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Available at: https://works.bepress.com/joshua_thoms/62/
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ABSTRACT

This exploratory, small-scale, qualitative study investigates the linguistic and pedagogical benefits and challenges of using a digital annotation tool (called eComma) to facilitate second language (L2) reading in a second-semester, university-level Chinese language course. The goals of the study are to analyze the effects of social reading on learners’ understanding of Chinese literary texts and investigate how an L2 teacher might effectively incorporate this activity in his/her classroom. The results indicate that students predominantly used the social reading experience to query fellow students about the meaning of vocabulary/Chinese characters in the digital, literary texts used in the study. eComma allowed students to co-construct meaning and scaffold their learning while engaged in close readings of the Chinese literary texts outside of the physical classroom. Drawbacks of social reading in this environment include students’ frustrations with some technical aspects of the eComma tool and the instructor’s concerns about meaningfully bridging students’ social reading experiences outside of the class with in-class discussions/activities. Pedagogical suggestions regarding L2 open/social reading include adding timing constraints to promote more virtual interaction, better integrating students’ virtual comments into classroom discussion/activities, and offering more structure for novice learners.

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1. Introduction

An increase in Internet accessibility and usability in recent years has sparked a shift from reading in a traditional, paper-based format to one that is experienced in a virtual/digital context. With this shift comes a new set of skills and strategies that readers must appropriate to make full use of reading in a digital environment. Research examining second language (L2) reading/literacy issues in digital environments has investigated the effects of a variety of technological tools, including glosses (Yun, 2011), blogs (Jalkanen & Vaarala, 2013), hypermedia programs (Yanguas, 2009), and others. Digital annotation tools (DATs) have been used in a handful of English-as-a-foreign-language (EFL) learning and teaching contexts as a way to help learners make the adjustment from print to digital reading (e.g., Chang & Hsu, 2011; Lo, Yeh, & Sung, 2013; Tseng, Yeh, & Yang, 2015). DATs allow readers to annotate and mark up a digital text much the way they would a printed text. However, in a digital environment...
environment, learners are able to share their annotations with each other, which ultimately creates a more collaborative reading experience. To improve reading proficiency in digital environments and the effectiveness of current DATs, it is imperative that digital reading skills and strategies are better understood in a wider range of L2 learning contexts, especially in light of calls for pedagogical and curricular reforms that attempt to link the teaching of language and literary-cultural content throughout the entire course sequence in university-level foreign language (FL) programs (Allen & Paesani, 2010; Maxim, 2014; Paesani, Allen, & Dupuy, 2016).

Our qualitative, exploratory study investigates the linguistic and pedagogical affordances of an open reading environment in a second semester, university-level Chinese language course via the use of a DAT called eComma. Similar to reading experiences via an e-reader, eComma is an open educational resource that allows learners to annotate texts and make comments that others can collectively read in a virtual space. Blyth (2014) refers to this kind of reading as digital social reading, which he defines as "the act of sharing one's thoughts about a text with the help of tools such as social media networks and collaborative annotation" (p. 205). He also suggests that social reading, unlike independent reading, can be synchronous or asynchronous in nature, and can also occur across different digital texts. Others have likened social reading via DATs as a “during-reading activity that can be carried out synchronously or asynchronously” (Luks, 2014, p. 8, italics in original). In essence, the eComma tool used in this study allows for an open learning environment where L2 learners can collaboratively/socially read a literary text. Our study helps to fill the void in the literature related to using DATs in L2 classrooms.

2. Literature review

2.1. Investigating the effects of DATs in L2 contexts

To date, a handful of studies have looked at the use of DATs in first language (L1) learning contexts, where the texts are written in learners’ L1 and learners are allowed to annotate texts using their L1; much less research has been carried out in L2 environments. Blyth (2014) presents case studies that summarize how four teachers in different L2 contexts perceive the pedagogical benefits of using eComma with students in their classes. The first case study describes how a French instructor incorporated social reading activities via eComma in her first-semester, university-level French language class. The instructor provided a selection of prose poems written in French to her students along with some cultural and historical background information about the poet and the time period in which the poems were written. Students then “noted their expectations, read the text, and shared their comments with each other in English” (Blyth, 2014, p. 214) via the eComma tool. The instructor indicated finding evidence of interpretive strategies based on her students’ comments made via the DAT, such as collectively evaluating the meaning of French vocabulary, reflecting on cultural differences (i.e., those described in the poems with students’ own cultural backgrounds), interpreting the meanings of textual features, among others.

The second case study involved another French instructor using eComma in a fourth-semester, university-level French language class. Students were asked to collectively comment/annotate a French poem in English or French. After analyzing her students’ annotations, the instructor noted that a meta-reading environment was established via eComma in that students were not only reading and annotating the assigned text, but were also reading and commenting on other students’ annotations. Overall, the instructor concluded that the use of eComma resulted in “…a collaborative commentary that was more nuanced and creative than any I had ever received from a student at this level” (Blyth, 2014, p. 216). The other two case studies highlighted by Blyth (2014) involved using eComma in a graduate-level Applied Linguistics course and a graduate-level Sociolinguistics course. As such, these latter two case studies did not make use of eComma in an L2 learning environment.

In a more recent study, Thoms and Poole (2017) incorporated a DAT called Hylighter in an advanced, university-level Spanish poetry class. Students read 18 poems written in Spanish via Hylighter and commented on each of them in Spanish over the course of a four-week period. Making use of an ecological theoretical perspective (van Lier, 2004), the researchers found that a majority of students’ annotations/comments were either literary or social in nature, with few focusing on linguistic issues (i.e., lexical or grammatical queries to fellow students). That is, students primarily used the DAT to engage with fellow students about a number of literary-related issues, such as rhetorical devices used by the poets, offering interpretations of the poems to classmates, and/or expanding on another student’s ideas about or interpretations of a poem. In addition, they discovered that the instructor gained valuable insights regarding his students’ understanding of the various Hispanic poems read and annotated via the DAT.

Beyond Blyth (2014) and Thoms and Poole (2017), other empirical work on DATs in L2 contexts has been primarily carried out in EFL environments. Tseng et al. (2015) investigated the digital annotations of 50 EFL students when reading a text written in English via the collaborative annotation tool Annotate. Students’ annotations revealed three different kinds of reading comprehension levels: surface-based (e.g., marking vocabulary and/or adding explanatory notes in their L1 regarding unknown vocabulary words); text-based (e.g., identifying keywords and grasping main ideas of the text); and situation-based (e.g., integrating the text information in a coherent manner by connecting each new piece of information with previously obtained information).

