

Audio-Visual Feedback: student attainment and student and staff perceptions

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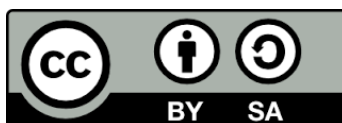
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2016

Suggested reference:

Kerr, J. Dudau, A. Deeley, S. Kominis, G. Song, Y. (2016) Audio-Visual feedback: student attainment and student and staff perceptions



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Executive Summary

Receiving, understanding and acting on feedback are essential parts of the student journey. During the academic year 2014/15 the College of Social Sciences launched a small pilot study of returning audio-visual feedback (AVF) on students' formative and summative assignments. Academic staff recorded the student assignment using a screen-capturing tool which picked up on screen annotations and narration. The output MP4 file was then returned to students via the institutional VLE, Moodle. Feedback from this group highlighted this as a superior method compared to traditional written feedback:

- 75% strongly agreed or agreed that they preferred receiving AVF to traditional written feedback
- 70% strongly agreed or agreed that as a result of AVF they were spending more time thinking about their feedback.

After the pilot concluded, central Learning Teaching and Development Funding (LTDF) was successfully applied for in May 2015, led by the College Learning Innovation Officer, to expand and continue the work into another academic year. In total, over 40 members of staff were trained on this method with 10 taking part and returning AVF to over 200 students. This report will focus its findings on both pilot phase and funded phase.

This new method of returning AVF highlights positive satisfaction from students and staff alike. Seventy-seven percent of students Agreed or Strongly Agreed that AVF would have a positive impact on their next assignment, and 78% Agreed or Strongly Agreed it was easier to understand what they did well/areas for improvement with AVF compared to written feedback. Eighty percent of staff stated that they delivered more detailed feedback per assignment using the AV method. However, staff did raise concerns over this method including: Increase in time to familiarise themselves with the process; and that any negative emotion in their voice could emphasise critical feedback more than perhaps would have been the case in writing. A further step from explore attitudinal approaches to the new technologically-mediated feedback was to investigate if it actually made a change to student performance.

To test the impact AVF had on positively effecting student attainment, the authors implemented a between-subjects quasi-experimental research design. To achieve this the authors split final-year undergraduate students of a management course into two equivalent, independent groups, specifically formed so as to control for two extraneous variables, gender and nationality, both of which were deemed to have the potential to affect the relationship between the independent variable (form of feedback) and the dependent variable (student performance) of the study. This experiment was carried out over three assignments. The first assignment served as a pre-test phase, to establish a base-line performance for all students, and was followed by splitting

the students into two equivalent groups (experimental and control groups). The experimental group received AVF on their second assignment, whereas the control group received traditional feedback for the same assignment. Student performance in the third assignment was then measured within the two groups (control and experimental) to establish whether there was any significant difference in performance between the two groups receiving different forms of feedback. Contrary to our expectations, the implementation of AVF did not appear to have a positive effect on students' performance – this appeared to have actually decreased slightly compared to the previous assignment, but the analysis revealed no statistically significant difference in performance for the AVF experiment group - despite students' enthusiastic attitudes towards AVF.

Although the results of the field experiment suggest that AVF may not impact on student performance, students and staff reacted positively to it. Indeed, it is clear that AVF has many advantages over traditional feedback and appears to complement the ubiquitous digital world that learners are immersed within. The authors recommend that future research into this method is explored to ascertain if students may modify or improve an aspect of their behaviour in response to their awareness of being observed and if the results in this report holds true in other studies.

Introduction

Feedback is an extremely high-priority area for Glasgow University. The 2015-2020 Learning and Teaching Strategy pays particular focus to continuing to develop and promote more effective approaches within this arena.

This report investigates two key aspects:

1. Does AVF benefit student satisfaction levels compared to traditional feedback?
2. Does AVF have a more positive impact on student attainment levels compared with traditional feedback?

At the beginning of the academic year 2015/16, the College of Social Sciences at the University of Glasgow, started to build upon a pilot that was undertaken in previous academic year 2014/15 of returning AVF to students. This was an action based on the results of student satisfaction levels reported in the 2014 and 2015 National Student Survey (NSS). Starting from 2014, this project has trained over 40 staff members across 5 schools and over 200 students have received video feedback on assignments. Among them, 10 staff members and 74 students completed the 2015 and 2016 questionnaire survey (2015 n=36, 2016 n=38), which this report later details.

We have also investigated whether or not AVF has an impact on student performance, by comparing performance improvement in a medium sized (80) student cohort following traditional and AVF, respectively. The method of delivery consisted of the student uploading their assignment to Moodle

assignment allowing the academic to then use Camtasia, screen capturing software, to record a portion of the screen which showed the students' submission while providing audio narrations and capturing on-screen annotation.

Pilot Phase

Throughout the previous academic year, 2014/15, the pilot consisted of returning AVF to students on formative and summative assignments. This pilot consisted of five academics across the College's five schools: Education, Law, Social and Political Sciences, Interdisciplinary Studies and the Adam Smith Business School. The rationale for the pilot was threefold:

- To seek improvement in student satisfaction with feedback (NSS driven)
- To expose academics to new, innovative feedback methods
- To innovate feedback approaches

The NSS is a UK wide survey gathering opinions from final year undergraduate students about their experiences of courses. In the 2014 survey, the College received a score below the institutional set benchmark of 80% in relation to the final question (Q9) on Feedback & Assessment, 'Feedback on my work has helped me clarify things I did not understand'. This pilot sought to address this point while also improving on the other four Feedback & Assessment NSS questions.

Results from the pilot were promising with:

- 75% strongly agreeing or agreeing that they preferred receiving AVF
- 96% saying that as a result of this feedback method they will act upon their feedback
- 96% found it was easy to match specific comments to the assignment and
- 70% strongly agreed or agreed that as a result of this method they were spending more time thinking about their feedback.

Based on these results, a £3,000 funding bid was submitted to the Learning Teaching and Development Fund (LTDF). The bid was successful and with the funding being awarded it enabled the acceleration of this pilot into a larger project during 2015/16.

