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## THE NATURE AND POTENTIAL OF DIGITAL COLLABORATIVE READING PRACTICES FOR DEVELOPING ENGLISH AS A FOREIGN LANGUAGE

*Research Article*

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# THE NATURE AND POTENTIAL OF DIGITAL COLLABORATIVE READING PRACTICES FOR DEVELOPING EFL PROFICIENCY

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## Abstract

This study investigates the integration of a digital annotation tool (DAT) into an advanced English as a foreign language reading course. Informed by the recent research, the goals of the study are to exhibit the nature of L2 learners' engagement in digital social reading practices and illustrate the linguistic benefits of such practices for L2 learning from a learner perspective. In response to these objectives, a mixed-method research was employed. The analysis of the data including digital annotations and learners' reflection journals reveal that learners' engagement within collaborative reading environments is linked to factors such as the quality of posts rather than the quantity. In terms of perceived linguistic gains, the findings indicate that digital collaborative reading enabled learners to achieve a perceived development in reading, writing, and vocabulary. The study concludes by suggesting further research to examine the use of DAT in L2 teaching and learning settings, which highlight the extent of factors influencing L2 learners' engagement in digital social reading practices.

*Keywords:* Digital collaborative reading, English as a foreign language, digital literacies

## 1. Introduction

The development in information and communication technologies presented many opportunities for individuals to take part in technology-enhanced interactions, which can be leveraged in ways to create pedagogical spaces for language learners to engage in socio-interactive literacy practices (Kessler, 2018). Such diverse and complex literacies are afforded by mediums including digital annotation tools (DATs), which offer spaces for individuals to discuss various aspects of a multitude of texts through synchronous or asynchronous multimedia-enhanced contributions. This type of multi-layered reading practice is commonly referred as digital social reading (DSR). A typical DSR practice entails annotating a text uploaded via a DAT as text itself becomes the meeting space, which "highlights the virtual nature of social reading, an activity that is shared, yet spatially and cognitively distributed" (Blyth, 2014, p. 209). Thus, it has the potential to create formal and informal opportunities for learners to have access to texts within multimedia-rich environments featuring instructor or learner-provided within-reading supports (i.e., annotations). The research investigating digital social reading environments and literacies in both higher education settings in general (e.g., Sun & Gao, 2017) and second language teaching and learning contexts in particular (e.g., Thoms, Sung, & Poole, 2017) revealed that DATs could function as alternative pedagogical spaces affording various types of online interactions and opportunities for facilitating L2 learners' linguistic and social gains.

Despite a growing body of scholarship, further examination is needed to gain a deeper understanding of the nature of language learners' digital collaborative reading practices and students' reflections on their social reading experiences. The present study explores the nature of learner interactions mediated by a DAT and learners' perspectives on linguistic benefits of DSR practices in a tertiary-level advanced EFL reading course. The study aims to

contribute to the literature on the use of DAT for language teaching and learning purposes through the adoption of a DAT in the underexplored Turkish higher education context.

## 2. Literature Review

Literature has abounded in studies that have attempted to analyze the use of digital annotation tools (DATs) in higher education contexts. This body of research reveals DATs serving different roles in different instructional activities including the promotion of reading comprehension, meta-cognitive skills, critical analysis, and cultivating interactions between students-students and students-instructors (Novak, Razzouk, & Johnson, 2012; Sun & Gao, 2017). However, these studies were carried out in first language (L1) contexts and did not involve activities featuring the use and development of any second language (L2). The studies exclusively dealing with the use of DATs in second language teaching and learning (L2TL) environments are more recent and relatively more limited despite a growing body of literature.

Preliminary work explored the efficiency of DATs compared to print-based texts and other digital tools, which cannot be annotated (e.g., e-mail, instant messenger). In English as a Foreign Language (EFL) contexts, Yang, Zhang, Su, and Tsai (2011), and Lo, Yeh, and Sung (2013) run tests to compare an experimental group of learners engaging in collaborative reading practices with a control group of students, who used other types of digital tools without annotation features or the same tool in a read-only mode. Experiment groups were found to achieve much higher scores in both of the studies, thus demonstrating an increase in L2 learners' reading comprehension. Examining the annotations of 50 EFL students, Tseng, Yeh, and Yang (2015) found that frequently used annotations were marking vocabulary, adding Chinese (L1) notes to unknown vocabulary, marking text information, and adding summary notes to each paragraph. Among those, marking text information and adding summary notes were the main annotations that fostered learners' reading comprehension. Finally, in a series of recent studies, Yeh, Hung, and Chiang (2017) and Tseng and Yeh (2018) investigated EFL learners' reading comprehension levels by adopting Reciprocal Teaching (RT), an instructional framework as part of which learners undertake the role of teacher for collaborative construction of their understanding of texts. Pre- and post-reading comprehension tests in both studies indicated that the intervention of DAT helped learners enhance their reading comprehension. It is important to underscore here that the above-cited research was almost exclusively carried out in East Asian settings, where from lower to intermediate levels of EFL learners took part as participants.