Of the 50 EFL students, twenty made gains at all three levels, twenty-one students made gains at the surface- and text-based levels, and nine made significant gains at the surface-based level. The researchers then correlated these results with the types of annotations made by the students who demonstrated gains at each level. One of the conclusions made by Tseng et al. (2015) is that marking text information while also adding summary notes to each paragraph were the main annotations that facilitated learners’ overall reading comprehension of the text.
Lo et al. (2013) also made use of a DAT to investigate whether or not it would improve EFL learners’ reading comprehension scores. However, their study utilized the multi-color highlighting function of an annotation tool called Paragraph Annotator to enhance learners’ knowledge/analysis of paragraph structure on webpages provided to two groups of students: the experimental group read various webpages while using the annotation tool and the control group read the same webpages but took notes offline. The students who used the annotation tool did significantly better on cued and free recall tests when compared to the control group. Additionally, those students who used Paragraph Annotator positively perceived the tool’s ease of use and its usefulness.

As we have seen, some preliminary work has been carried out to highlight possible ways in which DATs can be used to promote social reading in L2 environments, with the majority of the work being carried out in EFL contexts. However, there is still a dearth of empirically based research that focuses on ways in which DATs can facilitate the acquisition of L2 vocabulary and/or improve learners’ L2 reading comprehension. Furthermore, no other study to date has investigated the linguistic and pedagogical affordances of social reading via a DAT in a university-level, L2 Chinese course context. While developing the ability to read in any FL can be difficult, becoming a fluent reader in Chinese for native English speakers can be a daunting task for a number of reasons, one of which involves the complicated process(es) inherent in recognizing and understanding Chinese characters.

### 2.2. Learning to read Chinese

The Chinese written language consists of thousands of symbols called characters. Unlike languages with alphabetic scripts, each Chinese character represents an idea that has little correlation to its pronunciation (Sung & Wu, 2011). The basic components in characters are called radicals. Simple characters consist of single radicals while compound characters consist of more than one radical. Among thousands of Chinese characters, approximately 90% of them are compound characters, most of which are comprised of a phonetic and a semantic radical (Wang, 1990). The phonetic radical gives readers a hint regarding the sound of the character while the semantic radical provides information to readers as to the character’s meaning. However, such hints are not always clear to second language learners. Hence, learning to read Chinese can be challenging, especially for native speakers of English who have no experience with a logographic language.

Due to the enormous amount of time needed to learn Chinese characters, the kinds of materials that learners, especially beginners, can read are limited. Moreover, the Chinese written language does not show word boundaries, which can present another challenge for beginning learners, who have limited vocabulary knowledge, to process the written information (Lu, 1997). As a result, learners’ interest in reading Chinese can decrease over time (Lu, 1997). Allowing learners to read collaboratively in a digital environment may provide them with the individual peer support needed to overcome the obstacle of persisting through the challenging task of reading Chinese characters. That is, what remains to be fully investigated is whether or not collaborative/social reading via DATs such as eComma can assist learners to more efficiently understand Chinese characters when reading a literary text in Chinese.

To better understand how learners’ interactions in an open learning/reading environment might result in the co-construction of meaning, thereby facilitating their L2 Chinese literacy development, we have chosen to make use of a sociocultural theoretical framework (Vygotsky, 1978, 1987). While many L2 researchers are familiar with the primary tenets of Vygotskian sociocultural theory (SCT), we now briefly review some of the more relevant constructs that inform our study.

### 2.3. Sociocultural theory

At the heart of Vygotskian SCT lies the idea that human beings do not act directly on the physical world; rather, we make use of symbolic tools and signs to mediate and regulate our relationships and activities with others and with ourselves (Lantolf & Poehner, 2014). Vygotsky’s concept of mediation can be divided into human mediation and symbolic mediation. Human mediation, as defined by Vygotsky (1978), is the idea that every psychological function appears twice in development. It appears first in the form of actual interaction between people (referred to as interpersonal interaction), and then again in an internalized form, or intrapersonal interaction (Kozulin, 2003). Thus, human mediation initially relies on the aid of another person. However, over time, the need for another’s help lessens (for specific activities) as learners are able to confront and solve a problem on their own.

When applied to the context of a L2 classroom, a SCT perspective posits that students are presented with a variety of cognitive problems to solve during each class meeting or whenever students interact with each other to work through a task. Some of these problems are realized via linguistic puzzles in the L2, such as the learner’s ability to understand basic (or complex) L2 grammatical structures or, in the context of the Chinese language classroom investigated in this study, when attempting to decipher the meaning(s) of Chinese characters used in short stories or other literary texts. Other problems may lie in the learners’ inability to understand the historical or cultural context within which the L2 literary work was composed, thus limiting learners’ understanding of the text. Regardless of the type of difficulty, the learner in a L2 classroom will initially rely on the mediation of others for guidance, such as the instructor or a classmate, to co-construct meaning from a text. Eventually, the student will be able to confront and overcome these problems on her own—via intrapersonal interaction.

What is important to underscore here for the focus of this study is that a SCT view affirms that the development of higher mental functions or processes is first mediated by the aid of another person. In the case of analyzing the interactions between students while they collaboratively read a L2 literary text via eComma, some students may take on the role of chief mediator
while guiding other learners to mediate their own knowledge/linguistic development of the L2 text they are discussing. Therefore, this study analyzes the virtual interactions of students to better understand how some students serve as effective mediators to help guide other students through a variety of linguistic and literary difficulties while collaboratively reading an L2 text. This assistance, in turn, may help to lay the cognitive groundwork that will eventually allow individual students to solve similar problems on their own in the future.

In sum, given the paucity of research on DATs in L2 Chinese learning and teaching environments and how they might be used to facilitate a collaborative/social reading experience for learners, our study investigates the following research questions: 1. What are the features of the virtual interactions among learners when engaged in social/open reading via an annotation tool and how might these features affect students’ understanding of the literary texts and/or Chinese characters?; 2. What are the challenges of social/open reading via an annotation tool in a Chinese language course from a student perspective?; 3. What are the pedagogical ramifications of incorporating social/open reading activities in second language teaching?

