Digital Social Reading and Annotation in the Japanese University Classroom: A Case Study Using Perusall

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Abstract

This report introduces and assesses the pedagogical benefits of using a digital social reading and annotation tool called Perusall in the Japanese university classroom. Perusall is a free browser-based online software that allows teachers and students to digitally read and annotate class readings together. Preliminary results from a class survey after using this tool suggest that use of digital social reading and annotation software can help motivate students to complete reading assignments and is effective in encouraging collaborative learning. Although there were occasional technical problems, overall, students self-reported that social reading helped increase their comprehension of difficult texts, and the majority of students expressed higher satisfaction with doing reading assignments and posting comments through Perusall, compared to reading on their own or using traditional online discussion boards.

1. Introduction

Facilitating opportunities for university students to deepen and share their understanding of reading assignments can be challenging. This is particularly true in the Japanese university classroom where students with a full class schedule often struggle to complete reading assignments. On average, most first and second year Japanese university students take about twenty hours of class per week, yet on average, spend less than five hours a week on class preparation (Kokuritsu Kenkyu 2016, 3-4). Accordingly, any assignment of class readings for homework faces stiff competition for students' time. This situation can be remedied in part by pursuing pedagogical strategies for deeper and collaborative understandings of readings through active learning or flipped classrooms in which group discussion is made the focal point of classroom instruction. But this approach only works if students complete the reading in the first place. Short quizzes on readings can also encourage students to complete reading assignments but are time consuming and tend to reward surface reading rather than deep learning (Roberts 2011). These strategies also do not help students when they need help the most—such as while they are actually doing the reading.

One relatively new digital social reading and annotation software that seeks to solve some of

these pedagogical problems is called Perusall. Originally developed at Harvard University, and made available to the public since 2015, this tool is now being used at over 3,000 educational institutions around the world（Perusall.com）. Perusall allows students and instructors to read and digitally annotate reading assignments together, asynchronously, through a free browser–based software. This report presents the first case study of using this tool in the Japanese university classroom.

2. Background

Social reading is not new. For as long as universities have existed, students have gathered to read together, to share notes, to answer questions, and to exchange opinions about a reading. However, one of the biggest barriers to social reading is finding a space and time to meet. In Japan, where most university students live off campus, finding a time and a place to study together can be difficult. Digital social reading（DSR）and annotation software seeks to remove these barriers by allowing students to read assignments online and asynchronously post their questions and comments in the margins of the digital text. There are many different types of DSR software, but Perusall stands out in that it is specifically aimed at the university classroom setting and offers integration with many existing Learning Management Systems（LMS）. Although LMS software typically offers online discussion boards that are intended for discussion of reading assignments and other class materials, what makes Perusall unique is its ability to highlight and make annotations directly in the text while reading.

Perusall supports a wide range of reading materials including electronic textbooks that can be purchased or rented in the Perusall library along with PDFs, Word and Excel files, and even videos that can be annotated using timestamps. After a reading is purchased or uploaded into the course, the instructor is able to assign all or some parts of that reading for students to read. As students read the text, they highlight text that interests them and enter questions or comments that other members of the class can also see. Students and instructors are able to reply to student comments, raise questions, and even upvote comments that are especially helpful. For larger
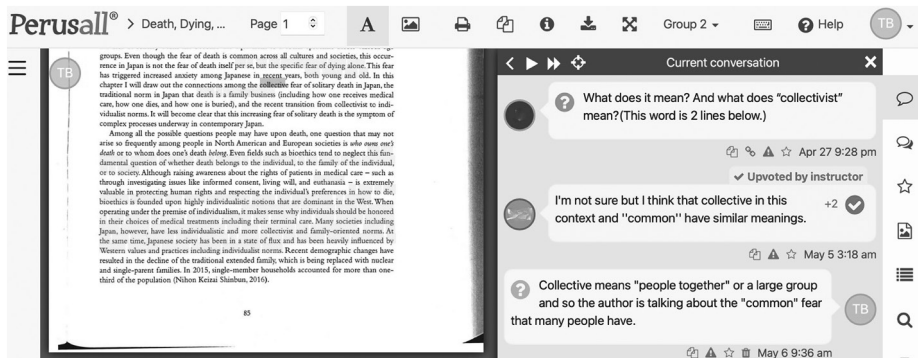

Fig. 1　Screenshot of Perusall（with student names redacted）

classes, students can be divided into separate reading groups so that number of annotations do not overwhelm the text.