Blyth's (2014) multiple-case study constituted an early attempt to explore pedagogical benefits of integrating a DAT (eComma) into teaching in a North American context. Investigating teachers' understanding of L2 literacy instruction through eComma in both undergraduate and graduate contexts, he concluded that eComma provided access to different types of digital reading, enabled learners to create a network, from which less expert readers benefited mostly, and allowed teachers to synthesize several activities (i.e., pre-reading, reading, post-reading) into a single activity (i.e., reading) in the medium. More recently, Thoms and Poole (2017, 2018) analyzed learners' interactions through a DAT in an advanced Spanish poetry course. Taking an ecological perspective in the first study, the researchers demonstrated that advanced learners had more social- or literary-related annotations compared to linguistic comments. Conducting another study in the same context, Thoms and Poole (2018) showed that the higher lexical diversity of texts (i.e., poems) led to a decrease in learners' annotations consisting of literary affordances. In other words, the study provided empirical evidence, which indicated that the factors not related to learners, such as text difficulty, could facilitate or limit certain types of affordances in digital reading spaces.

Thoms et al. (2017) examined the pedagogical and linguistic benefits of using a DAT in an undergraduate lower-level Chinese language class, in which learners read and commented on short stories written in Chinese characters over a two-week period. The results illustrated how learners interacted through inquiries for meaning of both vocabulary and Chinese characters while co-constructing meaning and scaffolding their learning in a digital environment. Finally, Solmaz (2020) investigated the role of a DAT in L2 socialization of EFL learners in a university-level reading class and found that students successfully socialized into various genres and communities by engaging in both expert and novice performances.

The perceptions and attitudes of learners and instructors in digital collaborative reading research has been explored by a number of authors (e.g., Blyth 2014, Lo, Yeh, & Sung, 2013). Participants engaging in social reading activities generally responded positively to DAT systems, with respect to perceived usefulness and ease of use, attitudes to share knowledge, thinking skills (Chang & Hsu, 2011; Lo et al., 2013; Yang et al., 2011) while reporting challenges such as frustrations with certain technical aspects of DATs, the difficulty of making distinct annotations to avoid repetition, existing comments impeding learners' understanding of texts (Thoms & Poole, 2017; Thoms et al., 2017). On the other hand, instructors were often reported to have favorable opinions about the incorporation of DATs into formal contexts despite a number of technical drawbacks (Blyth, 2014; Thoms & Poole, 2017).

A recently emerging strand of research concentrated on the use of digital collaborative reading systems for the professional development of L2 teachers. Michelson and Dupuy (2018) investigated six novice L2 teaching assistants' (TAs) academic literature discussions carried out in a DAT setting concurrent to a face-to-face methods course. The findings revealed that the experience enhanced teacher dialogues among L2 French teachers, and enabled them to co-construct an advanced conceptual knowledge of multiliteracies pedagogies.

In sum, the potential of DATs to facilitate social reading has been explored through a series of studies, which provide insight into the state of digital collaborative reading in L2TL contexts. However, further research is needed to understand the dynamic nature of L2 learners' socio-literacy practices and interactions in DAT systems, and to what extent their beliefs and practices align with the research on social and linguistic benefits of digital collaborative reading. Thus, the present study aims to fill a gap in the literature by attempting to address these research questions: 1) What is the nature of L2 learners' engagement in digital literacy practices when participating in social reading by means of a digital annotation tool?; 2) What are the linguistic benefits of digital social reading practices for L2 learning from a student perspective?

### **3. Method**

#### **3.1. Participants and Context**

The present study was conducted as part of an advanced-level undergraduate reading course offered in the second year of coursework at the department of English Language Teaching (ELT) at a university in Turkey. The study is part of a larger research project in which the same data-set was investigated through a different research question guided by the theoretical lens of socialization (see Solmaz, 2020). 12 students (9 females, 3 males), who were aged between 19-23 years old, participated in the present study. Majority of the students were able to access and use the internet regularly and had previous experience with the use of

technology for developing their language skills. The instructor of the course was the author, who had several years of experience in teaching at undergraduate ELT courses and had previously taught Advanced Reading courses.