3. Research methods

3.1. The course

The study site was a second-semester, undergraduate Chinese language course offered at a research institution in the Western region of the United States. The course syllabus indicated that students would gain communicative competency in the four language skills and would also be exposed to Chinese culture(s) and customs. In addition to routine quizzes that targeted students’ understanding of grammatical concepts, listening, writing, and speaking abilities, the course also included the distribution of 10 reading packets throughout the course of the semester. These packets were comprised of short texts written in Chinese characters along with comprehension questions. Students received these packets at the beginning of the week and were asked to complete them outside of class on their own by the end of the week. The reading packets were graded and represented 10% of a student’s final grade in the course. Finally, the course met each day of the week (Monday-Friday) for 50 min and was taught primarily in Chinese.

3.2. The participants

Eleven undergraduate students participated in the study, 4 males and 7 females, ranging in age from 18 to 67 years old; the median age of the group was 20. All but one of the students indicated that their native language was English, and some indicated having limited to advanced proficiency in a second language. One student indicated that she was born in Taiwan and raised there until she was four years old and therefore developed some Chinese literacy skills early in her life. However, she also indicated that since that time, she had not spoken/used Chinese on a regular basis. In addition, the instructor of the course indicated that this student’s linguistic ability in Chinese was comparable with other students in the course. It is worth noting here that we have assigned pseudonyms to the four focal students; Hanna, Melanie, Steve, and Thomas. When referring to student survey respondents in the Results section below, no pseudonyms are provided given that the survey was done anonymously.

The instructor of the course, Frank (a pseudonym), was a graduate student teaching assistant who had been teaching in the Chinese section at the university for one year at the time of the study. Prior to teaching university-level Chinese language courses, he had spent five years living in China working as a director of an English language school and was familiar with L2 pedagogy in a variety of teaching environments. His native language is English, but he has near-native oral proficiency in Chinese and Spanish.

3.3. Data collection procedures

Given that the second semester Chinese language course used in our study included the weekly distribution of reading packets and accompanying comprehension questions to students, coupled with our project’s focus on better understanding students’ collaborative/social reading experiences with electronic texts via a DAT, two digital reading texts were used to collect data. Similar to the other print-based readings assigned to students throughout the semester, the two digital texts were assigned and collaboratively read in a virtual environment via eComma and students received a grade for reading the digital texts and answering accompanying comprehension and vocabulary questions at the end of each week when each digital reading was assigned. Although the students collectively read the digital text via eComma, they were responsible for answering the comprehension and vocabulary questions on their own.

To ensure that the two digital texts used in this study had approximately the same amount of characters and were at the same level of difficulty when compared to each other and when compared to the other print-based readings read throughout the semester, the instructor of the course, together with the help of an Assistant Professor of Chinese who was an experienced language teacher and also a native Chinese speaker, consulted with each other to select the two digital texts (see Appendix A to see one of the eComma texts used in this study). The two eComma texts were provided to students using both simplified and traditional characters in accordance with the policy of the Chinese language program where this study took place.
Fig. 1. Sample eComma interface.
The DAT used in this study, called eComma, is an openly licensed tool that allows traditional texts to be digitized and uploaded to eComma’s website. Once in eComma, users can synchronously or asynchronously access, read, and annotate the same text (see Fig. 1). eComma therefore allows learners to “crowd source” their reading burdens by turning a solitary activity into a group activity (Blyth, 2013, pp. 33–34). The hypermedia environment of eComma has also been suggested to heighten “learners’ awareness of the process of textual interpretation” (Blyth, 2013, p. 34).

In addition to student- or teacher-generated text, picture, or video annotations, another feature of eComma includes a heat map that indicates where users have highlighted specific parts of the text more than others. eComma also features the creation of a word cloud when a text is uploaded, thereby allowing students to see the most common words (in our case, Chinese characters) used in the digitized text. Finally, like other DATs, eComma also allows users to ‘tag’ parts of the text; tags are another way that students can signal different aspects of a reading text (tone, metaphor, vocabulary/word choice, etc.).

Data collection first involved students meeting in a computer lab and receiving training from one of the researchers and their instructor regarding how to add comments/annotations to a sample digital reading text written in Chinese during week 6 of the semester. Students spent 50 min becoming familiar with the other features in eComma, and the researcher and instructor answered students’ questions about the tool. In week 7, students were assigned the first eComma text entitled ‘My Schedule’ and were instructed to read it on their own outside of class and comment on the text while they read it throughout the week. Students were then given comprehension and vocabulary assessment tasks that were graded based on this first eComma reading (see Appendix B for a sample comprehension and vocabulary task). In week 8, students were assigned the second eComma text entitled ‘Birthdays’ and were again asked to read the text on their own outside of class via eComma; they were reminded to annotate the text and/or pose questions to fellow students regarding any aspect of the text. At the end of week 8, they were administered comprehension and vocabulary assessment tasks that were also graded. In week 9, all students were asked to complete a survey that included various questions about their experiences and perceptions of collaboratively/socially reading a text via eComma vs. reading the traditional, print-based texts assigned to them during other weeks of the semester (see Appendix C for the survey).

Four focal students were invited to be interviewed by one of the researchers in week 10 (see Appendix D for the focal student interview questions). The criteria used to choose the four focal students involved a combination of (a) each student’s willingness to participate in the follow-up interview based on their response to the last question in the survey, (b) their high number of contributions/annotations made via eComma, and (c) their extensive comments provided via their survey responses. Some students who commented as much as the four focal students in eComma while also providing a lot of feedback via the survey were not interested in being interviewed and were not invited to serve as a focal student. Finally, the instructor was asked to provide his feedback/reactions to using eComma in his class.

3.4. Data analysis procedures

To gain a better understanding of how students interacted with each other when reading the two digital texts via eComma, two sets of data were coded—(a) the annotations/comments made by all students when reading the two digital texts and (b) the transcriptions of the four focal student interviews. Qualitative analysis of the data was carried out partially based on the tenets of grounded theory (Charmaz, 2006). At the heart of grounded theory, when applied to a language learning research environment, is the notion that “ideas about the social and psychological processes of language learning become ‘grounded’ in data from the field and, more specifically, in the actions, interactions, and social processes of learners” (Young, 2012, p. 537).

To code students’ eComma annotations/comments, two of the researchers first individually read through all of the digital annotations made by every student. The unit of analysis used in this study involved any annotation/comment made via

![Fig. 2. Three primary types of annotations made by students over both digital texts.](image-url)
eComma; each student ‘comment/annotation’ was defined as a one-word response, a short phrase, or a sentence-length (or longer) contribution to the virtual, threaded discussion. Based on that initial pass, categories for the various annotations/comments were created (Psathas, 1995). The categories established by each researcher were then compared and refined to create a master category list. The master list ultimately consisted of the three kinds of annotations/comments generated by students: vocabulary-, grammar-, and content-based annotations (see the Results section below for more on these annotations). Each researcher then coded the data again using the master coding category list. Initial inter-rater reliability was 94%; remaining discrepancies were discussed and resolved for the coding of students’ annotations. A similar process was carried out for the coding of the four focal students’ interview transcriptions in that the themes that emerged from the transcribed interviews were noted and compared between researchers. A master coding category list was created for that data set as well; inter-rater reliability was determined to be 96% with discrepancies eventually being resolved for the interview data.