Literature Review

In this literature review we will first focus on feedback in general before examining examples that have been delivered using audio and visual methods. As the subject areas focused on this report are based in Social Sciences, which covers a broad spectrum of disciplines, we will not focus on a particular subject for the literature review but instead take a wider more generalised approach for these examples.

Feedback is a fundamental indicator of student satisfaction in the National Student Survey (NSS), and is also seen as an important indicator of teaching quality by the Quality Assurance Agency (QAA) (Hyde, 2013). It is evident that student evaluation whether of courses, teaching quality or the overall student experience, is extremely important and has a significant role to play in the quality assurance process (Brown, 1999, Gibbs, 1999, Hyland, 2000, Doan, 2013). Many investigations of students' experiences and perceptions of feedback indicate that a large number of students read and value their teachers or tutors' comments and desire feedback providing them with much more than "correct answers" (Higgins et al., 2001). Furthermore, there is a perception that higher education is a service and, as such, it is also the educator's 'duty' to offer feedback (Higgins et al., 2001). With an increasing level of consumerism within higher education, the argument that feedback will be ignored or only used if it provides 'answers' cannot be sustained. Rather, it is more likely that many of today's students have a "consumerist awareness" reflected in a focus on achieving a grade alongside intrinsic motivations (Higgins et al., 2002). As a result, an increasing number of students may recognise the central importance of formative feedback for their educational development.

Although students are receptive to feedback, whether they can effectively use feedback is, however, another matter. Studies indicate that feedback is the most important part of the assessment process; furthermore, feedback is only effective when it is understood by the student and the student is willing to act on that feedback (Price et al., 2010). The research on how students perceived feedback found that students were critical on the feedback they were given, mainly due to illegible handwriting, poor tone or general vagueness of comments (Price et al., 2010). This is also reflected by Thompson and Lee (2012) who highlight the disconnection between handwritten comments and the students' ability to interpret the feedback. Feedback allows students to understand areas where they may have gone wrong, how to rectify this, and parts which meet the intended learning outcomes (ILOs) and, through the use of feed forward, how to improve their grade. The requirements for good quality feedback for students has been extensively documented by authors such as Macfarlane-Dick, Matthew, Nicol, Ross, Smith (Juwah et al., 2004) and Cottrell (Cottrell, 2011).

There is a large mass of literature on assessment and feedback but there is only a small portion that focuses on the innovation of audio-visual feedback, a view shared by Henderson and Phillips (2015) with a lesser amount of literature focused on student attainment. The research that focused on students' perceptions and attitudes about two different feedback modes - screen-capture

and Microsoft Word comments - found that the mode and medium of delivery had a direct impact on students' perceptions regarding the context of the revision process and student/teacher relationship (Silva, 2012). Another study found that, for teaching staff, the process of returning audio-visual feedback was 'easier' than traditional written feedback, and students, viewed the video multiple times (Stannard, 2007). Henderson and Phillips (2015) delivered video feedback to 126 undergraduate and postgraduate students. Their research established that students found this process very personalised and mimicked a conversation, despite the fact they could not ask questions. Students conveyed that the feedback felt 'real' and 'honest' and that they felt 'supported' by the lecturer. It is worth noting that Henderson and Phillips recorded themselves delivering the feedback and not a screen-capture of the students' submission. As a result, students stated that they had to spend time searching their assignment to find the example being discussed despite the page and the section being referred to (Henderson and Phillips, 2015). Our work focused explicitly on capturing the students' assignment on-screen along with oral commentary and annotations. Therefore, it requires further investigation into if delivering AVF using this approach is required.

The "success" of feedback should not only be judged by students' academic performance but their satisfaction with the learning process as well. This study will assess the effectiveness of AVF both in terms of student perceptions as well as performance.

Attitudes of students and staff towards AV feedback

Sample

This section presents the analysis of the data obtained from the questionnaire which was distributed to both students and staff in the 2015 pilot and in the main 2016 study. The student questionnaire provides a basis for comparison of students' reflections based on the two different feedback modes (AV or written) and to explore their perceptions on the benefits and limitations of the AVF method. The staff survey was designed to evaluate the effectiveness and efficiency of delivering high-quality feedback to students via AV along with the

time taken to complete this method and future areas for improvement. In total, 74 students and 10 staff members across the five Schools in the College of Social Sciences took part in the surveys. The demographic information of research sample can be seen as follows:

Table 1 Description of Sample in 2015 and 2016

	2015	2016
Student	36	38
Staff	5	5

Analysis of student responses

The 2015 student survey included 17 questions, then the 2016 survey extended this to 33 questions. The extension of questions allowed the authors to capture more detail concerning the impact students felt AVF will have on their next assignment, and also any effect the markers voice or attitude had during the feedback process. In total, 74 responses were received for the 17 questions (14 closed and 3 open-ended) that both questionnaires had in common and 38 responses for the 16 newly added questions (12 closed and 4 open-ended) in the 2016 survey. The authors applied an inductive approach to analyse the data by categorising responses based on specific words using Microsoft Excel. This allowed the authors to search for several patterns in the data which are explored in the following tables.

From the students' perspective, feedback plays an important role in assessment. Table 2 illustrates common themes in the student comments. There are three key aspects that effective feedback appears to be facilitating: reinforced, constructive corrective, and feed-forward feedback.

Table 2 Student Perspectives on the Function of Feedback

What the students say	What this means for us
<i>FEEDBACK</i>	
<i>"Feedback is the biggest aid to my learning. I feel like good feedback is the best tool to learning because it explains how you can improve as well as pointing out key areas that you are good at or have been successful in."</i>	Feedback should indicate good students' good practice.
<i>"First of all, it provides an excellent means of making me aware of any gaps in my knowledge. Secondly, it helps to let me know the structure required in the subject. Thirdly, and related, it allows me to know what that particular professor is looking for and what they expect."</i>	Feedback should indicate areas for improvement.
<i>"Feedback often helps me identify flaws in my work so therefore I can improve it when I come to do a similar piece."</i>	Feedback should provide guidance on how to improve.

