Improving Skills for Peer Feedback on Spoken Content Using an Asynchronous Learning Analytics App

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Abstract: Peer feedback can have a powerful effect on language learning outcomes. However, training students to successfully provide peer feedback and the subsequent evaluation of that feedback can be challenging. The first author's Ph.D. dissertation research will investigate how to improve that training process within the context of English as a foreign language education. First, this paper will describe the preliminary research questions and the motivations underlying these questions. Then, it will describe the design and development of the alpha version of a web app that supports training students to provide peer feedback on spoken content. This app will also be able to act as a platform which supports learning analytics (LA) research. Finally, this paper will lay out the proposed research methodology for moving forward.

Keywords: Peer Feedback, Learning Analytics, Technology Enhanced Language Learning

1. Introduction of Preliminary Research Questions and Research Contribution

Peer Feedback can have a powerful effect on language learning outcomes. However, training students to successfully provide peer feedback and the subsequent evaluation of that feedback can be challenging. In light of this, the authors propose the following preliminary research questions:

Question 1: How and to what extent can an asynchronous web app improve the skills of students for providing peer feedback on spoken content in the context of English as a foreign language (EFL) education?

Question 2: How and to what extent will the use of the asynchronous web app impact the performance of students on speaking tests?

Question 3: How and to what extent can the learning analytics data collected about students be used to modify the design and implementation of the asynchronous web app?

There are several contributions that this research can make. First, it can provide evidence of the efficacy of an asynchronous web app as a tool for improving peer feedback training. Second, it can demonstrate the efficacy of the app in improving student performance on speaking tests. Third, it can demonstrate how learning analytics data can be used to inform design and implementation decisions while developing and using the app through multiple iterations. Finally, this research can lay some groundwork for future research on peer feedback with learning analytics and technology enhanced language learning.

This paper will describe the design and development of the alpha version of an asynchronous web app that supports peer feedback on spoken content (as opposed to written content). First, this paper will briefly introduce the motivations for this research and the inspirations for the app. This will include some of the background literature which supports the inclusion of peer feedback in language learning and in learning in general. The following section will detail the design and development of the app. The last section will propose the research methodology.

2. Research Motivation and Research Methodology

2.1 Pebasco App Background

The initial idea for this web app was inspired by observations of the implementation of a synchronous pedagogical practice used in some EFL university courses in Japan called Timed Pair Practice (TPP). The authors thought that it could be improved by the integration of peer feedback. The concept was that students could do traditional synchronous TPP activities with their teacher in class and then they could use a web app to engage in supplemental asynchronous practice that is similar in approach to TPP and would involve giving and receiving peer feedback that is guided by teacher scaffolding.

The naming of "Pebasco" for this app comes from the underlined letters in the following phrase: "peer feedback on spoken content". The next section will provide more detail on Timed Pair Practice. The section after that will introduce background literature related to peer feedback.

2.2 Timed Pair Practice

One of the authors has taught at two universities in Japan which have included Timed Pair Practice (TPP) in their EFL curriculum. The author was intrigued by its effectiveness and wondered how it might inform the development of technology enhanced language learning. Because of this, it became one of the inspirations for the development of the Pebasco web app.

"TPP is a Task-Based Learning approach that incorporates random impromptu interactions and Corrective Feedback to help students identify and repair their errors" (Elam, 2014, p. 17). In its most basic form, the creator of TPP (Moe, 2005) describes the process as simple:

two students are randomly selected and allowed to converse until one of them makes an uncorrected mistake at which time their conversation is stopped. The duration of the conversation is timed from start to finish. After the uncorrected error has been pointed out, two more students are randomly selected and the procedure repeated. An average of all the times of a student's conversations and the average number of attempts made to converse in a class are used as the basis for making an evaluation of the student's performance. (pp. 197-198)

It is also worth noting that there are many different variations on the basic form of TPP. For instance, at the author's institution, when a pair of students performs a TPP test, in addition to receiving credit for the standard metrics (i.e. length and number of conversations), the students can be awarded addition credit based on the quality of the content of their conversations (e.g. the use of follow-up questions; novel or creative phrasing; supporting- or counter-arguments; etc.).

Research has demonstrated that the TPP approach has improved both the length and quality of student conversation (Pipe, 2015). However, there are some suggestions that the approach can be further improved by incorporating technology (Moe, 2005) and more error recognition and correction by students (Elam, 2014). These calls for technology integration and the inclusion of peer feedback form the starting points for the design of the Pebasco app.

2.3 Peer Feedback

In Hattie's (2009) work synthesizing hundreds of meta-analyses of learning success, feedback was identified as one of the top ten strongest influences on student achievement. Feedback was found to have an effect size of 0.75, nearly double that of the average effect size. Furthermore, feedback is not only unidirectional from teacher to student. Effective feedback can be given from student to teacher and also from peer to peer (Hattie & Clarke, 2019). It must also be noted that feedback can also have a detrimental effect on learning in some cases. Regardless of its positive or negative effect, the importance of peer feedback can sometimes be overlooked by teachers who are only focused on giving feedback from themselves to their students. Because of this, Hattie (2012) says "teachers who do not acknowledge the importance of peer feedback, and whether it is enhancing or not, can be most handicapped in their effects on students" (p. 273).

Unfortunately, feedback is not always easy to do correctly because there is considerable variability in its effectiveness (Kerr, 2020). In light of this variability, Hattie (2012) asserts that "more

research is needed on how to ensure feedback is given so that it is appropriately received, and there are few instruments that assess the frequency, types, and impact of feedback in classrooms" (p. 274). There is wide agreement that there needs to be more research conducted on feedback in order to improve effectiveness (AlFallay, 2004; Patri, 2002; Struyven et al., 2003). There has also been a call for the development of standardized tools to facilitate research in this area (Magin & Helmore, 2001). Hattie (2012) describes the future of feedback research as "exciting" and says that it "should set out to discover not only how to embed feedback in instruction but also to assist students to seek feedback, evaluate feedback (especially when provided by peers or the internet), and to use it in their learning" (p. 275).

