The Affordances of Digital Social Reading for EFL Learners:
An Ecological Perspective

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ABSTRACT

The goal of this study is to illustrate the affordances mediated by digital socio-literacy practices of university-level EFL learners engaging in collaborative reading of texts from an ecological perspective. For this purpose, a total of 38 first-year undergraduate students taking a compulsory EFL course in Turkey participated in the research. Data collected from learners' digital annotations on a digital annotation tool (DAT) and reflective papers were qualitatively analyzed. As a result, the construct of affordance was operationalized in an EFL digital social reading context through indicators derived from learners' annotations. The findings based on student-reported data showed that digital collaborative reading practices had contextual, social, and linguistic affordances for EFL learners. Following the discussion of the findings, the study invites future research to examine L2 learners' practices in a DAT-mediated environment in relation to affordances for specific language areas such as grammar and writing.

KEYWORDS

Digital Literacies, Digital Social Reading, Ecological Perspective, English as a Foreign Language

INTRODUCTION

The ubiquity of digital technologies facilitated the emergence of dynamic socio-collaborative literacy practices, which are considered essential for meaningful participation in digital communities across the world. Although not as common as social networking or bookmarking, digital social reading is among these interactive literacy practices in which individuals take part often through digital annotation tools (DATs). The act of digital social reading is commonly referred as the practice of collaborative reading of a text or content through highlighting or annotating particular sections of the text in either synchronous or asynchronous format. A substantial body of literature devoted to the implementation of digital annotation tools (DATs) in higher education contexts provides evidence on DATs being potentially effective in promoting reading comprehension, knowledge construction, academic achievement, meta-cognitive skills, motivation, and fostering multi-directional interactions (Novak, Razzouk, & Johnson, 2012; Reid, 2014; Sun & Gao, 2017). Studies conducted in second language (L2) learning and teaching contexts also reveal the potential of digital annotated reading activities for developing reading comprehension (e.g., Chang & Hsu, 2011), distributing learners' cognitive load (Blyth, 2014), providing opportunities for social and literary gains (Thoms & Poole, 2017, 2018) as well as their online second language socialization (Solmaz, 2020). However, research has yet to document the nature of affordances emerging across collaborative reading practices of

a large number of EFL learners within a DAT as well as learners' perceived affordances based on their social reading practices. Theoretically guided by ecological approach (van Lier, 2000, 2004) and built on the previous research operationalizing the construct of affordance in digital annotated reading context, the present study aims to fill a gap in the literature by investigating the collaborative practices of EFL learners in the underexplored Turkish higher education context.

LITERATURE REVIEW

The literature examining the impact of DATs in second language (L2) teaching and learning settings is in its infancy despite a growing interest in the subject in the last decade. Previous work in the field investigated the employment of collaborative annotation systems to enhance reading comprehension of EFL learners. In their preliminary work, Chang and Hsu (2011) analyzed the efficiency of a translation-annotation tool developed for a multi-functional handheld device and revealed that the tool contributed to students' reading comprehension, and a majority of the students found the system beneficial for them. Their study also uncovered that students in groups of two, three, or four were more successful with respect to their level of reading comprehension compared to individual students or those grouped into fives. In another study, Lo, Yeh, and Sung (2013) compared learners' level of recognizing paragraph elements and overall comprehension through an experimental design. The results illustrated that the experimental group, who employed the annotation tool, exhibited better performance in post-tests featuring both cued and free recall tests. Examining the annotation types of EFL students, Tseng, Yeh, and Yang (2015) found that learners frequently engaged in collaborative reading through four types of annotations including marking vocabulary, leaving notes for unknown vocabulary in native language (Chinese), marking text information, and adding summary notes to each paragraph. While the first two types facilitated learners' lexical recognition and understanding, the other types of annotation fostered their reading comprehension.

In a series of recent research conducted by Yeh, Hung, and Chiang (2017) and Tseng and Yeh (2018), EFL learners' reading comprehension was examined through the instructional framework of Reciprocal Teaching (RT), as part of which learners assumed teacher roles for a collaborative understanding of texts. Through pre- and post-reading comprehension tests in both studies, it was found that learners' English reading comprehension developed following the intervention of DAT and students practicing RT strategies with the tool. In addition to the above-cited research which was exclusively conducted in East Asian contexts, Solmaz (2020) explored the implementation of a DAT *(SocialBook)* for second language socialization and development in an advanced EFL reading course in Turkish higher education context. The findings illustrated students' successful socialization into a multitude of networks and genres by means of hybridized communicative practices in which they displayed both expert and novice performances while perceiving an achievement of development in reading, writing, and vocabulary.