“Good feedback is a reference for making future improvements. The feedback is provided by professionals who can give insightful and meaningful comments that try to help make the next essay better or guide you better in how to prepare for an exam.”

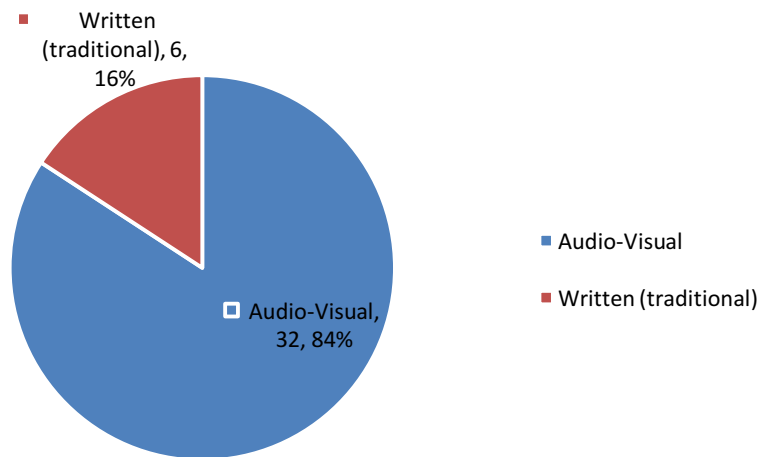
Accordingly, how students reflect and act upon feedback is summarised in Table 3 in the following three ways: building on areas of good performance; resolving problem areas to avoid making the same mistakes next time; and utilising the feedback to find what is required to achieve a higher goal next time. Students therefore generally desire feedback providing them with much more information relating to how their work can be improved rather than a simple grade.

Table 3 Student Perspectives on How to Reflect and Act upon Feedback

What the students say	What this means for us
<p><i>REFLECTION</i></p> <p><i>“When researching for and writing a new assignment, I know what to better focus on or how to achieve better understanding of the topic requested from me. It made it clearer what critical thinking is and what an academic standard is for essays and assignments in general.”</i></p> <p><i>“Thanks to the feedback, I have identified the improvements to be made in this specific assessment. I have then induced from them a more general problem in the way I work.”</i></p> <p><i>“I’ve listened to it a few times, and after hearing it, it kept me informed for the exam. I have taken comments into consideration and will make sure not to make the same mistakes in future essays.”</i></p>	<p>Students can conceptualise areas for improvement and appear to be making judgments of quality regarding their own work.</p>
<p><i>“I used the feedback by writing and down from the video and then to ensure on my next assignment I had for this subject I made changes that were highlighted in my previous essay.”</i></p> <p><i>“I took notes on areas of improvement and used them to address my next assignment. I also paid attention to the comments on areas where performance was good to make sure I used a similar approach in my next assignment.”</i></p>	<p>Students appear to be critically reflecting on their feedback and using it to improve on future assignments</p>

Considering students’ different perspectives on the role of feedback, we asked which form of feedback better fulfils their feedback expectations. As presented in Figure 1 below, over 80% of students insisted that compared with traditional written feedback, AVF was more desirable to them.

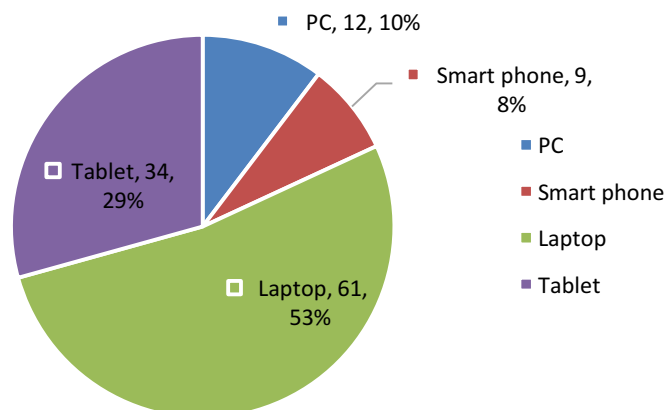
Figure1: Distribution of student choices on desirable feedback method



Furthermore, when compared with traditional written feedback, AVF achieves a slightly higher rate of students collecting and reflecting on their feedback. This is likely to be because, as learning content is becoming increasingly digitised, students expect feedback to be delivered using digital methods.

Figure 2 presents how students utilised various electronic devices to consume their AVF. As nowadays students are more likely to engage better with digital content due to its mobility and accessibility, receiving AVF may motivate them to engage with the feedback more than once and to take additional time reflecting on their feedback as their digital feedback can be more readily available to them than the paper-based traditional type. This easy-access feature was continually mentioned as an advantage of AVF comparing with written feedback by many students in later questions.

Figure 2: Distribution of Devices Use for consumption of AV Feedback



AVF also encourages students to build a connection with future assignments. Over half of the sample commented that they would go back to their AVF when they are preparing for a new assignment. Equally, when asked “if receiving audio visual feedback will have a positive impact on my next assignment”, 30 students (76.9%) responded “Agree” or “Strongly agree”. This further proves that students value their teachers or tutors' advice for improvement rather than only focusing on the grade.

Table 4 Distribution on Connection between Feedback and Assignment

	Did you re-watch the feedback video before you started writing another assignment?		Is there a connection between your assignment and the feedback you were given?	
	Yes	No	Yes	No
Frequency	18	16	33	1
Percent	52.9%	47.1%	97.1%	2.9%

When it comes to the benefits and shortcomings of AVF, the majority of students generally judged feedback based on their experience, rather than only focusing on grade improvement. As viewed in Figure 3, over 80% of students ‘agreed’ or ‘strongly agreed’ with all positive viewpoints, while Figure 4 presents that the majority of students ‘disagreed’ or ‘strongly disagreed’ with potential negative statements on AVF. As it is clear that from a student perspective AVF is the preferred approach when compared to traditional feedback. In general, over 70% of students prefer receiving this new feedback method.

