

# Personalizing Feedback for Feed-Forward Opportunities Utilizing Audio Feedback Technologies for Online Students

Catherine Moore and Ian P. H. Wallace

**Abstract**—As educational delivery through online media continues to grow, so too do the demands on educators to provide quality learning outcomes for their online students. This paper presents a small research study undertaken to explore and evaluate the provision of audio feedback to a diverse group of online students studying with an Australian university. To determine the effectiveness of this type of feedback, research was undertaken with both undergraduate and postgraduate students who were invited to complete an anonymous survey on their views and experiences of feedback on their assessment tasks. Students were asked to compare feedback from traditional hand delivered comments and audio comments through both quantitative and qualitative questions. The results from this study indicate students want feedback not only to provide constructive criticism on current work, but also guidance on how to improve on future work, i.e. feed-forward. Results indicated a fair to strong preference by students to receive audio feedback for their submitted assessment tasks. The study also revealed that innovative ways such as audio commentary can be used by educators to successfully provide online students with informed personalized feedback in a timely manner.

**Index Terms**—Audio feedback, informed feedback, feed-forward, online students, higher education.

## I. INTRODUCTION

Our investigations into the use of audio recording for student feedback began during collaborative discussions around a previous research paper. These discussions were captured using a digital recorder. We recognized the resultant recording provided a rich source of useful reflection as well as informed comments about our research for future use.

Having recognized the usefulness of audio recording for our research, we decided that it could be an excellent way to provide feedback and feed-forward opportunities for our students on their assignments. Consequently in 2006 we began using audio recording as an innovation within our faculty, offering our online students feedback on their assessment tasks.

We chose online students to pilot the use of audio

feedback in the first instance because of our experiences with growing consulting commitments over the phone or e-Mails with them. As a side, the consults themselves revealed the extent of the diversity of students the course was attracting. For example, as identified in earlier work by Signor and Moore (2011, p.30), online educational programs, inevitably have students with “assorted skill bases” [1]. Through our consults we found that each student in this course also came with their own assortment of experiences in learning context and work/industry experience. We felt that the audio commentary could also help us target our feedback better for each student. So, we considered the question: “What is the purpose of feedback?”

Brown (2007) suggested that the significance of feedback is increasing a way of providing vital comment within which to allow the self-reflective process to be of genuine and tangible benefit to the student [2]. Working with Brown’s assertion we consider the notion of quality too. Ovando (1994) was prescriptive in what constitutes good feedback [3]. He included such attributes as: being prompt, starting off with a positive comment, using informal language and offering personal help. Race (1995) agreed that feedback must be promptly returned to students but also observed that it should cover all the components of the assessment undertaken [4]. Race’s paper further developed the idea that feedback must also be personalized to individual students. In support, Rust (2002) found that feedback should be prompt and start with an encouraging comment [5]. Rust’s study included some focus on the principle of feed-forward, as he stated that general suggestions on how to go about the next assignment should be included for students. A study undertaken by Krause, Hartley, James and McInnis (2005) provided evidence that students seek more useful feedback from teachers [6]. With the above in mind we considered the ability of audio feedback to address some of these qualities.

Although audio commentary has been employed by a number of educators for some years, there is not an extensive body of literature on the effectiveness of this method for student learning outcomes. Our early observation is also supported by Sipple (2007) who

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carried out research on a small cohort of students studying writing using audio feedback [7]. While undertaking her research Sipple too recognized the lack of literature on this subject. In 2008, Dagen, Mader, Rinehart, and Ice (p.157) conducted a study and found their students “believed audio feedback to be more detailed, personal, in-depth, specific, and constructive than text-based feedback” [8]. More recently Lunt and Curran (2010. p.764) undertook a study on audio feedback and published results from their research showing “88% [of students] agreed or strongly agreed that the [audio format of the] feedback would help them improve their coursework” [9].

In considering the use of audio recording we hoped that it might provide a means of helping our students feel included in discussions about their work and learning. With this in mind our audio feedback was directed and focused specifically to each individual student, i.e. personalized.

## II. BACKGROUND

Initially we limited the use of audio recording to online units of study within an undergraduate degree. This afforded two outcomes for us as educators:

1. To gauge student response to the audio method of feedback provision; and
2. To validate and investigate innovative ways to provide in-depth personalized feedback in a timely manner for growing online cohorts.

Later, we expanded our use of audio recording for online postgraduate units delivered online.