A separate thread of literature explored the pedagogical benefits of integrating DATs into teaching of other languages including French, Spanish, and Chinese. In an earlier multiple-case study, Blyth (2014) described several case studies, two of which highlighted undergraduate French learners' experiences in an L2 literacy instruction involving a DAT. The findings revealed that DAT allowed learners to create a network from which they could seek assistance, distributed students' cognitive load through provided opportunities for different types of contributions, and enabled teachers to synthesize pre-, while-, and post-reading activities into a single activity. Exploring linguistic and pedagogical benefits and challenges of implementing a DAT with a logographic-based language, Thoms, Sung, and Poole (2017) analyzed lower-level undergraduate learners' annotations on short stories written in Chinese characters. The results demonstrated that digital social reading can present opportunities for learners to perform a closer reading of a literary text, co-construct meaning, and scaffold each other's understanding despite learners' reported frustration with technical issues. Finally, Thoms and Poole (2017, 2018) carried out a series of studies in which they examined learners' interactions

within a DAT in a Hispanic literature course. Guided by an ecological perspective, the study shed light on the nature of advanced students' digital annotations by illustrating that learners' social- or literary-related comments were higher compared to linguistic posts. The study also provided a theoretical contribution to the field through operationalizing the construct of affordance in online collaborative reading contexts. In the second study, the researchers analyzed the affordances of digital collaborative reading practices in relation to the difficulty of texts (i.e. poems). The results showed that the higher lexical diversity across poems resulted in a decrease in students' annotations featuring literary affordances, which provided evidence for the fact that certain types of affordances could be limited or facilitated by the factors that are not related to learners.

On the whole, the literature revealed examples of practices displaying the potential of DATs for the facilitation of collaborative reading along with additional pedagogical benefits. However, further research needs to be conducted to examine the nature of L2 learners' digital collaborative reading practices within a virtual reading environment consisting of a larger number of EFL learners, and to what extent their opinions align with the benefits they gain through their socio-literacy practices in such venues. In addition, the construct of affordance and ecological perspective have yet to be adopted in studies featuring the incorporation of a DAT in an EFL context.

Ecological Theoretical View of Second Language Acquisition

The present study is theoretically guided by an ecological approach (van Lier, 2000, 2004), which considers language learning as meaning-making activity and acknowledges the situational, cultural, and societal factors that play a role in the process of learning. According to the view, language learning is mediated by semiotic resources through which learners engage in interaction in a dynamic social context. Given that the way individuals relate themselves to the environment is considered crucial for meaning-making, the perceptions of participants are viewed as integral to the language learning experiences (Thoms, 2014).

Originally coined by Gibson (1979) and being introduced to SLA by van Lier (2000), affordance is one of the key constructs of the ecological perspective, which is defined as "what is available to the person to do something with" (p. 91). It is also described as opportunities provided by an environment which are perceived by the individual to take actions. Similar to the various affordances provided by the environment for different organisms, digital technologies present a multitude of dynamic affordances to learners who first perceive them and then take action by exerting their agency over his or her environment (Liu & Chao, 2018). van Lier (2004) defines four level of affordances. A first-level affordance implies direct relationship between an organism (e.g., learner) and an environment (e.g., a digital collaborative reading space), which provides potential affordances without necessarily turning into actual affordances. Second-level affordance features intentional attention to notice the gap, which means "a realization that some language used out there is different from our current language knowledge, and we then may use this as a learning opportunity" (van Lier, 2004, p. 101). Awareness is supported and strengthened by active control in third-level of affordance, while Level 4 affordance involves learners developing a critical perspective. Different levels of affordances may emerge as a result of learner's active engagement within the environment as well as someone, teacher or peers, drawing a learner's attention to something.

Despite a sizable research guided by ecological theoretical views of language learning (e.g., Berglund, 2009; Ibrahim, 2017; Jenks, 2015), the affordance construct has been operationalized in few studies. The affordance was employed as an analytical tool for examining linguistic affordances of synchronous computer-mediated communication discourse (Darhower, 2008), affordances used by a teacher to foster learner agency (Liu & Chao, 2018), learner experiences in a massive multiplayer online game (Rama, Black, van Es, & Warschauer, 2012), and social networking spaces (Jin, 2018). The construct has recently been adapted to examine learner annotations in digital collaborative reading environments (Thoms & Poole, 2017, 2018). Both studies identified and illustrated literary, social, and linguistic affordances emerging as a result of students' discussions of literary texts in Spanish. Yet to be

explored is the emergence of such affordances in digital collaborative reading environments and how learners perceive and utilize these affordances in an EFL context. Building on the findings of Thoms and Poole (2017, 2018), the present study aims to contribute to the scarce literature by presenting alternative interpretations for the construct of affordance in the digital socio-literacy practices of university-level EFL learners while engaging in collaborative reading of English articles via a digital annotation tool. More specifically, the current paper aims to answer the following research question: What are the contextual, linguistic, and social affordances of integrating digital collaborative reading into a university-level EFL class based on students' annotations and perspectives?

METHOD

Participants

This research involved 38 first-year undergraduate students (aged between 18 and 20) enrolled in the compulsory Contextual Grammar course offered at the Department of English Language Teaching (ELT) at a state university in Turkey. The group consisted of 29 female and 9 male students, which reflected the overall population of students in the department. All participants had taken the required university entrance examination, which also assessed their English proficiency through multiple-choice questions on vocabulary, grammar, and reading. They were in their first semester of study at university and no previous experience of digital collaborative reading. In addition, they were taking other compulsory skill courses such as listening, speaking, and writing at the time of this study. Prior to the study, all students were presented with a consent form, which they were asked to voluntarily sign. They were informed about the academic purpose of the research, that they could opt out from the study at any time, and their confidentiality was ensured.