Perusall also offers a range of helpful analytic tools for the instructor to use that measures student engagement with and comprehension of the reading assignment. For example, an automatically generated "Confusion Report" will identify sections of the reading that students are struggling with. The software can also measure the total and active reading time of students to help identify students who may be struggling to keep up with the reading assignments. There is also a grading function. By indicating a minimum requirement for the number of annotations, Perusall will automatically grade student annotations using an algorithm that measures frequency, distribution, and quality of annotations along with penalties for late work. Although the weighted distribution of grading can be adjusted to the instructors liking, this grading feature requires close monitoring, and was not utilized for this case study.

Overall, Perusall uses digital social reading and annotation to motivate students to complete reading assignments and help deepen their understanding of the text being discussed. The software also helps instructors more easily confirm what parts of the reading were confusing to students so that they can be brought up later in class. When used effectively, the use of computers and online technology for social reading and annotation, also referred to as computer supported collaborative learning (CSCL), has many benefits for students (Roberts 2005). So far, initial reports on effetiveness of Perusall as a tool to encourage completion of reading assignments and as a means for students to achieve a deeper understanding of challenging textual material is overwhelmingly positive (Miller et al. 2018; Walker 2019; d'Entremont and Eyking 2021; Gray 2021). There is also some indication that technologies like Perusall can be especially effective in language classes or ESL settings (Yeh, Huang, and Chiang 2017; Woodward and Neunaber 2020).

3. Methodology

This report is based on a survey of students who used Perusall in a single lecture course, "Death, Dying, and Religion," which I taught at Kwansei Gakuin University (KGU) in the spring semester of 2021. The course was primarily taught in English and required students to read seven short English language readings on Perusall. None of students were native speakers of English, although several had high English abilities. The total class enrollment was 45 students, including 15 students from the neighboring Hyogo College of Medicine (HCM). At the end of the semester, all students were asked to fill out an anonymous online survey and 41 responses were collected. I also used Perusall in two seminar style courses during the 2021 spring semester with five and four students each. While the data from these courses are not included in this report, my experiences and student feedback from these classes inform the discussion below.

4．Results

4．1　Did Perusall make it more likely that you would DO the reading than reading it on your own？

In response to the question of whether Perusall made it more likely for students to do the assigned reading then if they read it on their own, 61% of students strongly or somewhat agreed that it did, while less than 15% of students somewhat disagreed. Notably, no students strongly disagreed.

While further study is needed to confirm the specific reasons why Perusall may have helped motivate students to complete the assigned reading, when asked to list what they liked about Perusall, many students indicated that they liked, "watching somebody's discussion," or "it was good to see other people's opinion," suggesting that they found the experience of reading alongside other students more satisfying than if they read by themselves. Since students were encouraged to use the annotation tools to define unfamiliar words and confusing passages, reading on Perusall also helped students save time from looking up vocabulary. At least two students also indicated that the automatic reminder email generated from Perusall（if they had not finished reading）before the deadline helped them remember to complete the reading assignments.
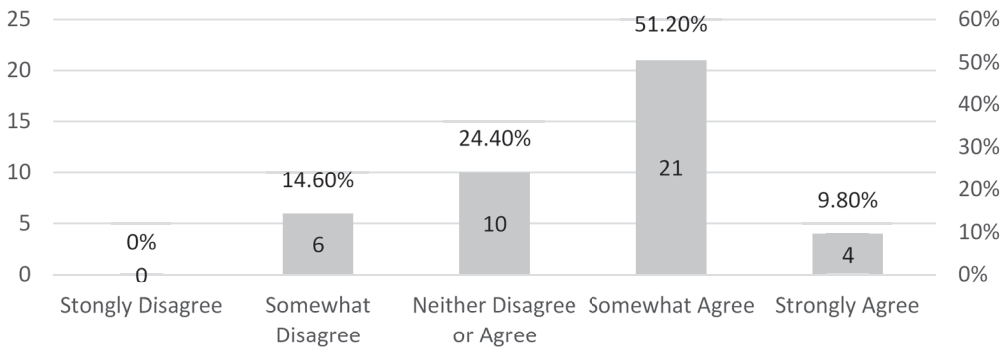

Fig. 2　Did Perusall make it more likely you would do the reading than reading it on your own？

4．2　Did Perusall help you UNDERSTAND the reading better than reading it on your own？

Another advantage of social reading through Perusall was the self-reported ability of students to understand the reading better than if they read it on their own. 66% of students strongly or somewhat agreed that Perusall helped them understand the reading better, while less than 20% somewhat or strongly disagreed with this statement.

