Learning and Teaching Enhancement Fund, Wales

A scoping exercise investigating the efficacy and efficiency of audio feedback

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There has been a recent impetus to improve feedback to students (Cardiff University, 2010), giving rise to an interest in the potential wider use of audio feedback. However, a paucity of literature revealed a need to investigate both the efficacy and efficiency of audio feedback in relation to learning styles. A scoping exercise (n = 11) gathering both quantitative and qualitative data was conducted in relation to a written assignment.

1. Abstract: please provide a brief abstract of the project delivered (maximum 250 words).

The findings suggested that participants rated audio feedback slightly higher than written feedback, in terms of both the qualitative and quantitative findings. The implication is that audio feedback should be considered for availability within this undergraduate programme. This supports the tenth principle of good feedback developed by the NUS (2010), which states that feedback should be suited to students needs and, within reason, should be offered in various formats. This would be in accordance with the inclusive curriculum. It is recommended that both written and audio feedback be given to students who demonstrate an element of auditory preference in their learning style. Nevertheless this would need to be managed in a time efficient way.

2. Rationale: Please provide background context, such as the research / evidence-informed practice context, which provided impetus for the project.

The need for this project has arisen as a result of increasing awareness of the diversity of undergraduate physiotherapy students’ learning styles and needs. Undergraduate physiotherapy students determine their learning styles at the beginning of the programme by self-evaluation questionnaires e.g. VARK (Flemming and Bonwell, 2006), yet normal departmental practice offers only written feedback on assignments. However, informal consultation with undergraduate physiotherapy students suggests that other options may need to be considered. Furthermore, in terms of potentially expanding inclusivity in the curriculum, there are other issues to consider such as disability e.g. visual impairment, and dyslexia. Cardiff University’s “Academic Feedback to Students: Policy and Guidance” (Cardiff University, 2011) addresses the issue of feedback being suited to the individual students’ needs and has hence also been a recent driver for this research.
3. Generation of Evidence: Please describe how the research / evaluation findings were generated, e.g. methods used.

The study involved a randomly selected tutorial group of level 4 undergraduate physiotherapy students. Students in the selected tutorial group were sent an invitation by e-mail along with an information sheet, and invited to a meeting regarding the project. Eleven out of a possible 16 students opted into the study and submitted a 2000 word summative assignment in the same way as all other students in the cohort. They subsequently received their written feedback in the same way as non participating students. This included a typed up mark / feedback sheet, giving feedback in relation to each of the four sections of the marking criteria. Students also received an electronic copy of their assignment with comments boxes on it saved on their memory stick. This reflects current feedback practice within the programme. However, participants were also given a questionnaire to rate their written feedback against six of the principles of good feedback (Nicol and MacFarlane-Dick, 2006), which forms appendix one. The seventh principle outlined by Nicol and MacFarlane-Dick (2006) is in relation to using feedback to improve teaching and was therefore inappropriate for inclusion in the questionnaire. A week later participants received their individual audio feedback as a podcast (MP3 file) attached to an e-mail, with another identical questionnaire as an attachment. A general introduction was given, followed by feedback in relation to each section of the marking criteria including examples from the text and the grade and mark for each section, and finally an overall comment and grade and mark was given; therefore the audio feedback was different to the written feedback. The detailed structure / guidance for the audio feedback forms appendix two. In the written (e-mail) and verbal instruction (within the podcast) students were asked to look at the copy of their assignment without comments on when they listened to the audio feedback as the listener was asked to look at specific sections within the text. One researcher provided both the written and audio feedback to ensure standardisation; all feedback was given with the marker knowing only the student's identification number. Eight out of the initial eleven students returned the questionnaire regarding the audio feedback. One week after receiving the audio feedback a scoping meeting with the co-researcher took place. Each participant was asked to bring their completed learning style questionnaire and feedback evaluation questionnaire (in relation to the audio feedback) to the meeting. The questions in the scoping meeting were semi structured, asking students about their views on the audio feedback compared with the written feedback; the structure for the scoping meeting forms appendix three. A dictaphone was used to record the scoping meeting and students provided pseudonym names to ensure anonymity of each individual. The researcher who conducted the marking and feedback was there for the initial part of the meeting, but then left the room so students would not potentially feel inhibited when making their comments. All research data is stored in a secure manner in accordance with the Data Protection Act 1998 and research conventions; the study has been approved by Cardiff University School of Healthcare Studies (SOHCS) Ethics Committee.