The Digital Annotation Tool

The participants used *SocialBook*, which is also known as *LiveMargin*, a free digital annotation tool allowing users to participate in a previously-uploaded text through several pre-, while-, and post-reading activities. Individuals can annotate texts through underlining a specific part of the text, commenting on them, and integrating multimedia content by means of uploading pictures or inserting links for other resources. Users can engage in both synchronous and asynchronous conversations through multi-layered annotations featuring digitized threaded discussions in a preferably public or private online environment. *SocialBook* was adopted in the present study mainly because it offers a rich set of tools for participants to engage in discussions and its adoption for academic purposes remains scarce with limited exceptions (see Solmaz, 2020; Michelson & Dupuy, 2018).

Procedures

The study lasted twelve weeks and followed a procedure that consisted of the following steps.

For the first two weeks the instructor provided theoretical background about digital collaborative reading practices and presented practical information about using the annotation tool, which was employed in the study. For weeks 3-4, the instructor uploaded and annotated a text to the DAT system. The annotations consisted of various comments related to both content and linguistic (i.e., lexical and grammatical) aspects of the text. Students were invited to explore the tools and various features of the medium for the purpose of ensuring that students familiarized themselves with the annotation tool.

For weeks 5-6, students were required to participate in the texts uploaded and annotated by the instructor. Learner annotations were often in the form of responding to the comments of the instructor rather than initiating them. For weeks 7-8, students engaged in the texts, which were uploaded but not annotated by the instructor. They were responsible for both initiating annotations and leaving responses to their friends' comments within the text. The purpose was to ensure that students take

partial responsibilities regarding the digital collaborative activities while becoming agents of their own learning experiences.

Finally, students were required to find a text of their interest on the Internet, upload it to the digital annotation tool, and annotate it as their final assignment performance for weeks 9-10-11. Later, they were asked to form a group consisting of 3 to 5 members and share the web links of their annotated texts with their group members. They were expected to participate in their group members' texts by leaving annotations while leading the discussions on their own texts. The goal was to provide an opportunity for learners to engage in a self-directed learning experience while gaining autonomy through adopting teacher roles.

In the end, students were asked to write a 2-page reflection paper following the completion of the assignments. They were expected to include their opinions and experiences of engaging in collaborative reading activities while reflecting on the potential benefits and drawbacks of the medium for language learning through examples. 26 participants submitted their reflection papers at the end of the semester. It is important to underscore that students knew that 30% of their mid-terms grades consisted of their performance in weeks 5-8 and 30% of their final grades for their final assignments.

DATA COLLECTION AND ANALYSIS

Data were collected from two primary sources: multi-layered comments in the digital annotation tool (DAT) and students' reflection papers. The answers to the research question were derived from qualitative analysis of digital comments and annotations of the instructor and the participants as well as participants' reflection papers.

The qualitative data were analyzed based on the tenets of thematic analysis (Glesne, 2011). Students' digital annotations and reflections in their papers were codified based on each comment, idea or a single phrase in a comment, or several sentences, which were interpreted as the unit of analysis. Both inductive and deductive coding was applied in a highly iterative process. During the initial inductive coding, core variables were identified and classified into the relevant categories and themes as part of an iterative process. A total of 17 types of activities (e.g., asking comprehension questions, sharing grammar-related notes) were identified as a result of the inductive analysis of individuals' comments in the DAT. Later, a total of twenty-six papers detailing participants' experiences regarding digital collaborative practices and their digital annotations were read multiple times. Inductive coding was applied in a recursive manner and emerging categories and themes, which were revisited and refined, were analyzed accordingly. The process yielded a total of 24 categories, each of which reflected students' opinions on a different aspect of their collaborative reading experiences.

For deductive coding, which is employed when coding sets are guided by the previous research or theoretical framework (Cho & Lee, 2014), the emerging sets of strands were compared and refined through the findings of the relevant literature exploring the affordances of digital annotation tools (e.g., Thoms & Poole, 2017; Thoms et al., 2017). As a result of the inductive and deductive coding process, three major types of comments indicating the affordances of digital collaborative reading emerged: contextual, linguistic, and social. Following the establishment of the affordance categories, types of activities emerging from participants' digital practices were categorized into the most relevant affordance groups (e.g., activating background knowledge as a contextual affordance, providing vocabulary-related explanations as a linguistic affordance, stating agreement and/or disagreement as a social affordance). The deductive coding approach was employed for analyzing the categories yielded from individuals' reflection papers. Several categories were eliminated during the process, while some of them were merged to form an overarching theme. The 10 of the remaining 13 themes were categorized into three groups of affordances (e.g., understanding the content better as a contextual affordance, developing reading skill as a linguistic affordance, online socialization as a social affordance). The three themes, which were not labeled as any of the three affordances, were grouped as 'other affordances' (e.g., developing digital literacies). Following the process, sample student

quotes and illustrative annotations representing each category of a theme were noted. The ultimate goal was to align the results across two major data sources and to present a comprehensive picture of the investigated phenomena. Considering that students' perspectives in a learning environment are often included based on ecological views of language learning (Thoms & Poole, 2017), the present study intends to achieve this goal by integrating learner opinions and perceptions through reflection papers, which highlight participants' experiences of engaging in digital collaborative practices and various affordances of the medium for language learning.

RESULTS

The research question addressed EFL learners' opinions about the affordances of digital collaborative reading practices in an online digital annotation platform. Therefore, a qualitative analysis of students' reflection papers and digital annotations was conducted to examine their perspectives of adopting a digital annotation tool in a university-level English course to explore the contextual, linguistic, and social benefits of online collaborative practices, and to provide further insight into the overall investigation through the lens of learner experiences. The analysis of learners' digital annotations displays sample social reading activities and annotations which illustrate different types of affordances mediated by the DAT (Table 1), while the analysis of students' reflection papers reveals themes and sample student reflections regarding each type of affordance (e.g., Table 2).