Student feedback included comments such as, "I liked how I could see others comments and sometimes people were answering the meaning of the difficult words which really helped me understand the reading," or "asking and answering the questions was good for me to understand easily and deeply!" Students were encouraged to use the question feature on Perusall quite liberally. As other students would answer questions, I also joined the conversation when necessary to add clarification, correct misunderstandings, or answer questions（see Fig. 1）. While
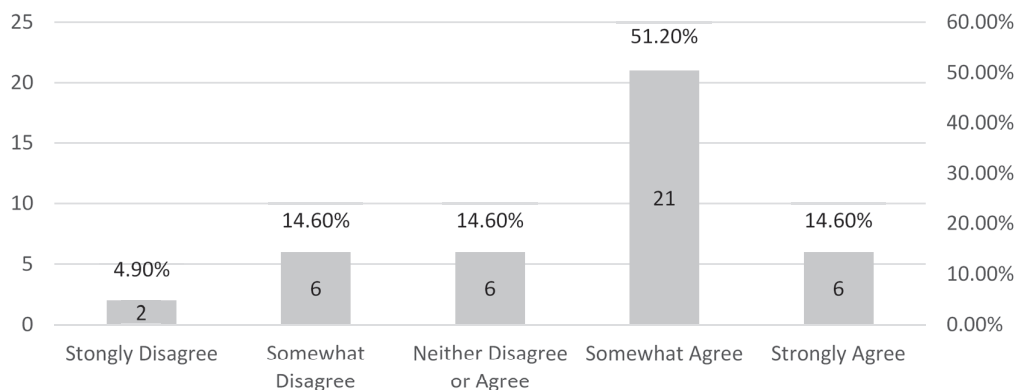
Fig. 3　Did Perusall help you understand the reading better than reading it on your own?

this required extra work on my part, Perusall's user interface made it easy to sort through annotations quickly, and was very helpful for getting a sense of what parts of the reading were resonating with students or causing confusion.

4. 3　Nnumber of required comments

For each assigned reading, students were required to make at least 3 comments (which included questions) on the text, as well as post an answer to a discussion question posed at the end of the reading. The required number of comments seemed to work well for the class. Two thirds of students thought the number of required comments was just right while just under a third felt it was too many. Only one student thought it was not enough. To make sure that the reading was not inundated with annotations, students were split into three different reading groups of 15 students each. This meant that students in each reading group would only see the annotations of their group. This was done to prevent the reading from becoming too cluttered with comments and to make it easier for students to contribute additional comments. This seemed to work well for the most part, although like any type of group work, disparities arose in the quality of annotations among the groups. There were always some students who did not make the required number of
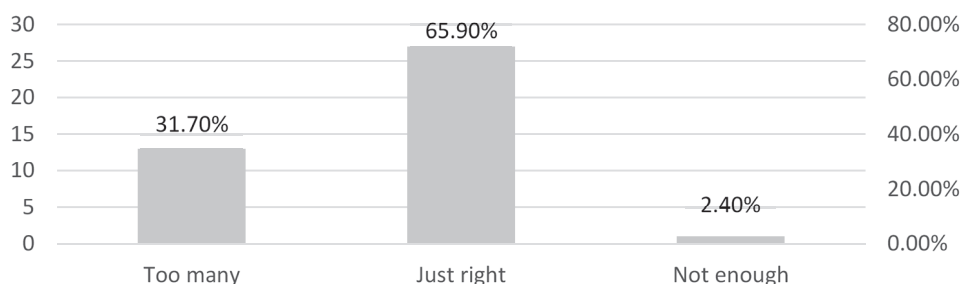

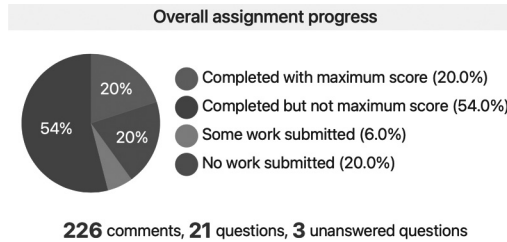Fig. 4　Was the number of required comments...?

Overall assignment progress

- Completed with maximum score (20.0%)
- Completed but not maximum score (54.0%)
- Some work submitted (6.0%)
- No work submitted (20.0%)

226 comments, **21** questions, **3** unanswered questions

Fig. 5　Screenshot of Assignment progress

annotations in any given week（see Fig. 5）. In hindsight, increasing the size of the reading groups to about 20 students may have helped produce a better ratio of annotations to text, especially for slightly longer readings.

