preference for print reading mentioned that they can understand better if they have a pen/pencil in their hand and take some notes, underline, circle, or highlight any parts that they think they need to pay more attention to. Some of them also mentioned that they are able to read and understand uisng both methods but because for years they were trained to use print texts, they just prefer to have the text physically on paper.

Learner Autonomy

The first theme emerging from the interview data was about how electronic reading influenced students' EFL reading process and habits. When the transcripts of focus group interviews were analyzed, it was possible to state that students who were reading from the screen thought they were responsible for their own learning and many students claimed that they found electronic reading quite enjoyable and they considered electronic reading as a comfortable environment to read stories compared to a guided printed book reading group. It was also noticed that reading texts online helped them feel more confident. Below are some excerpts from student interviews regarding these findings:

[...] I felt in a rush when I read the story in the lesson. With the help of time, I think I got used to it. When I read the stories I felt responsible and motivated to read the stories. (S2, Non-linear Gamified E-book Reading Group, Interview Data, 05.11.2019)
[...] Everyone in the online class was reading stories in the lesson and we have never done this before which made the lesson more interesting. Each story's ending and main characters were different. We compared the stories in the break time. The best thing was to get the help of the teacher. (S5, Linear Gamified E-book Reading Group, Interview Data, 05.11.2019)

These excerpts illustrate that e-book reading may have encouraged students to improve their *"self-regulated learning skills"* since they have recognized that they were able to learn at their own pace. They also stated they were more actively engaged in the stories and most of the students talked about the confidence and motivation they acquired.

Online or Printed

In the interviews, the students were also asked whether they preferred electronic or printed material to read at school. Nearly all of the students stated that they would like to read online at school, but they also mentioned that they understand better when the text is printed.

Below are some excerpts from the answers of the students:

[...] I love when I buy printed books (S5, Linear Gamified E-book Reading Group, Interview Data, 05.11.2019)
[...] Storybooks are my favorite to read. I buy printed books. Until this time, I have never bought electronic books (S5, Non-linear Gamified E-book Reading Group, Interview Data, 04.11.2019)
[...] I underline the important parts in school course books (S2, Non-linear Gamified E-book Reading Group, Interview Data, 05.11.2019)

Although students were more motivated to read e-books, they claimed they preferred to read printed books in their free time as a recreational activity. They also mentioned that they remember more when they read printed text.

Immediate Feedback

In the focus group interviews, students in the non-linear gamified and linear gamified e-reading groups were asked questions about the advantages of using electronic reading. Nearly all the students said that they would like to read online at school as they get immediate feedback.

Some excerpts from student replies:

[...] It was good to take feedback, to see the answers after we completed. (S4, Non-linear Gamified E-book Reading Group, Interview Data, 04.11.2019)
[...] When we finish the reading, the rocket flew. It was cool. (S1, Linear Gamified E-book Reading Group, Interview Data, 04.11.2019)

Students in the printed reading group were also asked about the disadvantages of using the reading program. Nearly all of the students stated that they would like to get immediate feedback.

Some of the answers of the participants:

[...] We answered the test but the teacher collected those papers and gave feedback on the other week after she checked the results. (S2, Printed Book Reading Focus Group, Interview Data, 05.11.2019
[...]We did not learn the correct answers weekly. (S1, Printed Book Reading Focus Group, Interview Data, 05.11.2019)

Participants of the printed book reading sessions complained about not getting immediate feedback from their teacher. They also noted that as the answer key was given verbally, they could not take the notes properly, which suggests an advantage for the electronic books as they are more feasible in terms of students getting immediate feedback and being able to see the answers individually on the screen rather than hearing them.

Focus Group Interviews with Participant Teachers after the Experiment

The findings showed that the observer teacher of the non-linear gamified and linear gamified e-book reading groups felt satisfied with the lesson in different ways such as the learning environment and the engagement it creates. And teachers also commented on some of its negative aspects.

Learning Environment

The participants were found to be actively practicing independent reading during the e-book reading sessions. The replies from observing teachers suggested that this learning environment might increase reading comprehension and autonomy of the learners.