The elective course required 2-hour meetings per week and aimed to support upper-intermediate English learners' development of reading skills by introducing them to a multitude of genres and various reading strategies. While the first six weeks of the course was centered more on theoretical aspects and required active presence of the instructor, the second part of eight-week period involved students uploading texts in various genres, and leading discussions in their respective groups. During the second part of the course, the instructor assisted learners to familiarize themselves with the use of digital annotation tool (DAT) through a text he uploaded and annotated for the first week. Later, students formed groups consisting of 3 to 5 members and each member found a text in a pre-determined genre, uploaded it to the DAT, annotated it (see Appendix for sample annotations) and led the online discussions evolving around annotations added by themselves and group members. Finally, students engaged in a similar activity for the final assignment (weeks 6-8) although they were able to select a text in the genre of their own choice. For this period, students were encouraged to participate in the discussions occurring in non-group members' texts as well. The students had a period of one week for the preparation of their texts and approximately ten days for the participation in other discussions. Following the end of activities, students were required to write a two to three-page journal, in which they reflected on their digital collaborative reading experiences. This pedagogical approach allowed both the teacher and the students to engage in face-to-face and online conversations to explore the various aspects of the text throughout the semester.

### 3.2. Digital Annotation Tool

For the present study, the participants used *SocialBook*, a free digital annotation tool which allows readers to engage in a variety of activities before, during, and after reading (Figure 1). Although the platform is still a work in progress, it offers access to a multitude of texts and enables users to upload their own materials as well. Individuals can upload a text and form a group around the document through inviting others. These texts can be annotated through commenting, underlining, and integrating multimedia resources such as uploading images or inserting links. Thanks to the digitally annotated documents by users, individuals can carry out conversations through threaded discussions. These threads are often formed as a result of certain parts of the text being annotated by users, thus resulting in a multi-layered discussion. Depending on the preference, these threaded conversations can be asynchronously led by either instructor or students in a pedagogical context. As is in the current research, students can upload texts, invite their classmates, and lead an online conversation, which is not constrained by time or space. Since the time and date stamps are automatically recorded, the instructor can follow the activities of the participants on the text. Despite the availability of several other annotation tools adopted in L2 research (e.g., eComma in Thoms et al., 2017; Hylighter in Thoms & Poole, 2017), *SocialBook* was selected for this study because the researcher had previous pedagogical experiences with the tool. He observed that a different group of students had positively engaged in using the medium in a different educational context. In addition, prior research employing *SocialBook* empirically in a language learning context was not present at the time of research design.