4.4　Was Perusall easy to use？

The main drawbacks to using Perusall were occasional technical problems in the user interface. Just under a third of the class found that Perusall was very or somewhat easy to use, just under a third were neutral, and about 40% of the class found it not easy or somewhat not easy to use.

Most of these complaints were centered on the difficulty of selecting specific word or line in the text to post a comment. This problem occurred most frequently when the reading assignment was a low-quality scan. Although optical character recognition（OCR）was applied to all readings, if the scanned text was slightly slanted, for example, the highlighted text would sometimes skip over a word or line, which frustrated students who wanted to select a specific word or line of text. Students complained, "It was hard to highlight sentences" or "to choose a word is difficult." This problem was compounded when using Perusall on a phone or tablet which required the user to use their finger to select the text on a small screen. Some students also complained, "the text was too small... it was hard to read and draw lines," "comments were sent immediately from a missed
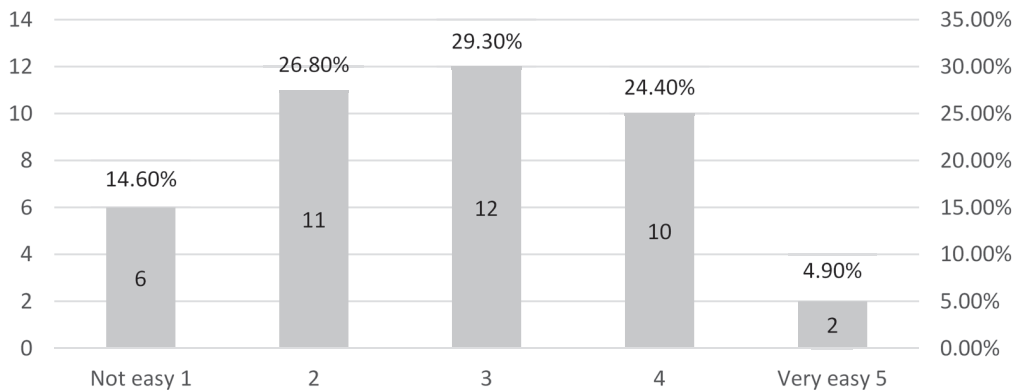

Fig. 6　Was Perusall easy to use？

touch," or, "I prefer reading on papers to reading online." At least one student indicated that they "liked to read by smartphones or PC."

Possible solutions to technical or user interface problems include using only electronic readings or high-quality scans of printed materials. Students could also be advised beforehand that reading on the small screen of a smartphone or tablet might be more difficult than reading it on a larger computer screen. After hearing that at least one student preferred to read on paper, I also adjusted the setting so that students could download the reading to print or read in a separate reading application. This seemed to satisfy students who preferred to do their initial reading offline or use their own digital annotation tools, and then add their comments back into Perusall after they were done. Another important consideration is whether Perusall is compatible with screen readers or assistive devices for students with disabilities. There have been some reports that it may not work for certain devices and so instructors should be made aware of this issue and work to guarantee accessibility (Gray 2021, 24).

4.5　Would you prefer to post your reactions to the reading on the LUNA Discussion board or on Perusall?

Despite slight dissatisfaction with the user interface, in the end, over three fourths of the class still preferred Perusall over the discussion board feature found in Kwansei Gakuin University's existing LMS software called LUNA, which is based on the LMS Blackboard.

This result was quite surprising considering that it was the first time for students to use Perusall and it required them to adapt to a completely new user interface. If the learning curve was removed though repeated use, it is possible that even a greater number of students might prefer Perusall over LUNA. However, three students mentioned that they found logging into Perusall cumbersome, with one student commenting that "it took longer to access than LUNA." Fortunately, Perusall also offers the option to integrate its web software directly into an existing LMS. Although I did not use this feature, integrating Perusall with LUNA could possibly lower the technological or psychological barriers that come from having to log into a separate application to
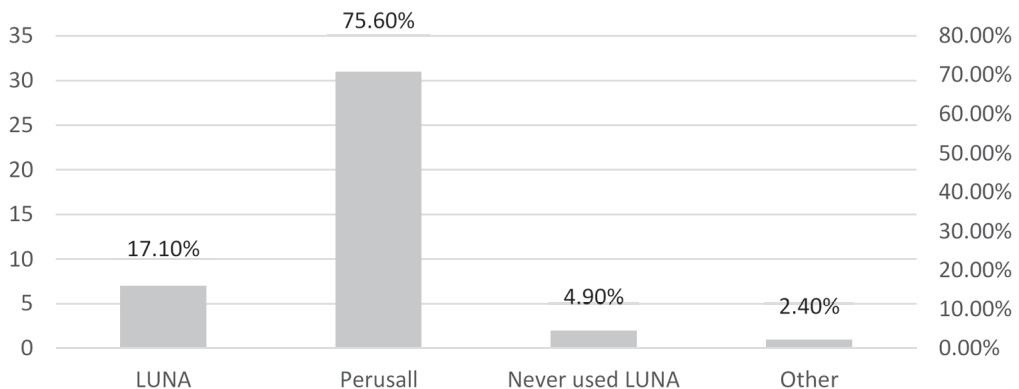