The statements below illustrate these findings:

[…] Class read online and I observed them they look really engaged. When they were reading their cameras were on, when they do not understand they asked questions. (T1, Non-linear Gamified E-book Reading Group, Journal Data, 23.10.2019)
[…] When they come across an unknown vocabulary, they use an online dictionary and note the new word in their online notebooks. They learned new vocabulary alone, while they were reading, doing some internet research. (T2, Linear Gamified E-book Reading Group, Journal Data, 23.10.2019)

All in all, teachers' reflections reveal that e-book reading lessons offered students the ability to plan their path of learning or discover new ways of learning on their own. In addition, it could also be concluded that such an "autonomous learning environment" provided students with the ability to learn in individually diverse ways. They also added that even though all the participants had gone through some pedagogical and technical challenges, they were willing to use electronic reading; and their answers indicated that this was mainly because they believed the necessity to make use of technology in teaching and had already witnessed its benefits especially in terms of motivating the students.

Ownership and Reader Preferences

When analyzing the results, it was seen that teachers in all groups mentioned that they prefer owning and reading print books over e-books.

Some of their comments are extracted below:

[…] I do not think that reading from screen is useful. When I read something, I need to take notes, and color the parts which are important. When I read online, I do not have this chance. (T1, Linear Gamified E-book Reading Group, Journal Data, 10.10.2019).
[…] It does not give me the pleasure of printed text. (T2, Linear Gamified E-book Reading Group, Journal Data, 10.10.2019).
[…] When I have the printed book in my hand, I like the texture of it, I love turning pages or underlining the sentences I like. (T4, Printed E-book Reading Group, Journal Data, 10.10.2019).

Overall, participant teachers seem to favor printed books as it gives them the chance to underline, and to take notes. Owning the printed book, underlining the important parts, and the texture of the book are still important habits that they cannot leave easily.

DISCUSSION AND CONCLUSION

The current research explored the effects of electronic reading classes on reading comprehension, reading attitude and reflections of sixth grade Turkish EFL students and teachers.

In this study, the impacts of gamified reading comprehension activities on students' reading attitude were analyzed. The research findings showed that all students who participated the study had improved their reading skills. In addition, it was found that the students had positive attitudes towards electronic reading as they were able to accomplish their goals more easily at their respective L2 levels and alone. The results of this study indicated that there is a statistically significant difference in reading attitudes of learners exposed to different instructional reading environments.

The findings indicated that the participants in the printed book reading group had lower reading attitude scores than the ones in non-linear and linear gamified e-book reading groups. A strong relationship between reading attitude and technology integration in classes were mentioned in previous studies (Baker & White, 2010; Hamari & Eranti, 2011). Therefore, it is possible to state that the use of electronic reading has a vital place in EFL classes and when students use digital platforms to read, their attitude might change towards positive especially when reading for academic purposes. In this research, the attitudes of sixth grade students towards reading at a high level had been found to be positive which is in line with the findings of many previous studies (Balcı et al., 2012; Durualp et al., 2013; İşeri, 2010).

The results showed that the non-linear gamified e-book reading group's academic digital scores were the highest. The reason behind this could be that students consider reading storybooks in class time as academic reading. When post recreative digital and paper scores were examined, it was found that students prefer to read printed books over e-books as a leisure activity, which calls for more electronic reading opportunities to change this impression. Another study shows that exposure to books from sources other than the library often predicts achievement in reading (Evans et al., 2010). As schools transition to paperless classrooms across the globe, the use of digital devices as reading resources has become increasingly relevant (Giebelhausen, 2015; Shishkovskaya, Sokolova, & Chernaya, 2015). Paperless classrooms enable the reader to adjust the text size, highlight important passages and search for relevant words outside of the text by clicking a button.

Overall, our results corroborate those of previous research, regarding differences in reading attitudes according to gender and type of reading (leisure vs. academic), showing a persistent gender effect among pupils in grade 4, favoring girls (McKenna et al., 1995, 2012), and more positive attitudes toward leisure reading than toward academic reading, even though there was a negative trend in attitudes toward both types of reading across grades. However, our finding that there are significant differences in reading attitudes were restricted to the period of sixth grade. The how and why of these changes during sixth grade in our study context are still unclear, but the transition should probably be regarded as one of the factors influencing young people's attitudes toward reading, at least in some contexts. These discrepant results also suggest that we cannot assume that the results of research on this subject are transferable, thus underlining the relevance of closely documenting these differences and changes in attitudes toward reading among pupils in the course of their schooling in a range of linguistic and education contexts.