Participants indicated in their reflection papers that collaborative reading practices had positively contributed to their learning and they had positive feelings towards the adoption of the medium. Learners' reflections illustrated that the use of a digital annotation platform had contextual, linguistic, social, and other affordances for their learning experiences. They reported that the main contextual affordances of their digital collaborative reading practices included: understanding the content better, accessing various types of texts, and learning about different subjects (Table 2).

The analysis of learner annotations showed that the contextual affordances were facilitated through digital social reading practices such as asking comprehension questions, expanding content through questions, integrating knowledge from other sources, exploring additional information, activating background knowledge, and providing additional contextual information. Learners often expressed that they developed a better understanding of the content by means of the annotations added on different parts of the texts (e.g., S13). In addition to the text itself being a meeting space for learners, it provided a setting for them to "interrogate the parts of the passages" (S16), which might assist them in developing a critical perspective as well. Furthermore, students thought that multimodal nature of annotations played a key role in comprehension of the texts as well as the permanency of the content: "You can connect with videos and pictures, so you cannot forget the text easily" (S19), "It makes learning easier" (S23), and "It provides us memorable, enjoyable and lasting information, which is the most significant feature of the program" (S21).

Participants also maintained that collaborative reading activities helped them access various genres and learn about a wide variety of subjects. Among the types of texts mentioned were news, summary of a book, biography, movie review, documentary, and city guide, some of which were narrative, expository, procedural, or descriptive in nature. As a result of this rich variety, many students had a lot of opportunities to read about issues and topics they did not know about beforehand: "Thanks to the activities, we can reach different texts and obtain a lot of information about the texts that we have no opinion about" (S7) and "When I make use of the program, I learn new things which I have never heard and it makes me enlightened" (S24). Based on learner reflections, it was evident that the learning occurred beyond the limits of the digital text, which functioned as a starting point for students: "I searched a lot of things; pictures, videos that I didn't know and now I have knowledge about various topics" (S2). On the whole, the findings revealed positive perspectives of EFL learners about the potential of digital social reading experiences for its affordances with respect to learning the content.

Table 1. Social reading activities and sample annotations illustrating contextual, linguistic, and social affordances of DATs

Category	Social reading practice	Sample digital annotation
Contextual affordances	· asking comprehension questions	In what kind of situations do people tend to pull their hair off more? *(Student 30, Trichotillomania)*
	· expanding content through questions	Do you think that hate crime should be legalized? *(Student 6, Hate crime)*
	· integrating knowledge from other sources	Could you add some pictures about non-verbal cues? *(Student 22, Differences between men and women)*
	· exploring additional information	Watch this video and make a short summary of it. *(Student 33, Button Batteries and Children)*
	· activating background knowledge	What do you know about Grammy Awards? *(Student 2, 58th Grammy Awards)*
	· providing additional contextual information	George Washington served two terms as the first U.S. president from 1789 to 1797. *(Student 13, Trail of Tears)*
Linguistic affordances	· emphasizing the function of a grammatical structure	Because of the uniqueness [of the object], the article "the" is used here. *(Student 1, Pagan Origins of Christmas Tree)*
	· sharing grammar-related notes	may have Verb3 (past participle): when we speculate about the past and we are less certain. *(Student 18, Göbeklitepe)*
	· asking structural / grammatical questions	Explain the usage of "must have been". What does the sentence mean? *(Student 12, The World's Hardest Place to Visit)*
	· providing vocabulary-related explanations	"Monogamous" is a type of relationship in which a person has only one partner during entire lifetime. *(Student 10, Penguins)*
	· adding multimedia representing lexical item	This is a photo of a koala [inserted image of a koala] *(Student 19, Life of Koalas)*
	· asking questions about lexical content	What is the meaning of 'take place'? Give an example. *(Student 15, Amazon Rainforests)*
Social affordances	· stating agreement and/or disagreement	Exactly, I agree with Student 25. Even if we are not familiar with this word, we can assume it by using the prefix. *(Student 17, History of Art)*
	· expressing 'like', 'dislike', compliment, appreciation	Thanks a lot for the information. *(Student 36, 9/11 Attacks)* / It is a very informative video, thank you *(Student 4, Land-use Changes Increasing Plague Risk)*
	· stating personal reference (vocatives, inclusive pronouns, group address)	Student 23, I really liked the picture you shared. It is very informative *(Student 3, The Real Mystery of Easter Island)* / Talking about school lunches, what do you think about our school lunch? *(Student 12, Concerned about Food? Ask the Expert)*
	· sharing personal experiences and/or views	I have seen tennis tournament on TV but I don't have a favorite tennis player *(Student 24, A Brief Information on Tennis)*
	· exhibiting sense of humor (jokes etc.)	We can't say punctuality died in all countries. Turkey is one of them. Because punctuality has never been born here:) *(Student 28, The Nation that Hates to Be Late)*

    With respect to the linguistic affordances of digital collaborative reading practices, the learners expressed that digital practices were helpful for skills and areas such as reading, vocabulary, grammar, and writing (Table 3). Among the learners' social reading practices that led to linguistic affordances were the students emphasizing the function of a grammatical structure, sharing grammar-related notes, asking structure-centered questions, providing vocabulary-related explanations, asking questions