Fig. 7　Do you prefer Perusall or LUNA discussion board?

access reading assignments.

Even with the added burden of logging into a separate LMS to read, overall, students still preferred Perusall over LUNA because of the ability to insert their comments directly into the text. Although LUNA also offers an online discussion board that can serve as a forum to discuss readings, since the text of the reading itself is not visible in the discussion board, students must cite the reading at length to provide context for a question or to illustrate their point. As one student put it, "in LUNA, even if you read someone else's comment, you can't know what part of the text made them think that. However, with Perusall, you could indicate the text which made it easier to understand what they were thinking."

4.6　Did you feel more comfortable discussing the readings on Perusall than discussing them verbally in class？

When asked whether they felt more comfortable discussing the readings on Perusall, or in person during class, almost half of the class indicated that they preferred posting their comments online rather than stating them verbally in class, while about a third of the class indicated that they preferred to discuss the reading in class.

Like with many online discussion tools, the ability for students to take their time to think and craft questions or comments can be helpful for shy students, many of whom would hesitate to raise their hand in class. Although the names of students' who made annotations in Perusall were visible to others, in the future I hope to experiment with the anonymous function, which allows students to write their annotations in Perusall anonymously（although their names remain visible to the instructor）, which could possibly encourage bolder questions and comments on the reading by students who may lack the confidence to voice their thoughts or feel embarrassed to ask simple questions in front of their peers. To accommodate students who preferred verbal discussion, I also collected the most helpful annotations from each week and incorporated them into my lectures, giving students in class an opprotuity to read out their annotations or elaborate on their comments or questions. during class.
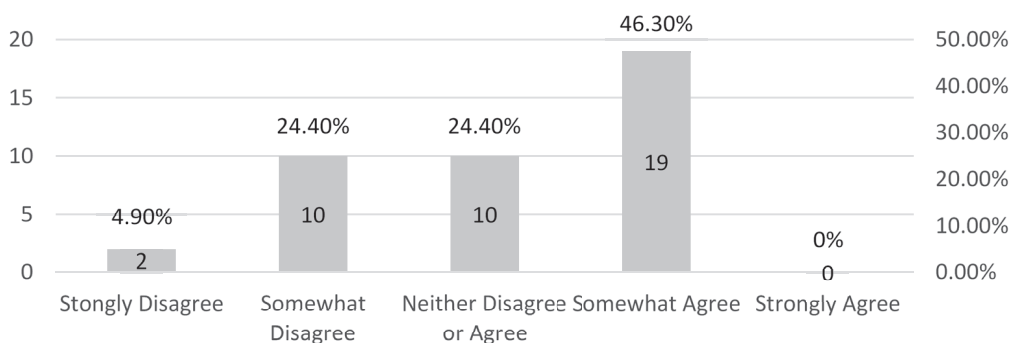

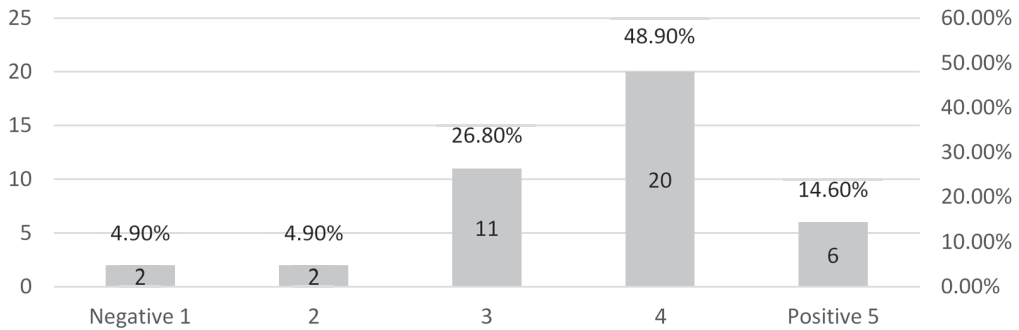Fig. 8　Did you feel more comfortable discussing the reading on Perusall than verbally in class？

Fig. 9　Overall, was your experience with reading on Perusall positive or negative?