For students undertaking units via online education their main interface with our University is with the learning management system (LMS), Blackboard. Using the LMS students submit assignments by uploading their completed assessment tasks. Their respective tutors are required to provide each student’s submission with feedback. Traditional methods for tutors to access student assignment submissions and supply feedback that have been employed across the University include but are not limited to:

1. Downloading and printing out hard copies of student submissions, physically writing the feedback on them, and then either scanning and uploading the marked up assignments onto the LMS for each student to download, or posting the assignment to students through the traditional postage mail system; or
2. Downloading student submissions, physically typing the feedback either in-situ within the student’s electronic document or within a separate word file, then uploading the file/s onto the LMS for student retrieval.

Both of the above feedback methods have merit, however are beyond the scope of this paper’s discussion.

Our introduction of audio commentary into the feedback process addressed a growing problem, i.e. the amount of time it was taking us to provide written informed comments for each of our students’ work. If students were to continue to receive written feedback via either of the methods described

in points 1 and 2 immediately above, a lengthy time delay in receiving feedback on assignments by our students was guaranteed to continue.

Part of the challenge for us as educators, was not which method was most suitable (as both required either handwriting or typing detailed and informed notes for students) but the time it took us to turn around marking and feedback to our students. For example, if a unit of study were to have 100 or more students, then time became a serious problem. The realization that there needed to be another, more efficient way of providing personalized feedback to our online students was increasingly apparent. We began the trial of audio recording student feedback using a digital recorder. Upon doing so, we found that the recorder had advantages in that it was easy to use and did not require a sound booth to record our comments. A quiet place such as a home or work office was sufficient.

From a practical perspective our recordings from the digital recorder were converted to MP3 audio files. The recording device allowed several of these files to be recorded in one session or over several sessions. We were then able to upload the MP3 audio files directly onto the LMS, similar to a word .doc file. From an accessibility point, our students were able to download and play back the audio file on their PC using any software.

Apart from the ease of use for both us and our students, the main advantage appeared to be the in-depth feedback that we could provide to our students using audio recording as opposed to written comments within a realistic and reasonable length of time. For example a 10 to 15 minute audio recording providing feedback on a student assignment would take one of the authors at least three to four hours to type in order to provide the same information. As suggested above, multiply this task by 100 or more students and the time saving attributes of audio recording become clear. Timing of feedback turn-around was an important factor for us and for our students. This factor is also supported in the literature. Wolsey’s (2008, p. 323) study concluded “the most effective feedback is that which is given at the time the learning is constructed (or as close to as practical)” [10]. In addition to timing is the ability to maintain quick turn-around. Conclusions from a recent extensive literature review on online formative assessment by Gikandi, Morrow and Davis (2011, p. 2341) highlight the need for sustaining “immediacy of feedback in online settings” [11].

Two years after the initial implementation of audio feedback on students’ assessment tasks and encouraged by unsolicited student e-Mails, we began investigating and researching the value of audio feedback. We decided it would be useful to find out how effective audio recording of assessment feedback was for online students. We focused part of our research on personalized feedback and timeliness of the feedback to provide opportunities for feed-forward for students and their formative learning.

## III. METHOD

A survey instrument was employed based on the survey questions developed by O’Brien and Sparshatt (2007) which included both quantitative and qualitative questions [12]. The

questionnaire adopted from O'Brien and Sparshatt (2007) was modified to include a four point Likert Scale with a neutral option [12]. Questions focused on the importance of feedback, including the most appropriate way of receiving feedback. Students were asked about the quality of the feedback they received as well as the time taken to receive feedback. In the final section, questions focused on students' perceptions of receiving audio feedback on assessment tasks. SPSS was used to analyze the data collected from the surveys.

The process of collecting data was undertaken through anonymous surveys. Approximately 100 students who had received audio feedback on their assessment tasks over a two year period were surveyed. The records we kept on student results within our units of study (courses) provided the basis for selecting students to be included in the research. Students were chosen from units where audio recording had been used to provide feedback on their assessment tasks.

#### IV. RESULTS

We received a 50% return from the 100 surveys sent out to students who had received audio recorded assessment feedback. The students surveyed indicated that they had received both audio feedback as well as other traditional methods (as defined in the 'Background' section of this paper) of feedback on assignments. This gave us confidence that the students were able to make informed comparisons between traditional written and audio methods of feedback provision. Our initial analysis aimed to establish the gender balance to determine if the results were skewed. From the results there were 27 males (52.9%) 23 females (45.1%), representing a well-balanced sample group and similar to the original 100 surveyed.