4. Results

4.1. Research question 1

To understand the features of learner’s interactions in eComma when engaged in social/open reading, we first analyzed students’ digital comments/annotations. Over the course of reading the two digital texts, students made a total of 90 comments/annotations. Forty-seven of those annotations represented an initial comment/annotation made by a student on a new segment of highlighted text. Regarding students’ language preference when making initial comments/annotations on the two digital texts, 65.9% of the comments were made using Chinese characters, 27.7% involved the use of Pinyin, and 6.4% of the comments were made in English.

A closer analysis of the 47 initial comments reveals that three main types of annotations emerged from the data based on students’ interactions in eComma: vocabulary-, grammar-, and content-based annotations. Over the course of the two digital texts, 61.7% of the annotations involved comments related to vocabulary concerns, 23.4% of the comments were dedicated to aspects of the content of the two texts, and 10.6% of the annotations dealt with grammar issues (see Fig. 2). The remaining 4.3% of the annotations were categorized as ‘Other’, such as off-task comments.

Table 1
Illustration of vocabulary-based comment/annotation.

<table>
<thead>
<tr>
<th>Date &amp; Time of Comment</th>
<th>Highlighted/Annotated Text [with English Translations]</th>
<th>Student Comment(s) Related to Annotated Text [with English Translations, when/if needed]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feb. 20, 18:15</td>
<td>可是 [But]</td>
<td>Student A Initial Comment: What do these mean together? Student B Response: It means but or “however”, kind of like 但是。[but] Student C Response: ke3shi4 It a conjunction [sic], like but; yet; or however.</td>
</tr>
<tr>
<td>Feb. 20, 18:43</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Feb. 20, 20:29</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Given that research question 1 seeks to understand the features of students’ comments made in a digital reading environment when engaged in social/open reading, we now illustrate each of the three aforementioned types of annotations made by students across the two digital texts.

As previously noted, students overwhelmingly annotated the two digital texts primarily to pose a question to fellow students about the meaning of vocabulary/Chinese characters found in the texts. In Table 1, we see a typical vocabulary-related inquiry by a student when she highlights two characters that mean ‘But’. In this particular case, Student A poses her question in English. Approximately 30 min later, Student B responds to her question and offers an answer by indicating that the two characters together mean ‘but’ or ‘however’, and then continues by providing Student A with an example of how ‘but’ is expressed via yet another example in Chinese. Approximately 45 min after that, Student C builds on Student B’s explanation when he expands the thread by stating that the highlighted characters, when used together, represent a conjunction such as ‘but’, ‘yet’, or ‘however’.

The aforementioned example of a vocabulary-based comment/annotation illustrates one of the unique features of social reading in that learners are afforded the opportunity to co-construct meaning while referencing text (in this case, a word/characters) in situ. That is, the ability to collectively scaffold/build on each other’s understanding of the word within the context of the literary text itself allows for a more content-based, collaborative learning experience when compared to the traditional, isolated reading activity that L2 learners typically experience when assigned a text to read in the majority of L2
classrooms. One of the focal students mentioned the collaborative advantages of social reading in her interview when she stated "... just highlighting a single word and asking what it means is something you could ask a dictionary, but something like this [i.e., eComma], or something like 'how does, why does this work in this sentence' is something you can really only ask of a group" (Hanna). In sum, participating in social reading via a DAT allowed some learners to regulate their understanding of Chinese characters via the assistance/mediation of other, more knowledgeable students.

The second most frequently made comment was a content-based annotation. These annotations included comprehension questions posed by students or simply involved statements that students made regarding how they were interpreting specific parts of the literary text. Table 2 illustrates a typical content-based comment found in the data. Student C highlights a section of the text that talks about lazy Sundays; Student C initiates her comment using Chinese characters and essentially states that she really agrees with this point made in the text. Eighteen minutes later, Student D comments on Student C’s reaction and concurs by stating that he does not agree with what Students C and D have stated. The thread ends with Student E’s response.

While the majority of students’ content-based responses were limited in that few of these annotations involved threads of extended discourse, they did provide learners a mechanism to express their agreement or disagreement with the content of the text. In other words, the DAT allowed learners to engage with each other regarding specific aspects of a literary text that they may have not been able to do via a whole-class discussion with the teacher and fellow students. For second-semester Chinese language learners, reacting to literary content via the digital annotation tool appears to have allowed students necessary processing time to (a) make meaning of the content of the literary text, and (b) express his/her thoughts with fellow students about that content using the target language (in this particular case, via Chinese characters and Pinyin).

The third type of annotation made by students was a grammar-based comment. Again, only 10.7 percent of the initial comments made by students across the two digital texts involved a grammar-related observation or inquiry. Table 3 shows that Student F highlights a series of characters that collectively mean ‘extremely excited’. Student F then indicates that he knows all of the characters individually, but does not understand what they mean when put together in a sentence. In other words, his initial comment signals his inability to understand the syntax of the sentence even though he says that he knows the meaning of the four individual characters. The next day, Student G responds by providing a translation of two of the four characters before translating the entire sentence in English for Student F.

In sum, the main features of the virtual interactions among learners when engaged in social/open reading via eComma primarily involved written discourse in Chinese and Pinyin, with only a handful of comments being written in English. One of the indirect benefits of social reading therefore involves students producing written language in the L2. While outside the purview of this study, it is possible that due to the nature of collaborative/social reading experiences, learners may in fact be provided with more opportunities to write in the L2 when compared to solitary reading experiences. More empirical work is needed to substantiate this kind of claim.

Although many of the students in this small-scale, exploratory study could have looked up the translation of the various characters that they did not know via other means (e.g., an e-dictionary or other online resource) as mentioned by one of the focal students during her interview (Hanna), the digital reading space can allow for more varied queries, such as seeing how a word can be used in the context of a sentence/alongside other Chinese characters. In addition, the threaded discussion feature of this particular DAT allowed students to co-construct the meaning of a word or grammatical structure, and/or build on another student’s understanding of the content of the literary text.