Figure 3 Student Perspectives on Positive Statements on AVF

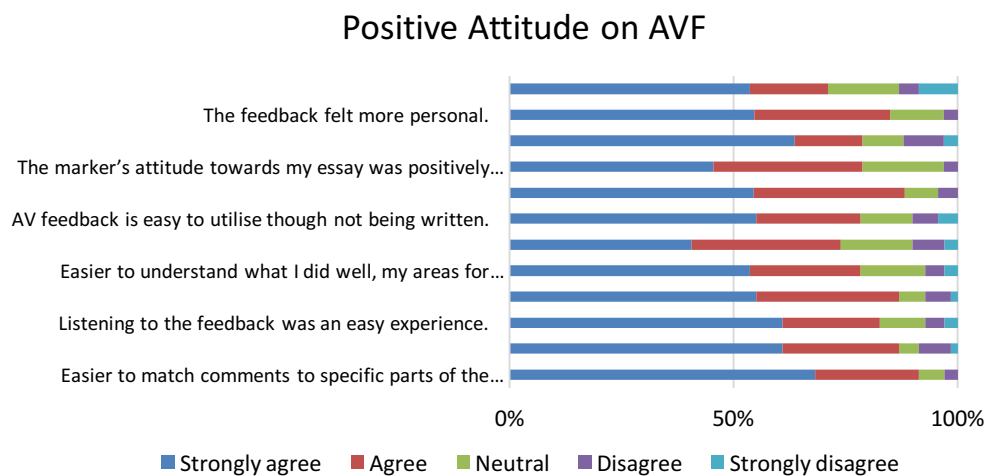
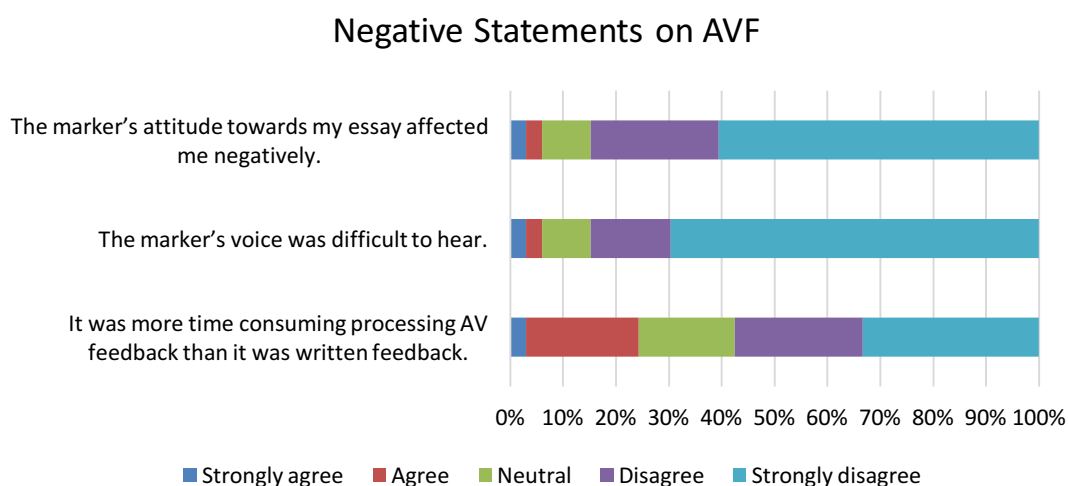


Figure 4 Student Perspectives on Negative Statements on AVF



More specifically, students' perceptions of the benefits and shortcomings of AVF in comparison to written feedback are summarised in Table 5 and 6 as follows:

Table 5 Perspective on the Benefits of AVF

What the students say	What this means for us
<p>FOCUSED</p> <p><i>"Audio Visual feedback makes it easier for the brain to process the data faster. I felt more focused on the feedback when watching video feedback."</i></p> <p><i>"I focused more on thinking about my problems mentioned during feedback."</i></p> <p><i>"Being able to view the essay on the screen as the feedback was given was helpful. It helps in concentrate on feedback."</i></p>	<p>AVF appears to be a great vehicle for delivering feedback and builds a strong connection with the student.</p>
<p>IMPACTFUL</p> <p><i>"The audio-visual aspect of the feedback made the lecturer's comments and recommendations more engraved into my mind whilst writing my second assignment. I do read the written feedback I have previously received, but I find myself forgetting to re-cap on the comments when I have finished writing the assignment."</i></p> <p><i>"When the feedback is written it's not always easy to read the handwriting, I also found the tone of voice helps to make me feel more impressed about feedback as it's not always easy to convey emotion or tone of voice when reading feedback."</i></p>	<p>A large proportion of students mentioned that voice/tone of the marker improved their intake of content, providing an alternative to often illegible handwriting.</p>

SPECIFIC

"I could see specifically what parts the lecturer was referencing when he spoke about the assignment. It helped greatly as I could follow the section that the lecturer was talking about more clearly."

"It was easy to follow as you knew exactly what part of the essay was being referred to. The marker clearly explained what exactly prevented me from obtaining the highest grade so I knew what to focus on next time."

"The visual aspect in particular was very helpful in understanding the parts of the assessment that the feedback applied to. It can sometimes be very confusing with written feedback as to what section the comments apply to. When seeing the lecturer scroll through my assignment, voicing the feedback by pin-pointing exactly what section she was referring to, her points seemed much more valid."

DETAIL

"There was more detail in the video feedback which was backed up by specific examples. Sometimes in written feedback it is difficult to identify specific parts of your argument which needs improvement."

"Video feedback is more reflective."

"It was much more detailed than written feedback, also no issues with illegible handwriting!"

"I feel like this method encourages the one giving the feedback to explain more clearly and in a more detailed way the problems to solve and the improvements to be made."

TEACHER PRESENCE

"The audio is accompanied with your work on the screen, and the cursor is showing you where to look for specific comments. It was like having the tutor sitting next to me telling me where I did well and where I could improve, other than just having big circles round things with scribbles on them."

"The assessment are much clearer as someone is explaining it 'live'."

"It was like having the tutor sitting next to me telling me where I did well and where I could improve, other than just having big circles round things with scribbles on them."

PERSONALISED

"I felt like it was more individually tailored to my essay rather than just general feedback."

"It was clearer feedback with visual as well as audio that made it personal and more understandable on the areas for reflection."