To summarize, peer feedback is an important tool that teachers should implement in their teaching practice, but it can be challenging to do effectively. There is also a need for research into peer feedback and learning analytics tools to help inform that research. Furthermore, the previous section noted that TPP practitioners (Elam, 2014; Moe, 2005) have called for an expansion of TPP that includes technology enhanced language learning and peer feedback. These factors were considered when developing the alpha version of the Pebasco app, a tool that can help teachers to model feedback and students to give and receive feedback. It is the first step in developing a system that can fill the role of a standardized tool with built-in learning analytics functionality which can further advance research on peer feedback.

2.4 Design and Development of the Alpha Version of the Pebasco App

When students are watching their classmates do TPP testing in class, they repeatedly have the opportunity to observe the instructor identify mistakes. The basic concept underlying Pebasco is to allow students to assume the same role as the instructor. In an asynchronous setting, they can identify a particular point (i.e. timestamp) in a classmate's recording of spoken content and then they label it with a comment identifying the mistake at that point. This allows the students to practice giving peer feedback in a context that is related to the TPP testing that they do in their classrooms. Unlike TPP testing, students using Pebasco can give multiple comments on one recording. After that, the teacher gives feedback on the Pebasco recordings in the same manner as the students (linking specific comments to timestamps). Finally, the system gives the ability to compare the comments on recordings; namely how closely a student's peer feedback aligns with the teacher's feedback on the same recording.

The authors decided to borrow the idea of a minimum viable product (MVP) from the world of entrepreneurial start-ups. This approach involves the creation of a low-cost prototype which has the minimal amount of functionality to be useful for the target end-user. It is intended to be more of a proof-of-concept than a full-fledged product. The authors set about finding the least expensive and fastest way to build an alpha version of the Pebasco app using existing discrete technologies.

The author who uses TPP in their EFL classes evaluated the educational technology that was currently being used to see if any of their affordances could be leveraged in the design of the alpha version of the Pebasco app. Three tools stood out as being particularly promising. The first is Flipgrid, a free online web app which is owned by Microsoft. It allows teachers to assign prompts to their students and the students reply by uploading brief video clips. Teachers can respond to the posted comments in many ways, including video replies, text comments, and rubric scoring, while students can respond by adding "likes" or replying with a video upload. While Flipgrid is popular with students and it offers opportunity for student interaction centered on spoken content, it lacks clear functionality for allowing teachers to scaffold and improve peer feedback. Furthermore, it allows teachers to give feedback on the overall video, but it does not allow them to target the feedback to a specific timestamp in the video, a feature that would be invaluable for EFL teachers who regularly need to draw students attention to specific areas (e.g. such as in TPP).

The second is the Microsoft Office 365 suite of apps. It includes Teams, a learning management system and video chat platform, and Forms, a platform for creating and distributing surveys and recording the responses. The third tool is Google Data Studio, which is a free platform for providing a data visualization dashboard for the students to compare their feedback to the teacher's and their classmates'. This free technology stack (Flipgrid, Microsoft Office 365, and Google Data Studio) was accessible to the authors and served as the backbone of the alpha version of the app design.

2.5 Proposed Research Methodology

In October 2020, approximately 120 first year students enrolled in a compulsory basic EFL course at a Japanese university will be invited to take part in this study and sign a consent form. During the course, they will have five TPP speaking tests. As one element of preparation for these tests, they will be asked to use the alpha version of the Pebasco system. First, they will receive an assignment in the Microsoft Teams LMS for them to record a 30-60 second video in Flipgrid within a designated time. After that, the LMS will give them an assignment that includes a link to the collection of their classmates' videos and a link to a Microsoft Form. In the Form, they indicate which classmate's video they are providing feedback on and the timestamp of the first mistake that they have identified along with a description of that mistake (e.g. grammar mistake or pronunciation mistake). A student can identify up to three mistakes per video. Each student is required to provide feedback on five of their classmates' videos, using a new Form for each video. When the teacher and students have all submitted their feedback, the students will be provided a data visualization dashboard via Google Data Studio so they can reflect on how their feedback compares to their teacher's and their classmates'. Data collected from Microsoft 365 and Flipgrid will be used to evaluate (1) Pebasco's effect on students' ability to provide peer feedback, (2) Pebasco's effect on students' performance on the TPP tests, and (3) modifications to the design and implementation of Pebasco.

The evaluation of (1) Pebasco's effect on students' ability to provide peer feedback will be based on a comparison of how well a student is able to identify the same mistakes as the teacher in successive rounds of Pebasco use. The evaluation of (2) Pebasco's effect on students' performance on the TPP tests will be twofold. The first evaluation will be based on a comparison of how well a student performs on successive TPP tests which are administered after rounds of Pebasco use. The second evaluation will compare the TPP test performance of the experimental group of students in the autumn term (described in the preceding paragraph) to the TPP test performance of a similarly sized control group of students who took the same course, but did not use the Pebasco system. Finally, data from the (1) and (2) evaluations will be supplemented by student surveys and teacher observations to inform possible modifications to the design and implementation of Pebasco. New iterations of Pebasco will be tested from the start of the new school year in 2021. A comparison of the subsequent iterations of Pebasco will be used to evaluate the (3) modifications to the design and implementation of Pebasco.

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