The questionnaire data was analysed by ranking the responses on a basis of 1-5, calculating the median score in relation to each question, and then calculating differences between the two types of feedback by conducting a Wilcoxon signed ranks test within SPSS 16. A template analysis approach was used to analyse the qualitative data thematically. The five themes were reasons for opting into the study, practicalities of process, attitudes to written feedback, attitudes to audio feedback, drivers for learning. These themes are...
discussed below in relation to the research questions.

A log was kept by the researcher who conducted the marking and feedback regarding how long it took to conduct both processes, along with a report on the practicalities of audio feedback from a lecturer’s perspective; this forms appendix four.

4. Existing Evidence: Please provide details of research / evaluation evidence drawn on and reported on in the project.

Gibbs and Simpson (2004) consider feedback to have the most powerful influence on student learning and achievement. In spite of this, effective feedback is still a challenge in Higher Education (National Student Survey, 2009) even though the principles of good feedback seem to be well established (Nicol and MacFarlane-Dick, 2006) and further principles of good feedback have been developed by the National Union of Students (2010). Even so, there seems to have been little previous published research on audio feedback. Savin-Badin (2010), reviews the literature to date and broadly summarises the pros and cons, but essentially argues that audio feedback should be based on dialogic learning. A researcher who previously investigated audio feedback within Cardiff University felt that it is necessary to consider learning styles in relation to audio feedback if further research is to be conducted (John, 2010). This current study seeks to build on this previous research (Davies et al, 2009; Davies et al, 2010) which found that although audio feedback delivered high quality feedback there were technical issues and it was less convenient for staff, and to some extent students. It aims to build on it by providing quantitative, in addition to qualitative data, and taking students learning styles into account.

Therefore the research questions are:

1. To what extent do students feel that the two types of feedback match the principles of good feedback as defined by Nicol and MacFarlane-Dick (2006)?

2. Do the students perceive there is a difference between the two types of feedback? What are the views of students on the value of audio feedback compared with written feedback, (including if they feel that this relates to their learning style)?

3. What are the views of students on the value of audio feedback compared with written feedback, (including if they feel that this relates to their learning style)? What is the efficiency of audio feedback from a staff perspective?
5. Research findings and new evidence: please describe any new findings or evidence reported on in the project.

A randomly selected tutorial group of level four undergraduate physiotherapy students (n = 16) were invited to participate in the study. Eleven students opted in, all of whom returned the questionnaire regarding written feedback. Eight participants completed the questionnaire on audio feedback, six of whom (see Figure 1) attended the scoping meeting and thereby completed all phases of the research study. The mean mark of the students who opted in was 71% compared with the mean mark of the whole cohort which was 62%. The results are evidenced below in relation to the research questions.

The responses to the Likert questionnaire were scored on an ordinal scale: 5 = strongly agree, 4 = slightly agree, 3 = neither agree or disagree; 2 slightly disagree and 1 = strongly disagree. A signed Wilcoxon ranks test was conducted in order to determine if there are any statistically significant differences (p≤ 0.05) in responses to the two types of feedback.

Findings are presented in relation to the research questions, which are then examined with regard to the participants’ reasons for opting into the study.

**Figure 1: Scoping Meeting Participants & their learning styles**

**Q1: To what extent do students feel that the two types of feedback match the principles of good feedback?**

This question was addressed by data from the questionnaire. Table 1 illustrates the results of the questionnaire.
Table 1: How the two types of feedback matched the principles of good feedback in the questionnaire

<table>
<thead>
<tr>
<th>Question number on questionnaire and summary of the feedback principle it relates to</th>
<th>Median Written Feedback Score (n = 11)</th>
<th>Median Audio Feedback Score (n = 8)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Clarifying good performance</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>2. Encouraged to reflect on learning</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>3. Delivered high quality information</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>4. Encourages dialogue with the marker</td>
<td>4</td>
<td>4.5</td>
</tr>
<tr>
<td>5. Enhanced self esteem</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>6. Provides an opportunity to close the gap between current and desired performance.</td>
<td>4</td>
<td>4.5</td>
</tr>
</tbody>
</table>

It can be seen that for both types of feedback the participants either slightly or strongly agreed that the feedback matched the principles of good feedback.