"It is more personal and natural. Because you could actually see lecturer highlighting the comments she was referring to, it was much more direct what was being referred to."

Students can follow the feedback and marking process on the screen synchronised with lecture/markers explanation. This close linking with their assignment can avoid ambiguity in identifying what needs to improve or what has been done well.

Some students maintained that the feedback content seems increased when it is delivered in AV way. The feedback is more detailed in comparison to written.

The majority of students reported they felt a closer connection with lecturer through this method. Comparing with tradition feedback, AVF stimulates the feeling of the teacher sitting next to the student, guiding them through the process.

Students appear to build a rapport with the feedback they received as it is more personal and tailored to their assignment.

ACKNOWLEDGING STAFF TIME & EFFORT

"I felt much more grateful for the time and effort that had gone into providing me with this feedback, which made me take it more into account."

"The fact that the lecturer spent so much time giving feedback (writing up, recording, etc.) made me feel like my improvement and learning is really important both for them and for me (it actually made it more important for me) and I'm not just another essay the lecturer has to grade to get their wages."

As AVF provided students with a more personal impression, some students concluded that they felt more valued as they can see the teachers' effort more clearly. They highlighted that the teacher appears to have spent more time and effort on delivering feedback if it is delivered in AV format.

FLEXIBLE / ON DEMAND

"Better than face to face. If it was face to face you wouldn't be able to listen to it again as you can with this recording."

The ability to come back to the video was a bonus for the students that you cannot get from face to face dialogue.

Table 6 Perspective on the Shortcomings of AVF

What the students say	What this means for us
<p>TECHNICAL ISSUES</p> <p><i>"The quality made it hard to see the assignment and hear the lecturer clearly."</i></p> <p><i>"The problem with audio is that the software of your computer, as well as your actual computer, has to be a good quality. I had a bit of trouble trying to access the link as none of my devices work on internet explorer."</i></p> <p><i>"Downloading a video was a little bit slow."</i></p> <p><i>"It could also be implied that a more demanding internet connection is needed as opposed to just a written text. Also written feedback is easily accessible by mobile phone devices. I don't know how easy it will be to download that content on a phone when it comes to audio-visual."</i></p>	<p>We have to explore different output options of the final MP4 to allow it to be compatible with all screen sizes. We used an output setting of 600x480px to help minimise the file size</p>
<p>NAVIGATION</p> <p><i>"With written feedback, you can refer to it and re-read it quickly to go over what you did well and need to do better whereas with video feedback you have to listen to the whole 15 minute clip over again to try and catch what the person was saying at each of the different points."</i></p> <p><i>"Related to the option selected above, if I was looking for a specific point then I'd have to replay the feedback as a whole rather than just referring to a written comment in a particular place on a hard copy."</i></p> <p><i>"The feedback received by a student should be easily accessible and clear and it should be easy to refer to it when necessary. Feedback taking the form of a video is a lot harder to continuously refer to unless you write out all of the comments yourself."</i></p>	<p>Some students found it harder to refer to the AVF in the future. In this case, students should take notes of this feedback to make referring to the video file easier. It would be too time consuming to add video chapters/sections into the video.</p>

TIME CONSUMING

"It takes more time to watch feedback than to read the feedback on paper."

"It took longer time to explain things while I could read it quicker."

Listening and consuming AVF may be more time-consuming for students. This could be due to the volume of feedback or because this was their first time receiving feedback in this method.

MORE FOCUSED ON CORRECTIVE THAN REINFORCING FEEDBACK

"I felt that the video picked out more negative points than positive ones, whereas the written feedback was slightly more balanced."

"The video feedback seems to solely highlight the things that were incorrect within the essay as opposed to written feedback where areas of strength are also highlighted."

Important to strike a balance between good points and areas that need revision.

The students were asked for areas on which they felt this method could be enhanced. These suggestions are concentrated in the following table.

Table 7 Perspectives on How to Improve AVF

What the students say	What this means for us
<p>COLOUR CODING</p> <p><i>"It would be good if the colour-coding was red/amber/green - much easier to remember and would save the lecturer from having to explain it again at the start of the video."</i></p> <p><i>"Having a tick or a cross next to the colouring scheme."</i></p> <p><i>"I liked that in my essay there were colour codes and the AV was referring to them regarding their colour code, which made it much easier and effective to follow and process during watching video."</i></p>	<p>Some staff used different colours to classify specific areas on the students' submissions. For example, highlighting areas with red meant the student needs to rewrite, yellow indicates small revision/factually incorrect statement, and green relates to a well constructed point. However, if different markers use different colouring systems, for example, a course with multiple markers, this could lead to confusion. It is imperative that a set colour code and legend is set up prior to feedback being delivered.</p>

WRITTEN SUMMARY

"Maybe adding a written explanation on the right hand side. For referencing back without having to re listen to the whole feedback presentation."

"As well as the audio visual feedback, produce a bullet point list of what it says, as it is nice to have to video to hear the lecturer talk about your individual piece of work, and scroll through the essay as they talk about relevant point, but it would also be good to have this in written form, so you don't have to watch the video every time you want to refresh your memory."

"Written feedback could be supplied as well as the audio-visual so you can refer back to the written feedback rather than re-watch the audio feedback several times."

"As a non-native speaker, not that I personally had this problem, but some people I can imagine possible could, is once a word could be misunderstood e.g. they can't look it up on-line as easily as a written word."

"A summary of key points would be beneficial as it would allow me to go back to the key strengths and weaknesses of my work without having to re-watch the entire video."

TECHNICAL / ACCESSIBILITY IMPROVEMENTS

"It could be improved by making it more accessible by having different accessibility types such as making it accessible on chrome or Firefox."

"Make it easier to find on Moodle. I was unable to access it via a smartphone."

"The actual video and audio have to be improved, there were sections of the essay the marker was discussing and all I could see was a blank screen."

"Improving the quality of the recordings."

CHUNKING

"By splitting the feedback into sections rather than one full clip. This would allow students to focus on a particular feedback point rather than having to listen to the full clip for a particular comment."