Table 2. Themes addressing EFL learners' opinions about contextual affordances

Category	Themes	Samples from reflection papers
Contextual affordances	Understanding the content better	S13: We answered questions about texts, made some comments. Some of us shared links about topic or pictures. After all, I noticed that I understood the text well.
	Accessing various types of texts	S19: There are many texts in different forms. For example, they can be news, magazine news, a summary of book, life of a writer, a review of movie, and others.
	Learning about different subjects	S20: I learned a lot about a lot of things through the activities which were not just homework. There were a lot of texts about many topics that I did not know anything about.

about lexical content, and adding multimedia representing lexical item. They thought annotations that were highlighted oriented them in engaging with texts, which could encourage them to enhance their reading skill (e.g., S10). In addition, the interactive and multimodal nature of the medium created a meaningful learning setting for learners to practice their reading, which lead them to enjoy the process more and potentially develop a habit as a result: "If you don't like reading and if you think it is boring, you will not think like that anymore thanks to this program [tool]" (S2), "This program can improve our habit of reading" (S20). Furthermore, an increasing amount of time spent with/in texts might have assisted learners to acquire or develop certain reading strategies: "Thanks to this site; we have learned how to ask questions about [a] text" (S3). Apart from reading, learners showed positive feelings towards the potential of the annotated reading for the development of vocabulary (e.g., S7) and grammar (e.g., S2).

Access to multiple genres and a rich variety of texts maximized learners' exposure to different sets of vocabulary while students' multimodal annotations provided opportunities for them to interact with content through auditory and visual input, which in return helped them improve vocabulary knowledge and use. Similarly, students underlined that engaging in several texts created awareness on grammatical structures and rules either explicitly by means of annotations and online discussions or implicitly by themselves. They reported familiarity with "new grammar structures" (S11) and "understanding grammatical structures better" (S13) as a result of being required to participate in digital reading activities. They recognized the value of collaborative practices for language use and grammar in particular, which was perhaps best evidenced in the following excerpt:

Table 3. Themes addressing EFL learners' opinions about linguistic affordances

Category	Themes	Samples from reflection papers
Linguistic affordances	Reading	S10: It [the tool] allows us to read more with many people and provided us with many things. For example, we have improved our reading skills thanks to the activities.
	Vocabulary	S7: I learned new words; I had information on different, interesting topics thanks to the texts my friends shared.
	Grammar	S2: It [the tool] is also useful for grammar learning/teaching because in the texts we can learn a lot of grammar rules. That is to say thanks to this program we can also improve our grammar knowledge.
	Writing	S12: We had the courage to translate our thoughts into writing, for example my English is not very good, but I was doing research to answer those questions and I was learning new sentence patterns. This also encouraged me to write new phrases and express my own thoughts.

We meet in SocialBook, comment on each specific content, and share different opinions with grammatically correct sentences. Sometimes they are not all correct; they do not have to be, because as I know, seeing mistakes is another way of learning. We see our friends misspelled words, grammatically incorrect sentences so we understand it should not be used that way. (Student 23, Reflection Paper)

Numerous writing opportunities provided in the annotation platform encouraged learners to practice writing consistently and employ different expressions and patterns while leaving comments as well (e.g., S12). They maintained that the best part of the medium was that they could easily delete their comment when they made a mistake; however, several students suggested that editing annotations would prove to be more valuable in comparison with the deletion of an entire post. Despite a relatively short period of time engaging in digital practices, some students reported a perceived development in their writing at the end of the course: "I have realized that I improved my writing skills as I can write easily and use different structures now" (S26).

The third theme identified from the qualitative data was the social affordances of digital collaborative practices, which consisted of the recognition of multiple perspectives, socialization, and a relaxing pedagogical setting (Table 4). The analysis of learner annotations illustrated that social reading activities such as stating agreement and/or disagreement, expressing 'like', 'dislike', compliment, stating a personal reference, sharing personal experiences and/or views, and displaying sense of humor played an important role in the emergence of the medium's social affordances.

Students emphasized the social aspect of the annotation tool, which presented opportunities for interacting with one another and recognizing different perspectives: "We can share ideas communicatively with each other … and I don't have to agree [with] the ideas, which are advocated" (S24), and "Everybody looks at one topic in a different way and so, everybody can see a lot various comments" (S15). Some learners thought that exposure to other opinions, specifically contrasting views, was challenging and stimulated interaction by cultivating participation: "*SocialBook* presents you [opportunities for] discussing texts so you can develop your viewpoint, you can hear and see different ideas" (S19), and "I learned [about] my friends' comments, and ideas about the subject in texts and I learned a lot of things" (S20). Similarly, students recognized the potential of the tool for creating a relaxing environment, which created opportunities for learning through socialization into collaborative reading practices with their peers: "This is an enjoyable way of sharing opinions, information, key points, and responding others' comments" (S21). However, it was also reported that not all annotations received response or any other reaction from participants, which might have been discouraging for some learners. Nonetheless, many of them found it quite motivating to share their interests with others and raising awareness as well as learning from their colleagues' texts. One of the students provided a step-by-step explanation of the process:

Table 4. Themes addressing EFL learners' opinions about social affordances

Category	Themes	Samples from reflection papers
Social affordances	Recognizing multiple perspectives	S6: It enabled us to see other points of views about texts. I think this is very improving [constructive] because every person who thinks about some intellectual subjects needs others' thoughts. Thanks to the activities, we can take advantage of others' ideas.
	Online socialization	S9: It is used for assignment but we can socialize thanks to it [the tool]. As a result, we can be active in different ways.
	Relaxing environment	S11: This activity can teach us new things easily with group work because when you study with group or when you make comment within the group, you feel more relax[ed].