This reliance on the mediation of others for guidance while carrying out a close reading of a text reflects the theoretical aspects inherent in a SCT perspective on L2 learning (Vygotsky, 1978). That is, social reading via DATs in lower-level language contexts has the potential to facilitate learners’ acquisition of vocabulary and grammatical structures during a close
reading of literary text. In other words, since students interact more with the text and with each other via the DAT (asking each other questions, stating opinions, etc.), it is likely that they are being exposed to some characters at a higher frequency rate than they would have been via reading a traditional, print-based text on their own. Similarly, given that learners are probing their classmates about the text, this can lead to a more critical reading experience (Bernhardt, 2011), which may improve students’ overall literary understanding. However, given the exploratory nature of this study, more empirical work is needed to fully explore the full range of benefits for learners. While the aforementioned features of students’ annotations/comments were primarily positive in terms of students’ L2 linguistic development and understanding of the two literary texts read via eComma, our data suggests that learners encountered some challenges when engaging with others in a social/open reading environment.

4.2. Research question 2

Analysis of students’ survey responses and focal student interview data revealed three primary concerns related to the challenges of participating in social/open reading: technical difficulties with the DAT; the linguistic level/preparation of the students; and limited opportunity to practice writing Chinese characters via traditional means (i.e., by hand). We now explore each of the three concerns mentioned by students in detail.

4.2.1. Technical deficiencies of digital annotation tool

Given that a number of emerging DATs are relatively new, some technical aspects are still being refined. Specifically, students in our study commented on some of the deficiencies of eComma. Overall, the majority of participants felt that some of eComma’s functions could have been more user-friendly. Several students, when responding to the survey, commented on the fact that when one hovered the mouse over the digital text, other students’ tags did not automatically appear. A second deficiency mentioned was that it was easy to incorrectly annotate bits of the reading assignment. In one case, this problem caused a student to inadvertently highlight large amounts of text in the reading. As a result, it caused the participant’s computer to crash while trying to work with the large amount of highlighted text. However, it seems this particular technical difficulty was limited to this one student’s computer as no other students indicated having this problem.

Finally, the participants thought that the eComma interface needed to be streamlined. For example, social interactions with other students in the comments section were, at times, difficult to follow. Some of the participants did not like to scroll through the entire conversation in the comments section to look for answers and indicated that they would rather find answers to their questions from other sources. On the survey, one participant states that, “I found it hard to sift through the comments to find the answers to the questions I had asked, so I would just look things up on my own” (respondent #10). One of the focal students indicated, “there are so many comments and tags that you just kind of don’t want to look at it, because there is too much and you can’t find what you want” (Melanie).

4.2.2. Novice language level of participants

The second challenge of using eComma for social/open reading has to do with the participants’ novice Chinese language level. Due to the limited knowledge of Chinese, the texts the participants could read were short, which resulted in limited discussions among them. In addition, the participants felt that the readings were so short that once a student had read through them, almost all of the possible annotations had been made by other students. As one participant described, “I liked

<table>
<thead>
<tr>
<th>Date &amp; Time of Comment</th>
<th>Highlighted/Annotated Text [with English Translations]</th>
<th>Student Comment(s) Related to Annotated Text [with English Translations, when/if needed]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feb. 26, 18:59</td>
<td>十分 激动 [Extremely excited]</td>
<td>Student F Initial Comment: 我知道每字，但是我不知道这个句子。 [I know every character, but I don't know what this sentence means.]</td>
</tr>
<tr>
<td>Feb. 27, 18:24</td>
<td></td>
<td>Student G Response: 十分 [extremely] is a way of saying very or really. So they're saying that they're very excited/extremely excited.</td>
</tr>
</tbody>
</table>
the idea of annotating as a group, but it was difficult to leave unique comments when others had already addressed the popular questions” (respondent #8). It was common to see that when a reading assignment was near the due date, the majority of the text was annotated, which the participants did not think was beneficial for learning. Another focal student said, “I like the idea initially of being able to tag something and to see what the whole class has been tagging it as, but then like by the time it got close to the due date just the entire text was highlighted at one point or another so it became kind of like information overload you know” (Hanna). Because of the short length of the texts and the limited language production the participants could make, it was difficult to take full advantage of using the eComma tool for social reading.

4.2.3. Character writing

The third challenge of social/open reading through the use of eComma is the lack of opportunity to practice traditional character writing by hand. Some of the participants expressed that when reading print-based texts, they needed to go through the trouble of looking up words and writing them down, which helped them memorize characters faster. On the other hand, when reading via eComma, the participants indicated spending less time to physically write down characters as they were able to easily find character definitions online or via other Chinese reading tools that they had downloaded and used. One participant, who used another Chinese definition program on his own to assist his understanding of the eComma readings, explained, “Being able to scroll over things and see the definition caused me to pay less attention to those characters. I still recognized characters but I could not write them when I did the digital reading” (respondent #10). Thus, the eComma tool provided the convenience of finding character information quickly; however, not needing to write down characters for learners’ reference can be viewed as a downside.

In sum, the challenges of social/open reading via eComma included (1) the various technical issues in the tool, (2) the novice language level of the participants, and (3) the lack of character writing practice provided. For the first challenge, technical improvements can be made to eComma to offer language learners a better interface and more user-friendly functions. For example, one participant suggested that at least a distinction between comments and questions should be made to make the tool more helpful (respondent #10). At the time of this writing, eComma is currently undergoing several changes/upgrades by the developer (COERLL). Therefore, it is possible that some of the technical limitations experienced by learners in our study will soon be addressed. The second challenge regarding the learners’ novice level illustrated that for language beginners to read effectively via eComma, modified instructions might be needed. Instead of encouraging all students to freely annotate the text and eventually having the whole text highlighted, different tasks could possibly be assigned to different students. For example, a few students could focus on tagging vocabulary that they or their peers might not know, other students could be in charge of simply answering questions posted by peers, and yet others could link the content of the text to their own experience(s) and comment about them. The third challenge—the lack of character writing practice—could be solved by requesting students to physically write down the character whenever they look up a character’s definition via the eComma tool.

4.3. Research question 3

To determine the pedagogical ramifications of incorporating social/open reading activities into the Chinese language classroom in our study, feedback from an informal interview with the instructor of the Chinese course was analyzed. In addition, comments from the four focal students interviewed provided further insight into some of the implications suggested by the instructor. The major issues discussed by both the instructor and the focal students can be categorized into four main areas: timing; improving discussion(s) in eComma; integrating eComma into the classroom; and providing more structure.