FACE TO FACE

"Discuss through a viva would be better as you can get further explanation quickly if you're still unsure on the feedback."

Although the majority of students selected AV as the preferred method, many students still asked for combined written summary or short transcript for further referencing. Front cover marking sheets often accompany students work which is still currently hand written and often contains the provisional grade. This is an area worth consideration for improvement as the project continues.

Further investigation is needed to understand what issues some users were experiencing and how these can be rectified.

Separating the feedback into clips would have resulted in more time spent marking per assignment.

Some students still prefer face to face discourse. Those who required a face to face meeting could still arrange this with the academic. The feedback method did not impact on this.

GRADES

"Maybe it could be improved by making it available for everyone at the same time, or including the grade in the feedback somehow. It is a bit stressful to have to wait for the grade and keep obsessing about every detail of the feedback until you get the results."

"It would be great if we could get the grades at the end of the video rather than having to wait for a separate email."

We did not combine their grade with the feedback file as grades must go through second marking and external marking before they are finalised.

Summary of Key Findings from Students

Conclusively based on the quantitative and qualitative data obtained from 2015 and 2016 student surveys, the majority of students preferred the new feedback method according to its following benefits:

- 1) AV feedback is more likely to attract student attention.
- 2) Voice/ tone help deepen the impressions on feedback.
- 3) Learners can pause the feedback and make suggested alterations and improve work.
- 4) The AVF appear more detailed compared to written.
- 5) Delivering feedback in a more interactive way builds up closer connection between the teaching staff and students.
- 6) Feedback content is on a more personal level.
- 7) Ability to review the feedback across a range of devices and universal locations.

Therefore, this student survey supports the notion that AVF makes progress in increasing student satisfaction on feedback experiences.

For improving the AVF method, students suggested:

- 1) Technical issues with some browsers need to be fixed and the video quality should be less limited by internet connection.
- 2) It could be better if the video combines with a written transcript.
- 3) The assessment process can also be improved by providing a provisional grade into the video and building an institutional colour system for clearer highlighting.

From what has been discussed above, many students' negative concerns on AV feedback can be addressed rather readily. The authors expect over time these issues will be resolved as the project continues to be utilised.

Analysis of Teaching Staff Responses

The staff questionnaire conducted in 2015 and 2016 contained the same questions and was completed by all academics who took part in the project (n=10). For nine of them this was their first time delivering feedback using an AV method, and none of them had used the Camtasia software before. All staff

in the study replied that they think it was “easy” or “extremely easy” to use this new technique and marked their intentions to use it again after the project concluded. Their evaluation on the AVF method principally focused on checking the efficiency and the quality of feedback delivery.

In terms of whether the AVF method improves the efficiency of feedback being returned, the majority of staff stated that providing feedback in video format took them slightly more time compared to their written way. Generally, it took between 4-5 minutes to produce the video file. However, as presented in Table 8, many staff also explained that some extra time may attribute to their lack of user proficiency with the software.

Table 8 the Efficiency Assessment of Feedback Delivery

What the teaching staff say	What this means for us
<p><i>TIME</i></p> <p><i>“Not sure how much additional time, at least some of the extra time was a result of learning how to use the software.”</i></p> <p><i>“This answer is based upon the notion that this is the first time of going through the process and attuning myself to a slightly different way of compiling and thinking about feedback. I am entirely confident that having gone through this type of process once, I will be far faster next time and ultimately save far more time than I would have done by typing out such feedback.”</i></p> <p><i>“The time per assignment varied because it took time to become familiar with and used to the method of feedback. So the first two assignments took about half an hour compared with the last assignments that took about ten minutes.”</i></p> <p><i>“It took me about 10-20% more time per assignment but given the lack of support from admin staff who are not familiar with the method, I also had to upload the files and send them back to the students, one by one, which depending on the network connection, took anything between a few seconds and 3-5 min each. All in all, I calculate this method to have taken me 30% more time than the traditional feedback forms.”</i></p> <p><i>“The time it took me to edit (4'), produce (5'), upload (30 sec to 5 min) and send to the students, particularly where the internet connection was slow.”</i></p>	<p>It took more time to deliver AVF, but this time consuming shortcoming can be improved with further practice as familiarity with the software and process improves.</p>

When it comes to the quality of feedback being returned to students, the majority of staff agreed that AV feedback is more effective for students. Table 9 presents staff opinions on the effectiveness of AVF.

Table 9 the Quality Assessment of Feedback Return

What the teaching staff say	What this means for us
<p>DETAIL</p> <p><i>"I gave more details as I can say more words than writing within limited time."</i></p>	<p>Increased feedback per assignment as staff can verbalise quicker than they can write.</p>
<p>FOCUSED</p> <p><i>"It allows easier focus on specific parts of the assessment so that particular issues with it can be more clearly identified."</i></p>	<p>Increased quality of feedback due to the immediacy of it.</p>
<p>IMPACTFUL</p> <p><i>"My feedback may have been more meaningful for the student perhaps."</i></p>	
<p>PERSONALISED AND EFFICIENT</p> <p><i>"The ability to 'speak' to each individual student, it felt good to get this personal."</i></p> <p><i>"I liked being able to talk through the assignment as if the student were there."</i></p> <p><i>"Students loved it, they said so many times and they had the other type to compare, because I used the written type on one of their assignments for the same course."</i></p> <p><i>"The fact that you speak more information in a shorter amount of time. For me, this process will definitely be more efficient."</i></p>	<p>Increased personalisation of comments and interactive with students allowed for a connection to be made between the staff and students.</p> <p>Some staff insisted that this has time-saving potential per assignment as to verbalise feedback is quicker than to write.</p>
<p>FORMATIVE ONLY</p> <p><i>"It may not really be useful for summative assessment as students are interested in grades. Also, better not have formative comments in summative assessments."</i></p>	<p>Some staff had several concerns on the effectiveness of summative AV feedback.</p>
<p>TONE OF VOICE</p> <p><i>"Voice may be more powerful than words, so it may strengthen the negative emotion, it is really hard to give critical feedback than in written format."</i></p>	<p>There were also concerns of the tone of voice message exaggerating negative emotion to students.</p>