Q2: Do the students perceive there is a difference between the two types of feedback?

With regard to the quantitative data, the participants felt that the audio feedback was slightly better in relation to questions 2, 4 and 6 (see table 1). However, there was only a statistically significant difference in relation to question 4 (p = 0.023) in that audio feedback was rated higher.

With regard to the qualitative evidence, all the participants seemed to gain added value from receiving audio in addition to written feedback as indicated above. The key perceived difference between the two types of feedback seemed to be concentrating on the spoken word.

As Nigel put it…

‘When I read it I sort of skim it and don’t take in the detail but when I’m listening I’ve got to sit there and take it all in’.

The researchers found it interesting that the participants seemed to suggest that they were more likely to act upon audio feedback as they paid more attention to it. It is these findings in particular that have influenced our recommendations as set out below.

Q3: What are the views of students on the value of audio feedback compared with written feedback, (including if they feel that this relates to their learning style)

It was evident from the scoping meeting that the students valued both types of feedback. What they found particularly valuable in the written feedback was the personalized approach, the use of comment boxes, the feedback sheet aligned with the marking criteria, and the concept of feed forward (see Figure 2 below).
All participants seemed to appreciate the audio feedback in addition to the written feedback. In some cases there was a direct relationship between the participants learning preference and the type of feedback.

Jamie, one of two participants with an identified auditory learning preference, preferred the audio feedback to the written.

'I definitely much preferred the auditory feedback as I found it difficult to concentrate on the written feedback'

Rosie a multi modal learner with an auditory component to her learning style said,

'I found the audio more helpful than I thought I would'

She seemed to value having both types of feedback.

'I think because I learn in lots of different ways it is good to have the mix'
John, the only visual learner, found the audio feedback helpful but only in addition to the written feedback.

'I am visual but I'm not sure...I need the written feedback as well

However, the most compelling and unexpected findings came from some of the participants who did not have an auditory learning style. Nigel, a kinaesthetic learner, indicated interestingly that he took advice on board more quickly when listening to the audio file...

'When I hear it, it sticks whereas when I read it, it doesn't stick in my head so much',

He concluded...

'listening is better than reading'

Ibrahim another kinaesthetic learner spoke of getting bored with the written feedback...

'I found with the written ones, the information in the margin, I got bored and didn't take them all in as after a while it seemed quite a lot. Whereas with the audio file I was actually listening and taking it into account more'

Emma, a kinaesthetic and read/write learner, also seemed to concentrate more with audio feedback.

'I would say I paid a little bit more attention to the feedback because you are being told it rather than reading it. You pick more up when listening to it'

Audio feedback, the fact that it was someone’s voice, also seemed to reinforce the personalized approach; as Rosie commented...

'I think it was more personalized because they were talking to you'

Overall, the participants seemed to get information that would enhance their future performance from receiving both types of feedback.

Q4: What is the efficiency of audio feedback from a staff perspective?
Routine single marking took 15 minutes longer per assignment for the audio feedback; it took one hour and fifteen minutes for audio compared with an hour for written. The impact was greater in the instances of modifying marks / feedback after moderation or double marking. This then took twenty five minutes greater in total for the audio feedback; one hour and thirty five minutes for audio feedback compared with one hour and ten for written feedback. The equipment was straightforward to use although a lack of resources in terms of the software only being available on one lap top and needing a quiet room to record the audio feedback were restrictions. The software could have been more user-friendly if the recording could have been made as an MP3 file in the first instance or if editing in Camtasia Studio was more time efficient.
Reasons for opting into the study
All of these findings must be considered together with the themes ‘reasons for opting into the study’ and ‘drivers for learning’. As mentioned above, the students who opted into this study appeared to be high achievers compared to the rest of their Cohort. As can be seen in Figure 3 the participants had a variety of reasons for opting into the study including gaining extra feedback.