I shared this topic [penguins] with my friends to make them aware about them too and I want[ed] to give examples or information about them. So, they may also like this topic, make research and learn something about them. I became very happy to five this information to them. When I read their text, I also think why they select this topic and I try to learn new or interesting views/parts of the topic. When I made research, I read more things about it and this was a pleasure for me. (Student 11, Reflection Paper)

The final theme emerged from the students' reflection papers was about the other benefits of digital social reading with respect to developing digital literacies, preparation for the upcoming lessons, and setting a model for future teaching pedagogies (Table 5). Many students underpinned the positive influence of online annotations in challenging them to conduct inquiries across the various pages on the internet. As required by annotations, they were often expected to respond to contextual and linguistic entries, which required them to search for the meaning of certain words, find content-related information, watch relevant videos, and then reply or form questions: "It [activities] showed us how we should use the internet, how to search and do the tasks" (S12), and "This program encouraged me to make more research about my text and finding material[s]" (S26).

Table 5. Themes addressing EFL learners' opinions about other affordances

Category	Themes	Samples from reflection papers
Other affordances	Developing digital literacies	S14: Thanks to these digital activities, students improve their searching skills and finding the true information [about the content].
	Preparing for the upcoming lesson(s)	S8: Thanks to the activities, we could reach texts and answer the questions or comments that prepared us before the class. We could add our text and ask questions or make comments.
	Setting a model for future teaching pedagogies	S22: The experience was so influential in terms of being a teacher candidate. We can use the program in our lessons in the future.

All of the specified activities might have contributed to the development of learners' digital literacies including locating and accessing target information, being critical about the content, appropriating the material or data collected, and transmedia navigation across multiple pages. However, several participants noted that searching the Internet for the information might have led certain students to use plagiarized content while responding in annotations although the number of such instances gradually decreased as students became familiar with the tasks. Students acknowledged the positive contributions of activities in fostering their understanding of the content covered in face-to-face classes. Given that text was taken from the course book, it was perhaps not surprising to observe students achieving certain parts of learning outcomes prior to the class, which was highlighted as a major advantage of the medium by one participant:

The first benefit that SocialBook gave me was to prepare me for the lesson. I was working on the subject that I would like to study before entering the class and I was also informed about the grammatical topics in the text. My teacher was asking about the text and the grammar topics that were used there, and we were also responding to these questions. Thanks to this, we were able to better understand the grammar notes in the text. (Student 12, Reflection Paper)

Finally, some participants reported that they would like to adopt digital collaborative reading technologies in their future career as language teachers as they have experienced many benefits themselves: "I believe that it will be useful for my students in the future" (S7), and "I will suggest *SocialBook* to my students and I want to use it with them" (S13).

Despite all the benefits, students frequently mentioned an area for improvement, which was about the technical problems they constantly faced. Among the issues reported were not being able to access the website, frequent disconnections, and automatic log-outs, which negatively affected learners' experiences and their participation: "It was tricky to use" (S1), "It is not a user-friendly website" (S18), and "If we did not have this trouble, we would have done a more successful and comfortable work" (S3). In addition to the technical challenges, there were some individual critiques regarding the reading practices and the nature of the tool. To illustrate, one participant noted that he preferred writing longer responses rather than the relatively shorter and 'simple' responses written as part of the course activities. On the other hand, another student mentioned that browsing content on the Web for the purpose of responding to the questions sometimes took a lot of time even if it contributed to their media literacies. The same student also expressed a preference for offline reading over the digital social reading activities: "The research sometimes took a lot of time because my English language skills were not good enough, so maybe it was just me. I also thought that I would rather read the book instead of reading [on] the internet" (S12). Finally, three students drew attention to their concerns about plagiarism by indicating that the nature of questions directed as part of the discussions might lead to it. As also noted by one of the participants, being able to reach a wide array of content on the web might have provided opportunities for students to access information and share them without critically evaluating the content. Although these concerns were not frequently reported, they need to be taken into consideration for the design and application of future pedagogical research and classroom activities.

On the whole, these results provided us with a deeper understanding of learners' digital collaborative reading practices and their perspectives towards the potential of digital collaborative reading activities in university-level English classrooms. The overall findings of the qualitative analysis indicated that students opined that collaborative reading practices through a digital annotation tool had contextual, linguistic, and social affordances for themselves as both English language learners and future teachers of English.

DISCUSSION AND CONCLUSION

This study examined EFL learners' digital collaborative reading practices as part of a tertiary-level advanced course with the lens of an ecological perspective and the affordance construct. Guided by an ecological theoretical perspective (van Lier, 2000, 2004) and built on the previous work (e.g., Thoms & Poole, 2017, 2018), the study presents a broad view of contextual, social, and linguistic affordances of digital collaborative reading practices, which potentially create pedagogical opportunities for learners to develop language skills and digital literacies in a socio-interactive environment afforded by a DAT. The findings illustrate the nature of their participation and the emerging affordances mediated by a DAT based on both learners' digital annotations and their reflections. These findings advance the scholarship in the field by operationalizing the construct of affordance in an EFL digital social reading context. Both the indicators of social reading practices derived from learners' digital annotations and themes emerging from learners' reflections might be employed in future empirical research investigating the affordances of digital collaborative reading practices in various second language (L2) teaching and learning contexts.