Outside the questionnaires responses, the study collected individual testimonies from staff reflecting on their use of AVF through Camtasia with their students. One such testimony recalled a course assessed through two essays, one of 500 words (essentially a series of students' answers to questions), receiving formative feedback, and one of 2,500 words, receiving summative feedback. The method of AVF on the kind of exercise entailed in the short assignment was ideal because it allowed for expressive personal feedback to students which took less time to provide than written comments. AVF was later provided on the lengthier assignment yet, to complement the relatively short AVF recording, further written feedback was given. The process was altogether time consuming but of great benefit to students who received specific comments on each student's essay *in addition to* the AVF. In this respect, AV feedback supplemented and complemented the written comments. Therefore,

using an AV medium does not preclude other approaches and can be used to supplement other forms of feedback. This digital affordance allows the opportunity for a varied and nuanced approach to giving feedback to students. In the example of giving AVF to students on their 2,500 word essays, this method was used to ensure that students received feedback before their exam. At this point students' grades had not been agreed and therefore could not be given, however, the purpose of the feedback was essentially as 'feed-forward' to help students in their preparation for the exam.

The same member of staff also gave AVF to students in large classes to provide summative feedback on exams, which appeared to be effective and was time-efficient. Clearly, AVF can be used in diverse ways and thus provides a multi-faceted resource for learning and teaching.

Summary of Key Findings from Staff

To sum up, the majority of teaching staff held positive views on the new feedback method according to the following benefits:

- 1) Staff reported they returned more feedback as a result of this method.
- 2) Specific areas of the assignment could be explored and discussed in greater detail.
- 3) Efficiencies expected as staff can verbalise quicker than they can type

However, staff did highlight some limitations:

- 1) It generally took more time to make and send AVF.
- 2) Possibility only beneficial for formative assignments.
- 3) Tone of voice / language may strengthen any negative feedback returned. Care must be taken on choice of tone and language.

From their perspectives, and anecdotal students' replies to teaching staff, AVF is more detailed, much clearer, more personal and interactive.

In conclusion, most staff agree that AV feedback improves students' assessment satisfaction. Although it was reported it took more time per assignment to deliver AVF, this potentially will be less of an issue with more use and improvement.

The Impact of AVF on Student Attainment

Now that it is clear that there are positive attitudes associated with AVF across the university, this section reports on the findings of a field experiment undertaken with one of the Honours student cohort in receipt of AVF in the academic year 2015-16. The course was assessed through 3 assignments of similar weight, structure and purpose. Therefore, the expectation was that, when receiving feed-forward feedback, students would have the time and would be able to incorporate feedback into subsequent essays.

The aims of the experiment were to determine whether AVF is more effective in enhancing student performance than traditional feedback. However, a discussion on whether or not AVF or traditional feedback have an impact of student behaviour, requires an understanding of whether or not feedback in general improves student attainment on subsequent, similar essays. Therefore, two hypotheses led the field experiment:

H1: There is a significant positive relationship between the provision of feedback and students' performance in subsequent assignments.

H2: Students who receive AVF will exhibit significantly higher performance in subsequent assignments than students who receive traditional feedback.

To test the impact AVF had on positively effecting student attainment, the course leader implemented a between-subjects quasi-experimental research design. To achieve this, final-year undergraduate students were split into two equivalent, independent groups, specifically formed as to control for two extraneous variables, gender and nationality, both of which were deemed to have the potential to affect the relationship between the independent variable (form of feedback) and the dependent variable (student performance) of the study.

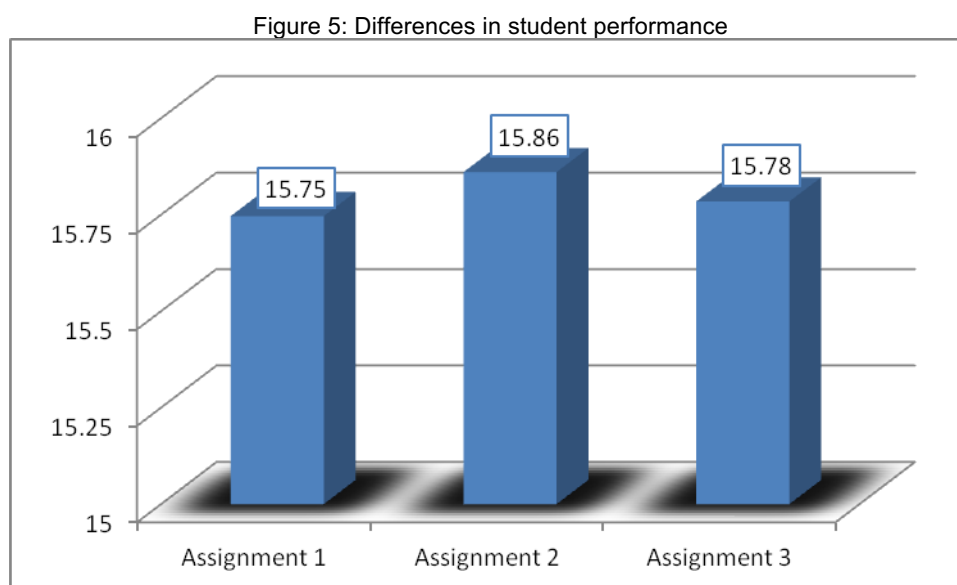
Phase 1 of the experiment (pre-test phase) consisted of establishing the base-line performance for all students in the course; this was measured as improvement in student performance between the first assignment and the second assignment in the course, after students had received feedback of traditional form after the completion of the assignment.

Phase 2 of the experiment (the post-test stage) consisted of splitting the students into two equivalent groups (experimental and control groups). The experimental group received AVF on their second assignment, whereas the control group received traditional feedback for the same assignment. Student performance in the third assignment was then measured within the two groups (control and experimental) to establish whether there were any significant difference in performance between the two groups receiving different forms of feedback.

The subsequent analysis essentially consisted of the comparisons of performance change; between assignment 1 and assignment 2, to assess the overall impact of feedback and set baseline level of performance for all students in the experiment; and between assignment 2 and assignment 3, to assess the effect of AVF in comparison with the effect of traditional feedback.