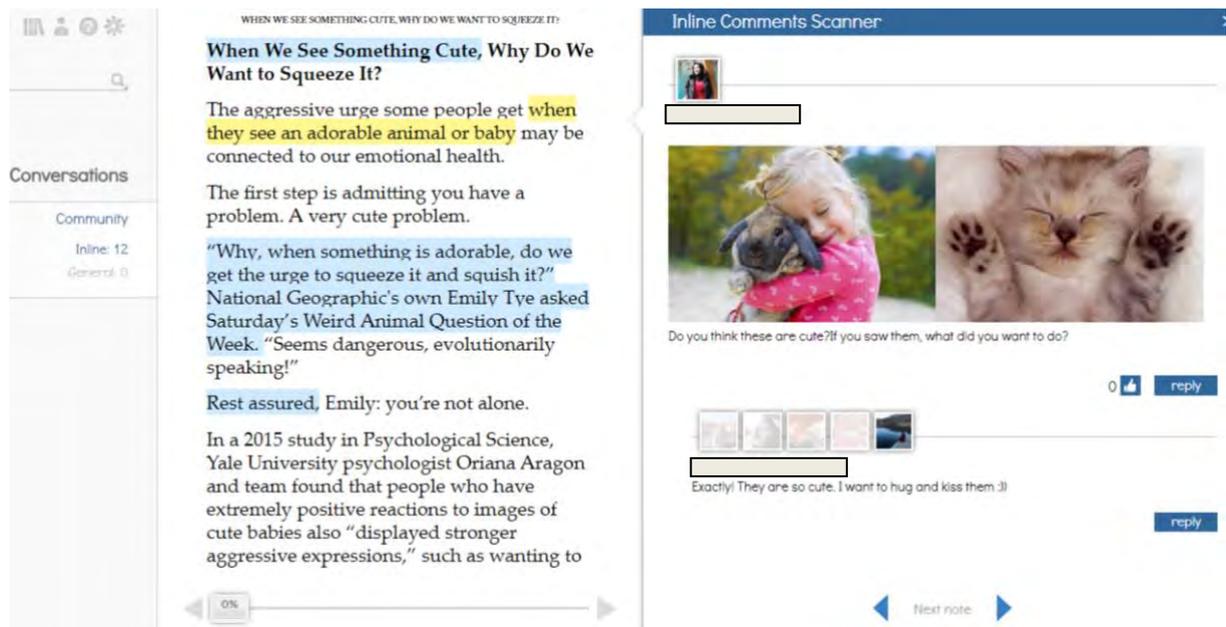


Figure 1. The Interface of SocialBook

### 3.3. Data Collection and Analysis

The present study utilizes a mixed methods approach by employing data sources which include a pre-study survey, annotations placed in the DAT, and learners' reflection journals. The survey aimed to illustrate a demographic picture of the learners and included questions to learn more about the individual's previous experiences of L2 learning with the assistance of web technologies, and whether they could access computer and internet at the place they live in. The second source of the data featured digital comments annotated by the instructor and participants during the activities. The collected data was quantitatively analyzed based on various indicators including the presence of multimedia or vocabulary-related discussions across the annotations as well as values such as mean values for discussion posts in the final project period. In an effort to understand the nature of students' participations and observe patterns regarding similarities and differences across their annotations, the data was analyzed by two main types of annotations: Initial Posts (IPs) and Response Posts (RPs). IPs were defined as the first posts which start or set a tone for the discussion of a specific part of the post. These posts often consisted of questions eliciting responses or comments from the participants (e.g., *What does the expression 'branch out' mean?*). RPs were taken as responses to initial posts emerging as part of the discussions across the texts. These posts were often in the form of responses to the directed questions (e.g., *It is to have an interest in something and growing it after realizing about it*), comments providing further insight to the discussion (e.g., *For example, knowing vocabulary may make it easy to branch out to speaking skill*), or links to external resources and multimedia (e.g., *check the link to see the trailer for one of his movies*). The statistical analysis of IPs and RPs constituted the quantitative part of the present investigation, the results of which allowed the researcher to answer the first research question regarding the nature of L2 learners' engagement in collaborative literacy practices through a DAT.

Learners' reflection journals and posts on DAT constituted the qualitative data. Reflection journals were particularly valuable as it served the purpose of gaining insight towards learners' experiences related to digital collaborative reading practices and their reflections towards the value of DAT systems as a pedagogical medium and its use for the purpose of

developing various language skills. Thematic analysis, in which “the researcher focuses analytical techniques on searching through the data for themes and patterns” (Glesne, 2011, p. 187), was adopted for the qualitative analysis of reflection journals. The data was thoroughly read for the purpose of understanding the core of the journals. Later, a set of themes were formed following the coding of ideas emerging from students’ comments featuring information regarding their experiences of DAT use, which was a result of “a progressive process of sorting and defining and defining and sorting” (p. 194). The data-driven coding process involved division and sub-division of categories through the analysis process as relevant patterns for each category were identified. These categories were harmonized with themes set for each language skill or area in accordance with the second research question of the study. The main theme emerging across learner journals was the ways they perceived the role of digital social reading practices in developing English language proficiency. Although multiple language areas and skills were mentioned across the journals by different students, the development of L2 literacies including reading, writing, and vocabulary were the most frequently reported areas by a more comprehensive group of participants. Therefore these language areas were taken as sub-categories of the main theme in the data analysis. Following this stage of inductive coding, learners’ digital annotations were analyzed through the emerging categories for the purpose of identifying illustrative examples. The goal was to document and demonstrate the examples of learner experiences by providing further insight into the ways DAT might have contributed to the development of the aforementioned language areas (e.g., annotating the text through integrating images as a means of a within-reading support). Further statistical analyses were also conducted to investigate the annotation practices of learners towards developing a particular area such as vocabulary. Overall, the purpose was to examine the complete data in a way to enhance the quality of the findings of the study by providing a comprehensive support to quantitative results.

#### **4. Results and Discussion**

The results of the study are discussed based on the research questions that guided the present examination.

##### **4.1. The Nature of English Learners’ Engagement in Digital Collaborative Practices**

The participants’ discussion posts in digital social reading environment were quantitatively analyzed for the purpose of addressing the first research question. The first analysis was conducted to see the weekly participation rates of the instructor and the students (Table 1). Week 1 represents the initial week in which the text was annotated and uploaded by the instructor while Weeks of 2 to 5 reflect the conversations emerging in student-led group discussions. Finally, Week 6 illustrates the total participation rates of students in the texts prepared for the final projects. The data show that students’ post numbers were trending upward through the project while it was trending downward for the instructor. These results may be attributed to the fact that following the active instructor intervention in the first two weeks, students developed familiarity with the medium and the tasks, which increased their participation rates. The qualitative analysis of reflection journals revealed data supporting the argument above. Such overt instruction activities are critical components according to Multiliteracies Pedagogy (New London Group, 1996) since individuals learn to recognize connections between form and meaning, and gain insight towards understanding how texts are formed, and how ideas are represented (Warner & Dupuy, 2018).