One series of questions asked students to comment on their understanding of the purpose of feedback. The first of these asked students to consider the importance of feedback. From the analysis of those surveyed, 50% generally agreed and 44% strongly agreed that feedback on assignments is important, with no respondents disagreeing with the statement.

A series of general questions were posed to students to further help us ascertain their perspective on the purpose of feedback. The results we recorded indicate that whilst we provide a mark to students, they are interested in receiving feedback on their performance and they are interested in knowing where there may be errors in their work. Table I summarizes the general questions respondents answered in relation to the purpose of feedback.

Students were asked to respond to the question: "Feedback should be applicable to future pieces of work that I may encounter in a unit of study." Almost all students (96.1%) surveyed agreed, with 47.1% strongly agreeing and 49% agreeing with the statement.

To determine if feedback was only useful to their current unit of study or whether feedback should provide some guidance for future study, students were then asked to respond to: "For me the purpose of feedback is to suggest improvements to increase my learning for the next assignment in any of my units". Almost all respondents

(84.3%) agreed with this statement, with 43.1% strongly agreeing and another 41.2% agreeing.

TABLE I: SUMMARY OF RESPONSES TO QUESTIONS ON THE PURPOSE OF FEEDBACK

Question	SA	A	NAD	D	SD
I am not interested in collecting feedback if I already have my mark	3.9%	2.0%	11.8%	51.0%	29.4%
Along with my feedback there should be a mark or grade.	49.0%	35.3%	11.8%	2.0%	
The purpose of feedback is to point out errors in my assignment so I can gauge my progress.	41.2%	45.1%	7.8%		3.9%
Feedback for me should be detailed (e.g. suggest improvements and point out errors)	60.8%	33.3%	2.0%		
For me the purpose of feedback is to suggest improvements to increase my learning for the next assignment in my current unit	54.9%	37.3%	3.9%		
Feedback should be applicable to future pieces of work that I may encounter in a unit of study	47.1%	49.0%	2.0%		
For me the purpose of feedback is to suggest improvements to increase my learning for the next assignment in any of my units	43.1%	41.25%	7.8%	3.9%	

SA – Strongly Agree, A – Agree,  
NAD – Neither Agree or Disagree,  
D – Disagree, SD – Strongly Disagree.

These findings suggest that it is not enough to simply provide a mark to students or to provide feedback focused narrowly on their current assessment. Students are and do desire feedback that informs them of how they can improve in subsequent assignments and study, and therefore move forward with their learning, i.e. feed-forward opportunities.

In order to gauge their progress, the students surveyed pointed out that feedback should be returned as soon as possible. This is supported by Nicol and Macfarlane-Dick (2006) who propound that the way forward is to ensure that feedback is a) provided in a timely manner; and b) focuses not just on strengths or weaknesses but also offers corrective advice that directs students to higher order learning goals [13].

Students were asked to consider the most appropriate way they could receive feedback in the survey. It was at this point questions explicitly focused on audio feedback were introduced. As presented in Fig. 1, the majority (74%) of the students surveyed generally agreed that audio feedback was superior to other traditional types of feedback that they had experienced.

Students indicated that the audio recording provided better quality feedback that was not as brief as written comments they had experienced in the past. Of particular note and interest was that 74.5% of respondents found that the audio

feedback provided, included an appropriate amount of constructive criticism. Ice, Curtis, Phillips and Wells (2007) supported the notion that, when using audio recording, lecturers are able to provide more feedback and expand on their comments in greater detail [14]. Research undertaken by Cooper (2008) also concluded that audio feedback was highly valued by students and was considered by a high proportion of his surveyed group as a more effective method of feedback delivery than receiving written notes [15]. This was both in terms of comprehension and aiding practical improvements in their work. In our study here, well over half of the students who responded via the survey agreed that audio feedback was better than written comments. We noted from those students who responded, almost half (42.0%) identified that the use of audio feedback provided more detail and useful information on the outcome of their assessment tasks.

Students were asked: “Given your choice of feedback (audio or written) which did you prefer and why? As presented in Table II, exactly half of the respondents (50%) indicated that they preferred audio for feedback on their assessments. In the study by Sipple (2007) students were asked a similar question and Sipple reported that her students preference was to receive both written and audio commentary so they could both see their “errors” and hear what they did well and what they needed to revise [7].

TABLE II: RESPONSES TO “GIVEN YOUR CHOICE OF FEEDBACK (AUDIO OR WRITTEN) WHICH DID YOU PREFER AND WHY?”