4. 7　Overall, was your experience with reading on Perusall positive or negative?

Overall, over 60% of the class indicated a positive user experience with Perusall and fewer than 10% had a negative experience, with the remainder undecided.

The fact that fewer than 10% had a negative experience bodes particularly well for future use of digital social reading and annotation in the classroom. Despite some technical mistakes on my part, such as using poor quality scans for some of the readings, occasional problems with the user interface, and the hassle of logging into a separate LMS, overall, most students felt that the benefits of Perusall outweighed its drawbacks.

5.　Limits

Admittedly, there are limits to extrapolating too much from a single survey. More precise questions combined with measurement of real comprehension and reading compliance would yield more detailed data that might help contribute to a broader discussion of the benefits and drawbacks of digital social reading and annotation tools. Although students self–reported greater reading comprehension and a higher likelihood of completing the reading assignments, whether this was the case requires careful confirmation. The class was also not typical of most Japanese university classes in that it was a course taught in English that was not designed as an English language course. Whether the use of Perusall in English language courses or in regular Japanese classes would achieve similar student satisfaction levels and pedagogical benefits, remains to be seen. Even with these caveats, however, the results of the student survey, my own observations, and similar positive reports from universities outside of Japan, suggest that the pedagogical benefits of Perusall are real.

6.　Discussion and Conclusion

The results of this survey and my own observations suggest that the ability for students to converse informally with their peers about reading assignments, help each other define difficult words or confusing passages, and to write questions and comments at their own pace without

being put on the spot in class, can help motivate students to complete reading assignments and foster deeper comprehension of the text than when they read by themselves. These self–reported benefits of digital social reading and annotation are also borne out in my own observations. When I taught the same class in the previous year, I asked students to post their questions or comments about reading assignments in the LUNA discussion board. In comparing the two years, one of the main differences I noticed was that Perusall seemed more conducive to drawing out wider types of reflections from students. While changes I made in the course content and structure prevented me from directly comparing the quality of student work in these two years, I noticed that when students posted their reflections and questions to the LUNA discussion board in the previous year, for whatever reason, their comments often seemed to resemble each other, possibly because other students' comments were all they could see on their screen. In contrast, with Perusall, the need to highlight the text they were commenting on seemed more conducive to eliciting a wider distribution of reactions to the text. Another difference was that with Persuall, students were less hesitant to raise simple questions or make short comments. The chat like interface in Perusall, along with the ability to upvote other students' comments, seemed to make annotations more conversational, whereas the LUNA discussion board often looked and felt more like a space for writing a mini essay.

It is also important to note the advantages Perusall offers for online classes. As many universities shifted to online classes during the recent Covid–19 pandemic, many instructors, including myself, found it difficult to recreate opportunities for close reading and discussion of reading assignments. This was especially true in asynchronous classes. However, by moving some of the student discussion about reading assignments online, I could use the lecture time to focus on clearing up misunderstandings rather than confirming how much they had comprehended—a kind of flipped classroom approach. While I did not measure this in the survey, it is possible that giving students a chance to do social reading could possibly help counter some of the isolation many students feel when taking an online course.

One question for further study is how useful Perusall would be for Japanese reading assignments. Although the interface of Perusall is currently only offered in English, and their library of textbooks are primarily in English, it is still possible to upload Japanese language materials and to type digital annotations in Japanese. In fact, many students used Japanese in their annotations, such as when they needed to define a difficult word or concept. Since Perusall supports the highlighting and annotation of vertical text as well, it is therefore possible, if students do not mind the English interface, to utilize this tool for classes taught in Japanese as well.

As for classes that are conducted in English, the benefits of online social reading and digital annotation can be especially useful in the context of ESL settings, when students use the annotating function to help each other understand difficult passages. Alternatively, before giving out the reading assignment, the instructor could also add as many annotations as she or he likes to provide scaffolding for students with poor English skills. This may also help lower the

psychological barriers many ESL students may feel when coming face to face with a difficult text. It is this ability for students to easily pool their knowledge through an online social reading platform like Perusall, that makes it ideal for collaborative learning.

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