Table 1. Total number of comments / annotations by the instructor and participants

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Total
Instructor	30	29	19	16	8	11	113
Participants	51	128	197	225	222	267	1090
Total Posts	81	157	216	241	230	278	1203

A detailed quantitative analysis exploring the nature of the participants' engagement was conducted to gain further insight as well. The students' comments in the first five-week period, which were categorized as Initial Posts (IP) and Response Posts (RP), were statistically analyzed for each individual (Figure 2). The goal was to see the potential differences across the roles of students as leading a discussion and being involved in a conversation. The data clearly show that (a) L2 learners displayed engagement mostly through RPs (M=12,06) rather than IPs (M=3,06), (b) there were individual differences in the engagement rates although the students' RPs were always higher than their IPs, and c) while the average number of IPs by participants were nearly identical, the average RP rates displayed more variety among the students. The statistical outcome between the number of RPs and IPs is to say that each IP nearly prompted 4 RPs. Considering each group featured 4 members in average, this finding is not surprising. It seems that students tried to respond to each IP annotated in the texts. Since students were mainly responsible for leading the discussion in their own texts, they naturally started the conversations through IPs. Although not reflected in the figure, a dominant majority of all the students' IPs were placed in their texts. This also explains the balanced engagement rates of participants via IPs as shown in Figure 2. The higher fluctuation patterns across RPs might be associated with individual differences. However, in this case, it might also be related to the students' performances as a discussion leader in their texts as not all the students followed up (i.e., responding to them) other group members' RPs on their IPs.

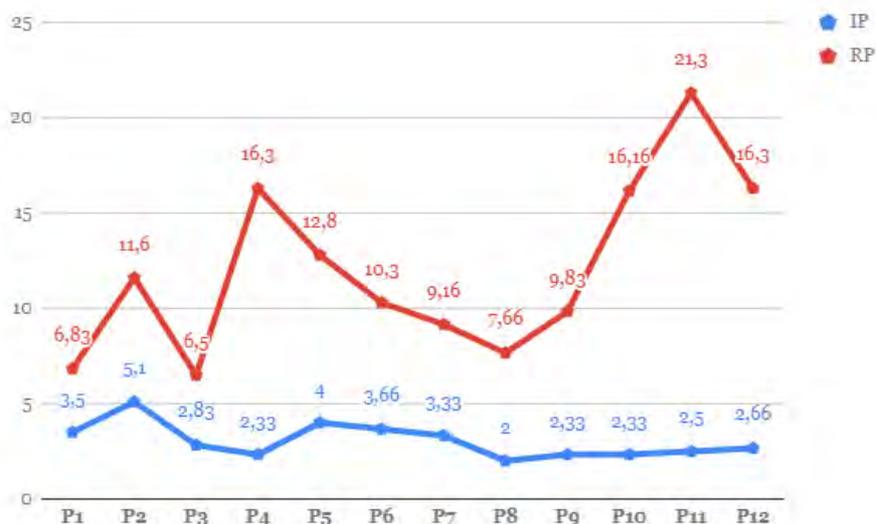
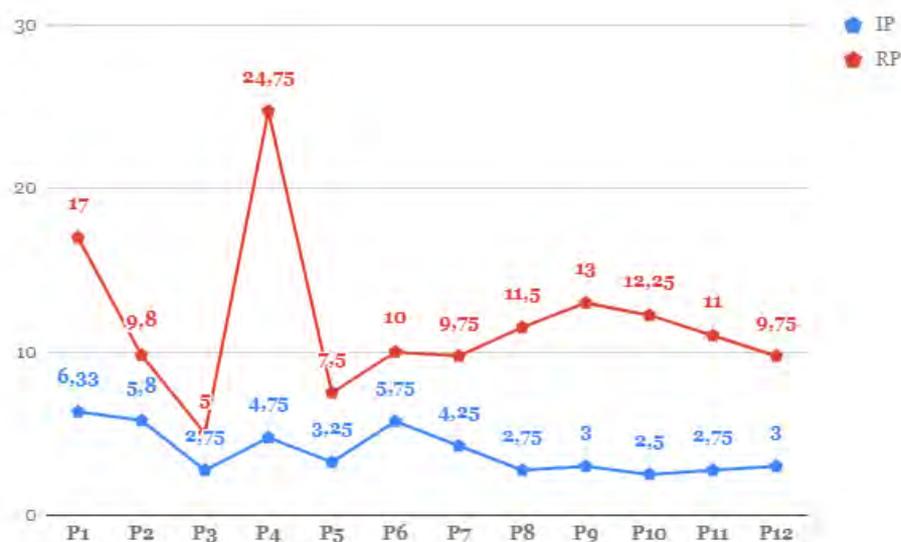


Figure 2. A comparison of participants' initial posts (IP) and response posts (RP) for the five-week period

The statistical analysis was also run for the participants' IPs and RPs for the final project period (Figure 3). The purpose was to draw a comparison between the outcomes of five-week and final project periods in terms of the emerging patterns. The results indicated

that students exhibited more engagement through RPs (M=11,4) rather than IPs (M=3,77), which is similar to the findings from the five-week period. Despite the fact that IP rates were higher for almost all of the participants during the final project, it was observed that most of these posts were in their own texts as in the earlier weeks. It might be speculated that students might not have felt comfortable in engaging in their classmates' texts through IPs as they might have felt that they could potentially pose a threat to the text ownership of group leaders. It might also be associated with the fact that students might not have felt responsible enough to participate in other texts through IPs. Unfortunately, the journal data did not reveal any insights about this particular observation.