The study showed that EFL learners reported positive perceptions regarding using DATs in an L2 context by pointing out several contextual affordances, which are gained through a series of digital collaborative activities. According to the learners, DAT allowed them to understand the content better and exposed them to texts in various genres and subjects. These findings concur well

with the previous research, which illustrated that the use of DATs supported EFL learners' reading comprehension (Chang & Hsu, 2011), learners using the tool performed better in tests compared to non-user individuals (Lo et al., 2013) and developed their reading comprehension (Yeh et al., 2017). However, these findings should be interpreted with the findings which demonstrate that such comprehension-related affordances are linked to factors such as the type of annotations (Tseng et al., 2015) and level of students (Tseng & Yeh, 2018). Based on these findings, it is recommended that L2 educators take learners' proficiency levels and the type of digital annotations (e.g., summarizing, clarifying) into account while they are engaged with texts in a DAT environment. In addition, as this exploratory study presented initial results indicating DAT's potential to increase learners' genre awareness; future research may examine the particular role of digital collaborative activities in developing L2 learners' genre knowledge and awareness compared to similar practices followed in face-to-face settings.

The data demonstrated that collaborative reading practices mediated several linguistic affordances in relation to reading, vocabulary, grammar, and writing, which were reported to have contributed to learners' second language development. This result supports and echoes the findings of previous research which showed that DATs had the potential to present a space for L2 learners to practice and improve their language skills (e.g., Chang & Hsu, 2011; Thoms & Poole, 2017). To illustrate, annotating vocabulary items with multimedia and adding notes in either first or second languages were found to be effective for students' understanding of a word's meaning and its retention (e.g., Solmaz, 2020; Tseng et al., 2015), while digital annotations served as a scaffold for learners to practice L2 grammar, writing, and vocabulary as they interacted with fellow learners (Thoms et al., 2017). However, it is important to underscore that further research is needed to examine the potential of collaborative reading practices for developing L2 grammar and writing as these skills were not specifically addressed in detail in the literature.

The findings of the study confirmed that learners had positive views regarding the role of their digital social reading practices on gaining social affordances through recognition of multiple perspectives, online socialization, and collaborative practices in a relaxing environment. These findings concurred with previous research, which indicated the social benefits of digital annotations for learners with respect to monitoring and comparing fellow learners' reading processes (Yeh et al., 2017), negotiating with others to construct a better understanding of a text (Tseng & Yeh, 2018), creating a scaffold for learners to provide assistance to their peers or seek help from expert readers (Blyth, 2014), co-constructing meaning through social interactions (Thoms et al., 2017), establishing a sense of community (Thoms & Poole, 2017), and socializing into a multitude of discourses and practices (Solmaz, 2020). It is understood that the socio-interactive nature of these spaces facilitates social interactions among participants while transforming them into active readers as they are exposed to multiple perspectives and potentially gain a deeper understanding of texts. However, the collaborative participation of students might negatively affect learner performances as their understanding of the text might be impeded by their peers' annotations through being exposed to pointless comments or accepting others' contributions as truth without critically analyzing them (Thoms & Poole, 2017).

The present study showed that learners had favorable opinions and experiences about the potential of digital social reading activities in assisting learners with developing digital literacies. Therefore, it is suggested that the aforementioned negative aspects resulting from the collaborative nature of the platform might be eradicated through an emphasis on critical literacy practices such as evaluating and questioning the truthfulness of information during the pedagogical implementation. Finally, this study fills a void in the literature by integrating a DAT into an EFL course in which participants are also English teacher candidates, who displayed their intentions to incorporate digital social reading technologies into their teaching pedagogies. As also laid out in Michelson and Dupuy's (2018) study, DATs can serve the purpose of providing opportunities for L2 teachers' professional development through engaging them in a series of discussions concurrent to a face-to-face course. Thus, it is

recommended that the potential of DATs is explored further in the context of both pre- and in-service language teachers with respect to their personal and professional development.

In conclusion, the findings of this study suggest that digital annotation tools enable EFL learners to engage in a series of social reading activities, which mediate contextual, social, and linguistic affordances for them. Several limitations are inherent in the study. First, the data is based on learners' digital annotations and reflection papers. Although the study features a large number of participants compared to similar research in the field, the data could be triangulated through semi-structured interviews with learners. Second, the data analysis was conducted only by the author, which could have been overcome with the inclusion of a second coder. Finally, the quantitative analysis of the data would provide a statistical picture of the affordances gained by learners. Despite the limitations, the present study operationalizes the affordance construct in the EFL collaborative reading context and invites future research to examine the digital social reading practices of EFL learners in relation to particular affordances gained through DATs.

Conflicts of Interest

Funding Statement

Process Dates:

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REFERENCES

Berglund, T. Ö. (2009). Multimodal student interaction online: An ecological perspective. *ReCALL*, *21*(2), 186–205. doi:10.1017/S0958344009000184

Blyth, C. (2014). Exploring the affordances of digital social reading for L2 literacy: The case of eComma. In J. Pettes Guikema & L. Williams (Eds.), *Digital literacies in foreign and second language education* (pp. 201–226). CALICO.