The novelty of this research in the field of reading comprehension in digital environments lays in using gamified reading as the focus rather than e-books. This was also one of the few studies that examined storybooks, not educational books, in the area of gamification. The analysis contributed either to reading comprehension or gamified storybook reading, and it calls experts to consider conducting new research on the reading comprehension performance of the students using educational gamified books rather than the storybooks.

This study not only analyzed the perceptions of the students, but also teachers about gamified e-reading. The students in the study stated that they liked the tactile feature of the printed books. However, as young readers still tend to depend on the suggestions of the adults who are close to them

(Zasacka, 2017) the researcher contends that teachers, parents and eventually the students should be made more aware and informed of possible e-learning platforms or online electronic library sources. In Poland, Zasacka (2017) carried a comparative study on 12-13 year old learners to understand their reading behavior and digital media habits. In that study, 70% of the participants reported that they read texts which are created by their peers (blogs and fanzines). 37% percent of the participants revealed that they actively contribute content by creating their own websites and blogging (Zasacka, 2017). Nine percent of the respondents stated that they read books as a leisure activity (Zasacka, 2017).

As the current study indicates, the power of technology in reading classes lies in the instant and formative feedback it provides. Both students and their teachers in the experimental groups talked about the instant and formative feedback as an advantage online learning platforms supply but it should be noted that online reading platforms alone would not be sufficient to take advantage of formative assessment in the classroom. Along with it, the culture of the class should change, the atmosphere of trust and student centeredness should be the focus. When what we say and what we do contradicts, students learn what we do. According to Demir (2017), all types of immediate feedback interventions have a positive influence on transfer of learning. The same author further adds that immediate feedback has a constructive influence on learning transfer. Feedback is a task that needs to be handled with care and precision. An analysis study that reviewed 131 studies on feedback reveals that more than a third of feedback interventions actually reduce student performance (Kluger & DeNisi, 1996). Feedback that emphasizes especially negative aspects of the student performance and focuses only on correction can produce negative outcomes. Delayed feedback also loses its effect. Therefore, an effective, meaningful and understandable feedback should have the following characteristics: it should be on time, see effort, be specific, be process-oriented, organized, focus on development, ensure the transfer of knowledge, be mobilized, be tailor-made, cover the process, include more than just praise, and be appropriate for features and goals.

The largest social experiment in world history was conducted with about 1.6 billion students with the help of COVID-19 (Anderson, 2020; Zimmerman, 2020). When the COVID-19 pandemic began in Turkey, it was the middle of the spring term and as in many other countries all around the world, universities and schools had to turn quickly to online and interactive education platforms, embracing remote forms of teaching and learning when closures of the schools and universities were announced (Liman Kaban, 2020). Especially after COVID-19 the link between technology and learning has become inseparable. With this process, it is inevitable that these experiences will have reflections on the general education paradigm in the long run. Every crisis generates opportunities in its continuation. In this context, success as well as many failures stories and acquired experiences can be turned into an opportunity. Before COVID-9 struck the world not only the educators but also students were looking from afar against screen reading and were not familiar with online reading. With the assist of pandemic teaching, millions of students around the world had the chance to try electronic reading. It is possible to conclude that digital reading strategies will gain importance. Schools and administrators need to involve teachers in the design of policy. If they do not involve teachers to the process, teachers are not going to help you with implementation.

In summary, the results of the current study demonstrate that in EFL classes the use of screen reading lessons while teaching and learning reading can be considered an effective way to promote the growth of reading comprehension skills and can improve reading performance and reading attitude levels.

The findings of qualitative as well as quantitative data of this study prove that the digital reading of English reading comprehension texts affects the comprehension of such texts by EFL readers significantly in a positive sense. The successful performance of the experimental groups demonstrates that the digital reading of reading comprehension texts improves the EFL readers' understanding due to comprehensible input. Moreover, it was found that both groups of EFL readers prefer to read digitally rather than on print. A pedagogical implication that can be drawn from this study is that the language and literature teachers and course developers can provide more interactive and convenient

learning environment for the students with the help of digital resources that can motivate the students to learn in a way that they are more interested in and have more enjoyable experiences in their learning process. Although the significance of digital reading comprehension of English texts is confirmed in this study in both EFL contexts, it is still a long way for this method to be used in practice around the world.

Conflicts of Interest

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