*Figure 3.* A comparison of participants' initial posts (IP) and response posts (RP) for the final project period

Given the fact that the study aims to investigate the nature of student engagement in digital social reading platform, an in-depth participant and text-based analysis was statistically performed for students' activities during the final project period as well. The investigation of the final project texts was important also because there might be differences observed across the nature of learners' participation since they were encouraged to participate in non-group members' texts as well.

The results represented through Table 2 demonstrate further insight regarding the engagement of learners in texts formed by means of digital tools. The findings hint that higher number of participants in a text does not always guarantee an increased engagement rate. Apart from Text 7, which featured the most participants ( $n=7$ ) and the highest RP mean values, the texts in which more participants are involved (e.g., Text 7) did not have higher RP mean values compared to the majority of texts with lower number of participants. Previous research investigating the effects of group size found that groups of two to four people were ideal for collaborative learning through digital annotation systems (Chang & Hsu, 2011). The present study, however, shows that factors other than group size might be more determinant to the success of a collaborative reading experience although it might be suggested that there should be at least 3 members in groups formed in similar pedagogical contexts.

The Table also provides further insight regarding the potential role of IPs in the engagement of the participants. As seen in Text 6, higher IP rate does not always generate a high RP. Examining the relationship between IP and RP mean values of the texts, we observe

that IPs created more RPs per individuals in Texts 4 and 8, while higher number of IPs in Texts 12 and 3 could not achieve a similar outcome.

Table 2. *Statistical values regarding the discussion posts in the final project period*

	Number of Participants	IP	RP	Mean value for RP
Text 4	7	20	142	20,28
Text 8	5	11	68	13,6
Text 1	4	18	51	12,75
Text 2	3	28	38	12,6
Text 9	6	12	66	11
Text 5	3	13	31	10,33
Text 6	2	23	20	10
Text 10	4	10	38	9,5
Text 11	4	11	36	9
Text 7	6	17	49	8,16
Text 12	2	12	10	5
Text 3	2	12	9	4,5

Overall, although it is claimed that digital annotation technologies positively affect learner participation and engagement (Novak et al., 2012), it remains unclear to which degree the higher engagement rates can be attributed to the number of participants or IPs by group leaders. However, these findings support the notion that nature of participants' engagement may be influenced by the quality of IPs and the leader, the topic appealing to the interests of participants, and learners' willingness and not necessarily simply by the number of participants.

#### **4.2. The Linguistic Benefits of Digital Collaborative Practices from Learner Perspective**

A recurring major theme in participants' reflection journals was how they perceived the role of digital social reading experience in the development of L2 literacies such as reading and writing along with vocabulary. The journals revealed that, a) all participants believed that the experience was beneficial for reading, b) most students think that the tool helps them with both writing and vocabulary in addition to reading, c) a quarter of the students hold the opinion that the experience contributes all three language areas, which is best evidenced by one of the students' comments:

*SocialBook helps me develop my reading skills; and if my reading skills develops, my writing skills also will develop, because they are connected to each other. It is also useful for building vocabulary. I cannot understand a text without understanding the words I am reading. If I read and understand the words in a text, my reading comprehension skills will be better (P9).*

Many students articulated the value of using a digital social reading tool for developing L2 reading comprehension as they were required to spend more time with(in) the text, which allowed them to explore issues beyond the text, thus providing a comprehensive experience.

Learners were also exposed to within-reading supports through annotations which assisted them in comprehending the text. The employment of multimedia particularly seemed to contribute to learners' engagement with the text (Figure 5).

ROMEO AND JULIET

ladder, which Romeo will use to climb into Juliet's window for their wedding night.

The next day, Benvolio and Mercutio encounter Tybalt—Juliet's cousin—who, still enraged that Romeo attended Capulet's feast, has challenged Romeo to a duel. Romeo appears. Now Tybalt's kinsman by marriage, Romeo begs the Capulet to hold off the duel until he understands why Romeo does not want to fight. Disgusted with this plea for peace, Mercutio says that he will fight Tybalt himself. The two begin to duel. Romeo tries to stop them by leaping between the combatants. Tybalt stabs Mercutio under Romeo's arm, and Mercutio dies. Romeo, in a rage, kills Tybalt. Romeo flees from the scene. Soon after, the Prince declares him forever banished from Verona for his crime. Friar Lawrence arranges for Romeo to spend his wedding night with Juliet before he has to leave for Mantua the following morning.