4.3.1. Timing

Both the instructor and the focal students mentioned timing of comments as a hindrance to interaction and discussion on eComma. Some of the students pointed out that they would comment and then, at times, not receive a response until two or three days later, if at all. Thus, instead of waiting to read their classmates’ comments, learners would simply log on to eComma, complete the assignment, and then not return to read their classmates comments. The instructor also noted that many of the comments were made the night before the assignment was due, leaving little time for other students to read or respond to the comments made.

To resolve problems associated with timing, one respondent suggested having multiple deadlines, such as making comments due on Thursday and then response(s) to the comments due on Saturday. Another survey respondent proposed having a set time (8:00 p.m. to 9:00 p.m.) to read and annotate a reading. Although the instructor did not advocate for a specific strategy, he did emphasize the importance of having a time constraint for comments.

4.3.2. Improving discussion(s) in eComma

Another major issue for both the instructor and the focal students was the lack of content depth in annotations made on eComma. Much of the content focused on simple translations. Two of the students (Thomas and Steve) believed this to be a result of students completing the assignment in the quickest and easiest way. The instructor also expressed some frustration with students primarily commenting on vocabulary words/characters. However, the instructor believed that this could also be attributed to the learners’ low linguistic levels as beginners.
To enhance the quality of discussion and depth of comments, the instructor suggested dividing the class into small groups. The instructor expanded on this by explaining that during whole-class discussions, students’ comments can get lost and sometimes do not carry as much importance as they would in a smaller group context. The instructor also believed that adding a training session that provided examples of ‘good’ and ‘bad’ comments could increase the quality of annotations made. One of the focal students (Steve) added that assessing comments based on quality rather than quantity could also improve the types of comments made.

4.3.3. Integrating eComma into the classroom

Although the instructor believed that integrating eComma into the classroom would improve student accountability and thus student comments and annotations, he reported struggling with bringing eComma into the classroom. He pointed out that due to the lack of depth in the comments, there was little to be discussed in the classroom. The instructor printed out hard copies of the reading with only the questions and no responses. He then asked students to work in groups to answer the questions. However, because most of the questions were related to vocabulary, this provided little support for an in-class discussion. Learners were also given weekly quizzes based on the readings that they completed via eComma. However, as the instructor stated, these quizzes seemed to provide little motivation for interaction on eComma. Future work with DATs in L2 classrooms should therefore focus more on how to meaningfully integrate the tool and the digital reading experiences of students with in-class activities.

4.3.4. Providing structure for novice learners

Finally, the instructor discussed the limited linguistic abilities of his students. He remarked that more structure and support embedded into his tasks may have led to better comments and more interactions between the students. Expanding on the type of structure that he thought necessary, the instructor suggested adding tasks that required specific types of comments rather than merely requiring a certain quantity of comments.

In summary, the pedagogical implications of integrating an annotation tool into the Chinese language classroom used in this study are (a) adding timing constraints, (b) supporting discussion, (c) integrating the virtual comments into classroom discussion/activities, and (d) providing more structure for novice learners. The feedback from the instructor and students in this study provide important insights for future implementations.

5. Discussion

The ubiquitous nature of digital texts in students’ academic and social lives means that the nature of reading in L2 classrooms will also continue to evolve. Social reading via DATs represents yet another way to develop students’ digital literacies in a L2 learning and teaching context (Blyth, 2014). The scant amount of research to date that has investigated the use of DATs in an L2 environment has only focused on alphabetic-based languages (e.g., Lo et al., 2013; Tseng et al., 2015). In contrast, this current study offers an initial first step to understand any possible affordances of using DATs with a logographic-based language.

We have seen that social reading in a lower-level Chinese language classroom can provide learners the opportunity to carry out a close reading of a text while also allowing them to co-construct meaning with each other (Lantolf & Poehner, 2014). Even when learners are not interacting with others with the explicit intent of scaffolding one another, they are still able to provide mediation (Vygotsky, 1978) in the form of examples, questions, and proposed perspectives about literary texts via their digital annotations. This kind of social interaction among students, particularly in the context of reading and understanding L2 Chinese characters used in literary texts, has the potential to engage learners in a way that traditional reading activities cannot do. That is, the solitary activity of reading, which is commonplace in many L2 classrooms, can be transformed into a more dynamic and collaborative experience for students (Thoms & Poole, 2017)—even for novice learners of a logographic language like Chinese.

One somewhat surprising finding was the way in which the majority of students in this study used the L2 when responding to other students’ comments in eComma. The case study carried out in a L2 French classroom highlighted in Blyth (2014) allowed students to make all of their comments in English while interacting via the DAT. The students in our study were not instructed as to what language to use (i.e., characters vs. pinyin vs. English) when annotating the digital texts. However, 66% of the comments/annotations were written using Chinese characters while only 6% of the comments/annotations were made using English. Again, this observation suggests that DATs also have the potential to afford students valuable practice via the production of digital-based L2 writing output while simultaneously allowing them to improve their L2 reading ability.

While we have seen in previous studies that individual students who use DATs on their own can improve their L2 reading comprehension (e.g., Lo et al., 2013), we would suggest that one of the primary affordances of using DATs in a classroom context is that learners can collectively share their insights about a text with fellow learners. In this study, eComma allowed students to interact with each other and provide scaffolding assistance related to L2 vocabulary and grammar, along with content-based issues related to the literary texts.

In contrast to the existing research on DATs in L2 contexts (e.g., Lo et al., 2013; Tseng et al., 2015; Thoms & Poole, 2017), this exploratory study sheds light not only on the potential benefits of social reading, but it also identifies some of the primary challenges of creating a digitally based, interactive reading environment. Given that digital social reading via DATs in L2
contexts is still a relatively new area of research, coupled with the fact that some technical aspects of DATs used by educators are still being refined, we have highlighted what worked well and have signaled how the use of a DAT in an L2 classroom context can be improved. However, more empirical work is needed to fully explore both the linguistic and pedagogical affordances of social reading in other L2 classrooms. This study serves as an initial step towards that endeavor.

6. Conclusion

In conclusion, our study highlights how students in a lower-level Chinese language course use a DAT to scaffold each other's understanding of Chinese characters/vocabulary words when engaged in digital social/open reading. eComma allowed students to co-construct meaning and scaffold their learning while engaged in close readings of the Chinese literary texts outside of the physical classroom. Drawbacks of social reading included students' frustrations with some technical aspects of the eComma tool and the instructor's concerns about meaningfully bridging students' social reading experiences outside of the class with in-class discussions/activities.