Figure 3: Participants reasons for opting into Research Study

When the drivers for learning were explored in relation to the questionnaire descriptors, the participants were very honest stating that it was the first principle of feedback ‘clarifying their performance’ that motivates their learning. Both Ibrahim and John illustrate this point. Ibrahim perceived that dialogue leads to ‘improving performance’ and John stated that he was ‘motivated by good grades in order to learn’.
6. Outcomes of research / evaluation evidence and the implications for policy and practice: Please identify any application or outcomes of research / evaluation evidence and details the implications for policy and practice for different stakeholder groups such as: academics, practitioners, professional developers, senior managers, policy makers, students, sector organizations, employers and professional bodies. Please also use this section to reflect on any lessons learnt and potential of the project’s transferability (eg. to other disciplinary areas).

Although this research was a scoping exercise, in terms of the sample size (in that only 6 out of the 11 participants completed all phases of the research), there are potential implications for a wide range of stakeholders. At the end of this section a series of recommendations will be made based on the findings of this study; the implementation of any recommendations will need further evaluation.

If further research were to be conducted to evaluate any such implementation, it is recommended that this would involve a larger sample size and a cross over design. This would enhance the external validity of the study and also counterbalance any learning effect which may have had an impact on this scoping exercise. A cross over design was not possible for this study as students were not available to collect their written feedback later than the date they were informed of at the beginning of the academic year. It should also be recognized that this sample of students were also generally higher achievers (a mean of 71% compared with a cohort mean of 62%); a larger sample would be expected to include a wider range of student abilities, as well as learning styles.

The potential implications for stakeholders are as follows:

a) Students: Students did rate audio feedback slightly higher than written feedback, in terms of the qualitative and quantitative data. The implication is that audio feedback should be considered for availability within this undergraduate programme. This supports the tenth principle of feedback developed by the NUS (2010) which states that feedback should be suited to students needs and, within reason, should be offered in various formats.

b) Learning Technology Practitioners: Feedback will be given to the Camtasia Studio designers (Techsmith), as well as information services within Cardiff University, regarding the time taken to convert a Camtasia Studio file to an MP3 file. It is hoped that this will inform the software design and also the future purchasing planning.

c) Professional Developers: This report will be passed onto Learning and Teaching Support within Cardiff University in order to help inform other School’s decisions regarding the use of audio feedback.

d) Senior Managers: It is anticipated that the appropriate use of audio feedback could potentially enhance NSS scores regarding feedback.

e) Policy makers: This study was driven by Cardiff University Feedback Policy. However, the findings of this study could be used to evidence recommendations for a Board of Studies at programme level (see below), with the potential for informing recommendations at a School level, and throughout the wider university.

f) Sector organizations: Findings will also be disseminated through the HEA’s Evidence Net, and submitted for dissemination through the HEA Welsh key contacts meetings. An abstract will be also be submitted for presentation at a Medical Education Conference e.g. AMEE.
g) Professional bodies: Findings can be disseminated to the Chartered Society of Physiotherapy (CSP) Higher Education group to help inform other undergraduate physiotherapy programmes. A copy of the report will also be sent to the Royal National Institute for Blind People (RNIB) in order to help inform their support for healthcare students in Higher Education, who have a disability or dyslexia.

h) Academics: The findings of this study suggest it is worth academics considering audio feedback as a possible means of enhancing dialogue and thus matching individual students’ needs. However, it is recognized that staff may find it challenging to utilize audio feedback as it could involve a cultural change, whereas students generally seem very comfortable with using audiovisual media to communicate with each other on a daily basis.

**Recommendations Regarding Process**

The researcher conducting the marking felt that her written feedback took 25% longer than it had for this assignment in previous years, but was of a higher quality as she was aware of the recent Cardiff University feedback policy and the principles of good feedback that had informed it. Unfortunately, it was not possible to have a blinded researcher. However, this suggests a seminar on marking principles for all markers may be an initial step to enhance feedback. This awareness by the marker may partly account for the overall high scores for both written and audio feedback.