Inline Comments Scanner

I hope this picture helps you to understand better book's characters

Figure 5. Learner annotation featuring an image as a means of a within-reading support

Annotating an excerpt from Shakespeare's *Romeo and Juliet* as seen above, a discussion leader incorporated an image depicting the characters in the play, which might have helped learners to follow the storyline better. Such annotations functioning as within-reading supports allowed learners to engage in a more comprehensive reading experience, through which they were able to explore certain sections of the text in detail as well. Pointing out to the importance of concentrating on particular parts of the text, one participant reflected:

*When we read texts on SocialBook, we focused on important points in texts. Therefore, we easily understood what text was about and what the main idea of the text was. Also, we emphasized abstract aspects of texts. This enabled us to get extra information about texts (P1).*

The excerpt below, for instance, demonstrates that a discussion leader draws attention to a particular word possessing an underlying meaning in the text. Eliciting similar utterances from different participants, the annotation exemplifies how learners can focus on specific parts of the text including abstract notions and concepts. As expressed by the participant above and illustrated in the excerpt, emphasizing multiple aspects of texts and extending the discussions may positively facilitate learners' reading comprehension and assist them in reaching further context-relevant information. Similar findings were previously documented in L1 (Sun & Gao, 2017) and L2 settings (Lo et al., 2013). However, it is important to underscore that proficiency level of learners and the course itself might have an impact on linguistic benefits of L2 collaborative reading and reading comprehension in general. For instance, while the majority of upper-intermediate level students' annotated comments were primarily social and/or linguistic in a reading-centered course, learners in advanced Spanish poetry class in the study of Thoms and Poole (2017) mainly engaged with their colleagues about social and literary-related issues.

### Excerpt 1.

P11: [Highlighted area: “The treasure buried; the room...”] What can the treasure be in this context? Is it a financial item or an abstract item? Just make a guess :)

P9: I don't know why but the story makes me think that the treasure may be abstract.

P11: hmm actually your prediction is true ☐ Also, we can support ur prediction by reading the last paragraph of the text. ☐

P12: I think it is an abstract item. But, I am not sure about it ;)

P11: that is true 🍷

P10: I think that it is an abstract item.

P11: 🍷 🍷 right.

Another benefit indicated by participants was about writing, which was often mentioned along with reading as the platform was recognized as a space combining both literacies. One student stated that annotating the text either as group leader or participant created opportunities to practice their writing, while another student expressed that being engaged in various types of writings was valuable for the improvement of their L2 literacies. As foreseen by Thoms et al. (2017), the experience afforded learners to produce L2 writing while contributing to the development of their L2 reading skills. Some students thought that the casual and relatively informal nature of the platform positively contributed to their L2 writing performances. For example, P10 commented: “You can write what you think or what you want without any restrictions since it is not a very formal page.” In addition to the fact that the informal nature of environment resembled their digital quotidian experiences, the asynchronous nature of the tool allowed learners to create an individual timeline for their engagement in the texts within the time frame allotted to them. They evaluated the permanency (i.e., long-term accessibility) of their texts and comments as something positive from which they could ultimately benefit a lot. This was perhaps best evidenced in a student's reflection:

*Your answers and comments are never lost if you save your reply after answering a question. So, you don't have to complete your whole passage in the same day. You can also answer some questions the following day or after a week, a month, even a year (P4).*

While students' initiated posts naturally created a space for their peers to practice their writing skills, some participants posted annotations explicitly offering such opportunities. For instance, some annotations were constructed as pre-reading activities encouraging learners to speculate about the plot and suggest alternative titles for the story (e.g., *What do you understand from the title of the story? is it suitable for the story? Can you write some interesting titles? -P7, Week 4*) while learners were also expected to complete a given sentence, which is a controlled writing activity developed as part of on-reading activity (e.g., *The Downs means that ..... Describe it in your own sentences. -P11, Week 4*).

For most students, even though the tool was reading-centered, they did not see the platform merely as a space for practicing reading and writing; rather, the process enabled them to identify unknown words, idioms, sentence structures, and attach meaning to them. One student summarized the process: “When you highlight unknown words for your audience, they will learn their meanings through the questions you ask them”. The instances of such highlighted words consisted of approximately 17% of all initiated posts, meaning that

learners were exposed to nearly 3 vocabulary-related annotations posted by discussion leaders (Table 3). There was only a small difference in the frequency of embedded vocabulary across initiated annotations of five-week period and final projects.

Table 3. *Vocabulary-related initiated posts by the participants*

	Five-week period	Final project period	Mean
Total number of IPs	204	178	191
Vocabulary-related IPs	32	33	32,5
Percentage	15,68	18,54	17,11

There were different types of vocabulary-related annotations, some of which included only a definition, explanation or an image depicting the target word, while others consisted of combinations such as a definition accompanied by an image or a definition followed by a relevant question. One of the questions, for example, required learners to use the target word in a sample sentence as in the post provided by Participant 8: “What does this expression mean? Could you make an example by using it?” Although it was not common, some students incorporated vocabulary-related annotations to the texts directed by their peers. In one of those cases, one student (P1) wrote the following annotation after highlighting the target word: “I didn’t know the meaning of anticlimactic, so I wondered and checked it. It means anything connected with turning out to be far less meaningful or exciting than was hoped (Week 3, Obama arrives in Kenya).” The analysis of reflection journals revealed that such within-reading vocabulary support provided by either discussion leader or participants were viewed favorably by learners. Specifying the need to accommodate a variety of learning styles, one participant commented on one of the benefits:

*You can upload some pictures showing your sentences or words. Students can learn them easily by this way. For example; some learners like me associate words with pictures and they can memorize vocabulary faster (P12).*

Learners in prior studies reported similar experiences, which featured illustrations of L2 grammar and vocabulary-related scaffolding assistance in their respective communities (Blyth, 2014; Thoms et al., 2017). Such within-reading supports might contribute to students’ learning experiences resulting in higher achievements. Previous research examining the role of computer-mediated text glosses / dictionaries on L2 reading comprehension revealed that learners accessing to such glosses performed consistently better than those without such support (Abraham, 2008) and they learned more words and had greater vocabulary retention (Li, 2010). Furthermore, DATs allow instructors to visualize and understand not only the problematic vocabulary for learners or but also the ones stimulating more interaction. As a result, the instructor can address these lexical issues in the face-to-face portion of the class, which is another benefit of DATs. Finally, the engagement of the class in multiple discussions based on vocabulary or other types of annotations are important since group collaboration fosters high-level cognitive and metacognitive learning (Li, Pow, & Cheung, 2015).

Together all of the examples above illustrate the diversity of opinions that students shared towards improving L2 literacies through collaborative annotated reading, which functioned as a platform for them to exploit opportunities for linguistic practices and exposure to a rich variety of texts.

## 5. Conclusion

In conclusion, the present study reveals that among the factors influencing the nature of learners’ engagement within digital social reading environments are the discussion leader and

the quality of their initial annotations rather than the quantity, learners' willingness and motivation levels as well as their interest in the topics discussed. However, it is yet to be uncovered to which degree the higher participation rates can be associated with each of these factors. Furthermore, it is shown that the digital space provides a valuable venue for learners by allowing for additional practice with reading and writing abilities as well as exposure to a variety of L2 vocabulary, which possibly went beyond what they could achieve in traditional EFL classroom featuring similar L2 texts. Therefore, it is recommended for language educators to maximize the pedagogical potential of digital social reading tools in language teaching and learning contexts. The integration of collaborative reading spaces into classrooms could be particularly useful when the medium is employed as a supplemental context for learners to engage in practicing multiple L2 skills through well-structured tasks. It is also important to design collaborative reading activities by recognizing the potential role of learners' motivation levels, their willingness, and the degree of teacher presence for a successful learning experience. Furthermore, the pedagogical model followed as part of the present study (e.g., spending the first week for learners to familiarize themselves with the DAT, providing relatively more structured tasks before giving them freedom to bring their own texts from the web) could assist learners to develop an agency as they are expected to take more control of their learning throughout the process. Finally, as previous research indicated (e.g., Solmaz, 2020), DATs can be integrated into both general and skill-based language courses as learners can socialize through engaging in collaborative socio-literacy practices.

Regarding the scholarship, the study makes a value-added contribution to the literature by; a) examining and illustrating the role of certain factors on L2 learners' participation in digital social reading activities, b) detailing the potential of EFL learners' collaborative reading practices for linguistic development from learn perspective, and c) investigating the integration of DAT tool for L2 learning purposes in an underexplored context. However, a number of limitations of the study should be acknowledged as well. First, it did not measure participants' overall learning performances. The relationship between the incorporation of a DAT and students' learning outcomes might have revealed further insight into understanding whether and how annotations contribute to learners' overall L2 proficiency. Secondly, small sample size of the study and the lack of focal student interviews might affect the generalization of the findings for other EFL contexts and the overall strength of the arguments presented. Finally, drawing learners' data automatically from *SocialBook* system was not possible at the time of data analysis, which created a major challenge during the process of data collection and analysis.

Despite the increasing number of research on the use of digital social reading tools for L2 teaching and learning purposes, empirical work has yet to investigate DATs' potential for its successful integration into L2 classes for various language skills in multiple contexts featuring populations such as learners of less commonly taught languages and EFL learners at high school.

#### **Appendix. A participant's initial posts for a text about Michael Jackson.**

1. What is the meaning of the verb "debut" here?
2. Can you give examples of famous people who broke down racial barriers?
3. How has he become a dominant figure in music?
4. Why is M.J. very well-known around the world?
5. Do you know the song "Man in the Mirror"? What is it about?
6. What is a public memorial service?
7. Why did his appearance change in his life?

8. Do you know any allegations about M.J.? Do you believe in them? Why or Why not?
9. What do you think about his death? Was it a murder?

#### **6. Conflict of Interest**

The author declares that there is no conflict of interest.

#### **7. Ethics Committee Approval**

The author confirms that the study does not need ethics committee approval according to the research integrity rules in their country.

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