6.1. Limitations

Like other exploratory studies that investigate the use of a relatively new tool in L2 contexts, our study has limitations. First, the small sample size does not allow for generalizations to be made about the use of eComma in other L2 Chinese language courses; clearly, subsequent research efforts need to involve more learners to fully understand the linguistic affordances and pedagogical challenges of using DATs in L2 contexts. On a related note, the proficiency level of the learners (i.e., second semester, university-level students) who participated in our study may have limited the ways in which they made use of eComma.

Finally, the recent proliferation of a number of DATs has resulted in technological features inherent in the tools themselves that need to be improved to allow for a more user-friendly experience for students, teachers, and researchers alike. As previously discussed, some students mentioned technological difficulties when using eComma that may have adversely affected (a) how they made use of the tool, and subsequently (b) their overall social reading experience. These kinds of technological limitations will ultimately be improved with newer versions of DATs. Despite these limitations, our study has shed light on the potential benefits and challenges of incorporating L2 social/open reading in an L2 Chinese language class and serves as a springboard for more research in this area.

6.2. Future research

Given the dearth of empirical work to date on social/open reading in L2 contexts other than EFL classroom environments, a number of future research areas need to be explored. One area involves investigating how more advanced L2 Chinese language learners make use of DATs to enhance their acquisition of L2 vocabulary and/or their overall reading comprehension/ability in Chinese. Another area worth exploring is how L2 digital social reading via DATs affect whole-class discussions in the physical classroom. Specifically, the question remains about whether or not virtual interactions in/around/about digital L2 texts via DATs facilitate in-class discussions about linguistic, literary, historical, or cultural aspects of L2 readings. Finally, much more empirical work is needed to understand whether or not digital social reading leads to better comprehension of L2 literary texts vs. traditional, solitary experiences found in most L2 classrooms.

Acknowledgments

We would like to sincerely thank the cooperating teacher and his students for their time and unique perspectives on using eComma in their classroom. We would also like to acknowledge the three anonymous reviewers and editor for their insightful feedback on the various drafts of this article. Any remaining infelicities are our own.

Appendix A. One of the eComma readings used in study*

Americans’ American birthdays

Americans’ American birthdays are usually very cute on the outside, but in the cake, there are candles. The birthday person will blow out the candles, if this person can blow out all the candles in one blow, then their wish will come true. If the birthday party is at a restaurant, then they may also sing a song. Typically, the birthday person will only invite their friends to the party, Dad and Mom will give a gift, or wish the birthday person a happy birthday, but usually they won’t attend the party.

Literal translation: Americans’ American birthdays are generally very cute on the outside, but in the cake, there are candles. The birthday person will blow out the candles, if this person can blow out all the candles in one blow, then their wish will come true. If the birthday party is at a restaurant, then they may also sing a song. Typically, the birthday person will only invite their friends to the party, Dad and Mom will give a gift, or wish the birthday person a happy birthday, but usually they won’t attend the party.

For everyone, the birthday is very important, so the people of the birthday will receive special treatment from friends and family. Therefore, children will do their own things to continue the birthday. Furthermore, the birthday person will possibly help him or her do some housework.
Birthdays are important to everyone. So, usually the birthday person will get special treatment from their family and friends. So, all children will be very excited about their birthday. For example, the birthday person’s friends might take them out to eat, or help them do chores.

还有一个传统叫惊喜聚会。有时候人们会假装忘记了生日的事，让过生日的人感到自己被忽视了，而实际上大家都暗中准备惊喜聚会。

There’s one more custom, it’s the ‘surprise birthday party.’ Sometimes people will pretend to have forgotten someone’s birthday, making the birthday person feel like they are being ignored, when actually everyone has secretly prepared a surprise party.

中国人 过 生日-Chinese birthdays

中国人 过 生日 的时候 有很多的传统。小孩一周岁的时候，在孩子周围放上书、针、硬币之类的东西。每件东西都有含义，孩子摸到的东西会告诉大家以后他会干什么。假如孩子摸到硬币，可能他以后就喜欢做生意。中国的老人过生日的时候，常吃长长的面条，表示长寿。有的人家还会送老人桃子，为了祝他长寿。

There are many Chinese customs for celebrating birthdays. When a child is 1 week old, a book, a needle, a coin, and other similar things are placed around the child. Each object holds a deeper meaning, whatever the child touches will have implications about the child’s future. For example, if the child touches a coin, then the child will like business in the future. Older Chinese people often he long noodles on their birthday, because long noodles represent a long life. Some people will give elder Chinese people a peach on their birthday to also wish them a long life.

中国人过生日的时候一般要去吃饭。不过，在中国过生日的人应该请朋友吃饭而且家人也会参加。年轻人还会去KTV唱歌或者去酒吧玩。中国人也被西方的文化所影响。比如现在中国人过生日的时候会吃蛋糕，送礼物，还会送生日贺卡。

Nowadays people will go out to eat on their birthday. However, in China it is customary that the birthday person pay for the meal, also family members will participate in this. Young people also will go to KTV bars to sing or they will go and hang out at a bar. Chinese people have been influenced by western culture. For example, Chinese people will sometimes eat cake on their birthday, give gifts, and even give birthday cards.

*NOTE: Due to space limitations, we have only included one of the eComma readings used in this study. In addition, only the simplified Chinese characters appear here. However, as previously mentioned, both sets of characters (i.e., simplified and traditional) were included in each of the three readings used in this study.

Appendix B. Sample comprehension and vocabulary task (with English translations)

**Comprehension questions** *(Answer according to the reading in English in a complete sentence)*

1. 美国人过生日的时候有什么样的蛋糕? What kind of cake do Americans have when they celebrate birthdays?
2. 美国人吃蛋糕有什么传统? What American customs are associated with the birthday cake?
3. 美国人一般在哪儿过生日? Where do Americans typically celebrate birthdays?
4. 什么是惊喜聚会? What is 惊喜聚会 (jingxi juhui — surprise party)?
5. 中国人对小孩过生日有什么传统? What birthday customs with children do Chinese people have?
7. 西方文化怎么影响中国人过生日的习惯? How has western culture influenced Chinese customs?
8. 中国人过生日做什么? How do you Chinese people celebrate birthdays?