However, having reflected on the process and the findings, the recommendations for a future process would be to:

a) Read the assignment and make comments in boxes within the text.

b) Complete the written mark and feedback sheet as is standard practice.

c) Conduct audio feedback on a dictaphone which saves the file as an MP3 file. Each student’s audio feedback could have 6 components constituting an introduction from the marker explaining the process; a separate file relating to each of the four sections of the marking criteria with examples from the assignment and a mark and grade for each section; and a final section with general comments and an overall mark and grade. There would be a strong emphasis in the final section on ‘feed forward’ (Hounsell et al, 2008; Quinton and Smallbone, 2010) so making the comments from this assignment relevant to the next and being explicit about this. Once the audio feedback had been completed the comments boxes could be deleted as participants said they did not like too much written information because they would not read it.

With this process it is foreseen that the audio feedback would not take as long to record as it did using Camtasia Studio and would be more user friendly for the listener as it would be in “chapters” approximately one minute long; it would also be easier to edit as the marker would not have to re-record the one large file for each student if they needed to make changes. In this way it is seen that the time issue of audio feedback would be more manageable, as well as the accessibility of the equipment for staff, as licensing costs currently limit the extent of wider use of Camtasia Studio.

The participants also commented on the slightly monotone voice of the marker which partly matched with the aim of having her tone of voice neutral but friendly. However, on reflection and taking account of the findings, the audio feedback needs to provide even
more “added value” and be in contrast to the academic jargon of written feedback in that it could be chatty, using contemporary language, to encourage the student to meet in order to have a two way dialogue. The participants suggested that this was particularly relevant in relation to the feed forward aspect of the feedback relating to their next assignment.

'I cause we had the sheet divided into each section we could tell what we needed to improve for the future and whether we needed to work specifically on one bit to get a better grade' Ibrahim

'I've also learned about how to improve my next essay and I've gained more from having two types of feedback' Emma

'I think I agree that I understand how to improve my performance’ Rosie

This was an unexpected finding of the current research but on reflection is considered be a strong potential characteristic of the added value. A key finding, within the scoping meeting, also relating to the added value is that the students felt that they paid more attention to the audio feedback and it felt more personal.

Overall Recommendations

Therefore, overall recommendations as a result of the findings are:

a) A seminar on the principles of good feedback (NUS, 2010) for staff to further heighten their awareness and understanding of these.

b) Demonstrate the recommended procedure for audio feedback (as described above) to the 2011 cohort of students, who have a component of auditory preference, and explore how many would be interested in receiving audio feedback as described in the above section.

Implement audio feedback for the next assignment (for those who requested it) and then evaluate it using a questionnaire based on the NUS principles of good feedback (NUS, 2010); this relates to the comments from the participants about a lack of clarity in the current questionnaire. Evaluation would also be by focus groups, relating to learning styles as in the current study.

7. Impact: Please describe the impact of the project including any evidence collected, if possible.

The impact of this study to date has been restricted to the students whom participated and seemed to find it beneficial. It has also had an impact on the two researchers in that their reflections on the findings have led to the above recommendations. The implementation of these recommendations, if accepted, would have an impact initially at programme level but would be anticipated to be transferable within the School of Healthcare Studies, and the wider university. Through dissemination via the HEA Evidence Net and Medical Education Conferences they would be expected to have a wider effect. However, it is acknowledged that further research needs to be carried out regarding evaluating the above recommendations. A larger study would be expected to have greater impact, depending on the findings.
8. Links: Please use this box to include any links to resources.

http://www.techsmith.com/camtasia/

9. Bibliography / references (preferably annotated): Please list any references mentioned in or associated with the project’s topic. Where possible, please annotate the list to enable readers to identify the most relevant materials.


John D. (2011) Personal Communication

National Student Survey (2009) Available at: http://tinurl.com/lpo52g (Accessed 20/9/10)