	Frequency	Percent
Audio	25	50.0
Written	8	16.0
Both	6	12.0

A somewhat unexpected but welcomed finding from the qualitative section of the survey revealed that 30% of students identified that another important element of audio feedback was the presence of the tutor’s voice.

A student offered the following qualitative statement: “To be able to hear the tone of voice with which the feedback was given offers fuller indication of teachers meaning behind feedback. Far more detailed than written feedback.”

As online students they indicated it left them feeling more a part of an inclusive learning environment when receiving audio feedback. We interpret this loosely as the ‘personalization factor’.

One student suggested: “... it personalized the experience. I may not meet the teacher but I feel that there was a sort of personal interaction with the audio feedback rather than everything through a computer.” (Extract taken from student survey 2008. Available on request)

Over 80% of surveyed students responded yes to the question: “Did audio feedback enhance your learning experience”. Of note are the student responses to the following question: “I prefer audio feedback rather than type written or hand written notes.” As shown in Fig. 2, 56% of respondents generally agreed that audio was preferred over the more traditional approaches. However 26% and were still not sure with a further 18% disagreeing.

A final comment from one student suggests a positive note about audio feedback on assessments: “The audio feedback I received in [unit of study] has been one of the reasons why I have improved on my written assignments in my other subsequent units. It inspired me to keep improving.” (Extract taken from student survey 2008. Available on request.)

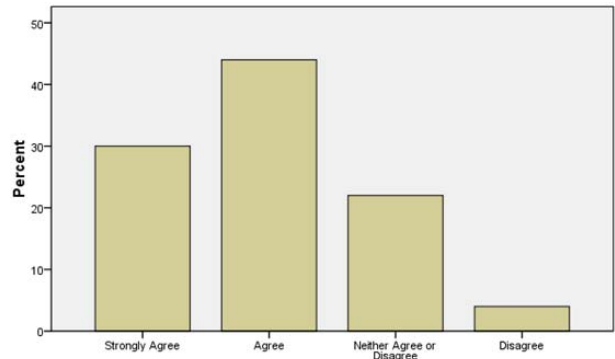


Fig. 1. Audio feedback on my assignments provides a superior form of feedback that I find useful.

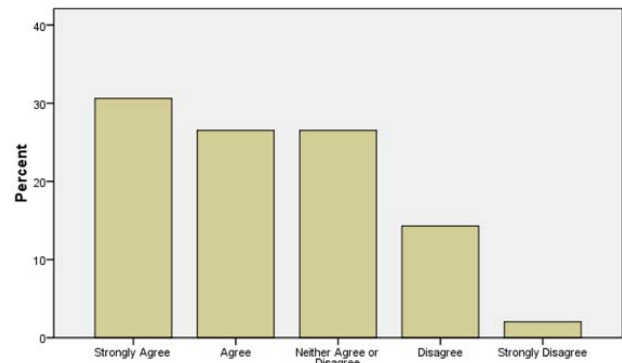


Fig. 2. Responses to “I prefer audio feedback rather than type written or hand written notes”.

## V. CONCLUSION

The findings show that while the provision of a mark was important in grading students’ work, students desired more in-depth feedback on their assignments. Student responses to the survey highlighted strongly that students required and wanted detailed analysis on their work; provision of suggestions for improvements that feed-forward to their next assignment; and feed-forward opportunities for their future studies.

We found that audio feedback not only reduced the overall time in which we could deliver feedback to students, but was easy to record and afforded us the ability to provide in-depth commentary on our students’ assignments. Operationally, the digital recorders we used to provide audio feedback were simple to use and uploading the audio files through the LMS was a familiar upload file task that required minimal training.

On the choice of feedback (audio or written) we found that half of the respondents prefer audio commentary over written notes for feedback on their assessments tasks. It is interesting to note that a small percentage of respondents indicated that they would like to have both audio and written feedback.

This study has revealed that the practice of providing audio feedback to online students may assist with the development

and promotion of inclusive online learning environments for students with diverse backgrounds and requires further investigation into the 'personalization factor'.

On a concluding point, we will be endeavoring to provide both an audio file and a corresponding transcript of the recorded commentary to students. This next phase will form the basis of future study. This is of particular interest in terms of developing inclusive practices for students studying online.

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His current research in audio feedback will provide a transcript of the audio recording to students. The research undertaken will validate feedback. Further research will determine which form of feedback is desirable to online students.

His current doctoral studies offer research into a program undertaken with Secondary Schools within the region. The Making a Difference Program (MAD) is offered to secondary school students through Swinburne University, providing engagement within the school and aspirations for entry into Higher Education.

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