**造句子** *(Write the English translation for each word and then a sentence in pinyin)*

<table>
<thead>
<tr>
<th>Chinese</th>
<th>Pinyin</th>
<th>English</th>
<th>Sentence</th>
</tr>
</thead>
<tbody>
<tr>
<td>而且</td>
<td>érqié</td>
<td>and</td>
<td></td>
</tr>
<tr>
<td>愿望</td>
<td>yuànwàng</td>
<td>wish</td>
<td></td>
</tr>
<tr>
<td>实现</td>
<td>shíxiàn</td>
<td>achieve</td>
<td></td>
</tr>
<tr>
<td>平时</td>
<td>pínghì</td>
<td>normal</td>
<td></td>
</tr>
<tr>
<td>坚持</td>
<td>jiānshì</td>
<td>persistent</td>
<td></td>
</tr>
<tr>
<td>周围</td>
<td>zhouwéi</td>
<td>around</td>
<td></td>
</tr>
<tr>
<td>含义</td>
<td>hán义</td>
<td>meaning</td>
<td></td>
</tr>
<tr>
<td>假如</td>
<td>jiànrú</td>
<td>if</td>
<td></td>
</tr>
<tr>
<td>文化</td>
<td>wénhuà</td>
<td>culture</td>
<td></td>
</tr>
<tr>
<td>影响</td>
<td>yǐnxuǎn</td>
<td>influence</td>
<td></td>
</tr>
</tbody>
</table>
**Personal questions (Write a response in pinyin)**

1. 你怎么样过生日？How do you celebrate your birthday?  
2. 你感觉中国人过生日还是美国人过生日好？Why? Which way of celebrating birthdays is better, the American or Chinese way? Why?  
3. 你收到最好的礼物是什么？What is the best gift that you have received?  
4. 你过生日的时候会请谁来你的聚会? When you celebrate your birthday who do you invite to your party?  
5. 你什么时候过生日？When is your birthday?  

**Appendix C. Student survey questions**

*Background/demographic information*

1. What is your age?  
2. What is your gender?  
3. What do you consider to be your native language?  
4. What do you consider to be your second language?  
5. Do you know another language other than English and Chinese? If yes, please indicate which other language(s) you have working knowledge of. If not, simply respond 'no' in the space below.  
6. Describe how you came to know/speak Chinese (e.g., the number and kinds of formal classes you have taken (and where)), if you consider yourself a heritage language learning of Chinese (i.e., Chinese was spoken in your home and you learned it there from an early age), and/or if you have any immersion-type of experiences learning Chinese. Please provide as many details as possible in the space below.  

*Reading and learning Chinese/Chinese characters in this class*

7. When thinking about the reading texts assigned thus far in your Chinese language course, how long (on average) do/did you spend reading each weekly assigned text?  

<table>
<thead>
<tr>
<th>Time</th>
<th>30 min</th>
<th>1 h</th>
<th>1.5 h</th>
<th>2 h</th>
<th>More than 2 h</th>
</tr>
</thead>
</table>

8. In thinking about reading Chinese via traditional, print-based texts vs. digitally based texts (i.e., via the annotation used in this small study called eComma), which format do/did you prefer and why? Please be specific and give reasons for your preferred format (i.e., traditional, print-based text vs. a digital text via eComma).  
9. When thinking only about the digitally based texts that you read in this class via the ANNOTATION TOOL eComma, what are the advantages and disadvantages of collaboratively reading a Chinese text/characters online and with fellow students? Again, please be specific as possible. Your answers will help us better understand the pros and cons of a tool like eComma.  
10. When you were/are assigned a traditional, TEXT-BASED reading in this Chinese class, what resources (e.g., online or print resources or a tutor/friend) do/did you use to help you comprehend the text and/or characters? Please list/describe any/all resources that you use(d).  
11. When you were/are assigned a DIGITALLY BASED reading (i.e., via eComma), in this Chinese class, what resources (e.g., online or print resources or a tutor/friend) do/did you use to help you comprehend the text and/or characters? Please list/describe any/all resources that you use(d).  
12. Do you think you learned more vocabulary/Chinese characters when reading a traditional, TEXT-BASED reading in this course? Why or why not?  
13. Do you think you learned more vocabulary/Chinese characters when reading a traditional, DIGITALLY BASED reading (i.e., via eComma) in this course? Why or why not?  
14. Are there any functions that are currently not available in eComma that you think might help to improve its usefulness? In other words, how can eComma be improved?  
15. Would you be interested in reading more Chinese texts via an annotation tool like eComma in the future/in future Chinese classes? Why or why not?  
16. Is there anything else that you would like to comment on regarding this small-scale study?
17. If you would be interested in participating in a ~30-min interview with the researchers regarding the use of print-based vs. digitally based texts (i.e., eComma) for reading and vocabulary learning purposes in Chinese, please provide your name and email below. Participating in this final part of the study is optional. However, if you are willing to be interviewed about reading in Chinese and learning Chinese vocabulary/characters, we will compensate you $10 for your time.

Appendix D. Focal student interview questions

1a. Tell us about your background learning Chinese.
1b. What motivates you to learn Chinese? (if not answered in question #1)
2. Please comment on your ability to read Chinese.
3. What strategies do you typically use when reading Chinese texts?
4. Please comment on your ability to learn Chinese characters.
5. What strategies do you typically use to learn Chinese characters?
6a. Before participating in this study, did you ever use technology to help you read Chinese texts or learn Chinese characters? If so, what technologies/applications did you use?
6b. (if needed—i.e., if they answered that they did use technology to help their Chinese before this study): How did the technology/application help you to better comprehend Chinese texts and/or to facilitate your learning of Chinese characters?
7. On average, how many hours per day do you spend online (e.g., either via smart phone, tablet, desktop, laptop)?
8. Thinking specifically about the texts you read using eComma this semester, explain how eComma enhanced or hindered your ability to:
   a) read and understand Chinese texts;
   b) understand and eventually learn Chinese characters;
   c) interact with fellow classmates.
9. What benefits did you see using eComma that traditional, print-based texts/readings can’t offer in relation to learning the Chinese language?
10a. What types of questions or comments did you frequently post on eComma?
10b. What are the reasons you think these questions or comments were useful for your Chinese learning?
11a. Did you frequently read other students’ posts?
11b. Were their posts useful to your learning? Why or why not?
12. Based on your experience, what are the weaknesses of eComma and how could it be improved?
13. Would you want to read Chinese texts in the future using an annotation tool like eComma? Why or why not?
14. Anything else that you would like to add?

References

Center for Open Educational Resources and Language Learning (COERLL). http://www.coerll.utexas.edu/coerll/.