Chang, C., & Hsu, C. (2011). A mobile-assisted synchronously collaborative translation–annotation system for English as a foreign language (EFL) reading comprehension. *Computer Assisted Language Learning*, *24*(2), 155–180. doi:10.1080/09588221.2010.536952

Cho, J. Y., & Lee, E.-L. (2014). Reducing Confusion about Grounded Theory and Qualitative Content Analysis: Similarities and Differences. *Qualitative Report*, *19*(32), 1–20.

Darhower, M. (2008). The role of linguistic affordances in participation in a bilingual telecollaboration. *CALICO Journal*, *26*, 48–69.

Gibson, J. (1979). *The ecological approach to visual perception*. Lawrence Erlbaum.

Glesne, C. (2011). *Becoming Qualitative Researchers: An Introduction* (4th ed.). Pearson.

Ibrahim, K. (2017). The Impact of Ecological Factors on Game-Based L2 Practice and Learning. *Foreign Language Annals*, *50*(3), 533–546. doi:10.1111/flan.12278

Jenks, C. J. (2015). The semiotics of learning Korean at home: An ecological autoethnographic perspective. *International Journal of Bilingual Education and Bilingualism*, *20*(6), 688–703. doi:10.1080/13670050.2015 .1070788

Jin, L. (2018). Digital affordances on WeChat: Learning Chinese as a second language. *Computer Assisted Language Learning*, *31*(1-2), 27–52. doi:10.1080/09588221.2017.1376687

Liu, Q., & Chao, C. C. (2018). CALL from an ecological perspective: How a teacher perceives affordance and fosters learner agency in a technology-mediated language classroom. *ReCALL*, *30*(1), 68–87. doi:10.1017/ S0958344017000222

Lo, J., Yeh, S., & Sung, C. (2013). Learning paragraph structure with online annotations: An interactive approach to enhancing EFL reading comprehension. *System*, *41*(2), 413–427. doi:10.1016/j.system.2013.03.003

Michelson, K., & Dupuy, B. (2018). Teacher learning under co-construction: Affordances of digital social annotated reading. *Apprentissage des langues et systèmes d'information et de communication (Alsic), 21*. 10.4000/alsic.3344

Novak, E., Razzouk, R., & Johnson, T. (2012). The educational use of social annotation tools in higher education: A literature review. *The Internet and Higher Education*, *15*(1), 39–49. doi:10.1016/j.iheduc.2011.09.002

Rama, P. S., Black, R. W., van Es, E., & Warschauer, M. (2012). Affordances for second language learning in World of Warcraft. *ReCALL*, *24*(3), 322–338. doi:10.1017/S0958344012000171

Reid, A. J. (2014). A case study in social annotation of digital text. *Journal of Applied Learning Technology*, *4*(2), 15–25.

Solmaz, O. (2020). Examining the collaborative reading experiences of English language learners for online second language socialization. *The Reading Matrix*, *20*(1), 20–35.

Sun, Y., & Gao, F. (2017). Comparing the use of a social annotation tool and a threaded discussion forum to support online discussions. *The Internet and Higher Education*, *32*, 72–79. doi:10.1016/j.iheduc.2016.10.001

Thoms, J. (2014). An ecological view of whole-class discussions in a second language literature classroom: Teacher reformulations as affordances for learning. *Modern Language Journal*, *98*(3), 724–741. doi:10.1111/ modl.12119

Thoms, J. J., & Poole, F. (2017). Investigating linguistic, literary, and social affordances of L2 collaborative reading. *Language Learning & Technology*, *21*(2), 139–156.

Thoms, J. J., & Poole, F. (2018). Exploring digital literacy practices via L2 social reading. *Journal of Linguistics and Language Teaching*, *10*(2), 36–61. doi:10.5070/L210235506

Thoms, J. J., Sung, K., & Poole, F. (2017). Investigating the linguistic and pedagogical affordances of an L2 open reading environment via eComma: An exploratory study in a Chinese language course. *System*, *69*, 38–53. doi:10.1016/j.system.2017.08.003

Tseng, S., & Yeh, H. (2018). Integrating reciprocal teaching in an online environment with an annotation feature to enhance low-achieving students' English reading comprehension. *Interactive Learning Environments*, *26*(6), 789–802. doi:10.1080/10494820.2017.1412989

Tseng, S., Yeh, H., & Yang, S. (2015). Promoting different reading comprehension levels through online annotations. *Computer Assisted Language Learning*, *28*(1), 41–57. doi:10.1080/09588221.2014.927366

van Lier, L. (2000). From input to affordance: Social-interactive learning from an ecological perspective. In J. Lantolf (Ed.), *Sociocultural theory and second language learning* (pp. 245–259). Oxford University Press.

van Lier, L. (2004). *The ecology and semiotics of language learning: A sociocultural perspective*. Kluwer Academic Publishers. doi:10.1007/1-4020-7912-5

Yeh, H., Hung, H., & Chiang, Y. (2017). The use of online annotations in reading instruction and its impact on students' reading progress and processes. *ReCALL*, *29*(1), 22–38. doi:10.1017/S0958344016000021

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