H1: Impact of Feedback

Analysis at the descriptive level indicates that students in the class did slightly better in assignment 2 than they did in assignment 1, but performance dropped slightly for assignment 3.



This pattern is interesting because it suggests some improvement between assignment 1 and 2, presumably due to the feedback received (traditional feedback, in this instance). Contrary to our expectations, however, the introduction of AVF does not appear to have a positive effect on students' performance, which was actually reduced slightly, despite students' enthusiastic attitudes towards AVF.

An interpretation of the observed drop in students' performance between assignment 2 and assignment 3 may lie in the fact that the deadline for assignment 3 was close to a number of other assignment deadlines, so

students are likely to have spent less time preparing for the last assignment than they may have done for the first two.

At any rate, analysis at the inferential level indicates that the differences in performance across the three assignments are not statistically significant. The parametric and non-parametric tests run (see Table 10 and Figure 6 below) provide conclusive evidence that there was no effect of feedback on students' performance from assignment 1 to assignment 2, and from assignment 2 to assignment 3. Therefore, the hypothesis that, generally, feedback has a positive effect on performance is rejected. This finding goes against the popular belief that feedback, irrespective of its type, improves student performance. Students' reports do suggest that AV feedback may have enhanced their assessment literacy, but that does not seem to have translated into improved performance.

Table 10: Paired Samples Test - Assignment 1 vs. Assignment 2 vs. Assignment 3

	Paired Differences					t	Df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
Pair 1 Assignment 1 - Assignment 2	-.114	3.262	.367	-.845	.617	-.310	78	.757
Pair 2 Assignment 2 - Assignment 3	.076	2.947	.332	-.584	.736	.229	78	.819
Pair 3 Assignment 1 - Assignment 3	-.038	3.506	.394	-.823	.747	-.096	78	.924

Figure 6: Non-parametric test of significance

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distributions of Assignment 1, Assignment 2 and Assignment 3 are the same.	Related-Samples Friedman's Two-Way Analysis of Variance by Ranks	.775	Retain the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

H2: Impact of AVF

Next, the differential effect of AVF was examined, compared to traditional feedback. The control group, comprised of students receiving only traditional feedback, showed slight but steady improvement in assignment 2 compared to assignment 1, as well as in assignment 3 compared to assignment 2. For them, feedback appears to have produced positive increments in performance.

Table 11: Descriptive statistics depicting student performance for the control group (traditional feedback)

	N	Minimum	Maximum	Mean	Std. Deviation	Skewness	Kurtosis
Assignment 1	44	8	21	15.80	3.246	-.445	-.526
Assignment 2	44	9	21	15.89	2.951	-.219	-.534
Assignment 3	44	8	21	16.00	3.673	-.797	-.293
Valid N (listwise)	44						

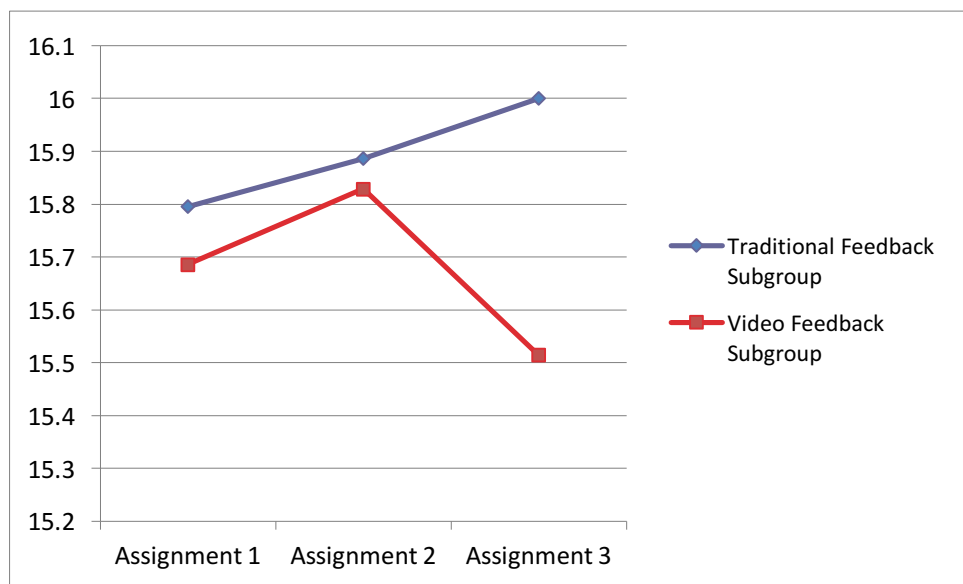
In the group of students who have been given AVF, however, a rather different story about feedback effectiveness emerges. As Table 12 illustrates, students in this group improved their performance slightly after receiving traditional feedback on assignment 1, but then their performance dropped in assignment 3 after receiving AVF on assignment 2. Again, this is contrary to our expectations that AVF will be more effective in increasing students' performance in subsequent assessment.

Table 12: Descriptive statistics depicting student performance for the experimental group (AVF)

	N	Minimum	Maximum	Mean	Std. Deviation	Skewness	Kurtosis
Assignment 1	35	6	21	15.69	3.998	-1.154	.573
Assignment 2	35	9	20	15.83	2.728	-1.312	1.369
Assignment 3	35	6	21	15.51	4.104	-.812	-.016
Valid N (listwise)	35						

Figure 7 below illustrates the two groups' performance following two rounds of feedback for the two groups in the experiment:

Figure 7: Descriptive variation of performance with type of feedback



The study's findings need to be considered in light of the experiment's limitations. The students who participated in the study were not randomly allocated to the two groups. Although an attempt was made to control for important extraneous variables (gender and previous educational system), it is possible that other confounding variables, not controlled in this study, may have affected performance change (e.g. various pressures from other courses or from students' extra-curricular activities) alongside feedback type. This threat to internal validity is inherent in quasi-experimental designs, where control over groups is generally limited. On the positive side, our findings are based on data collected from real students in a real university context, which provides some assurance about the ecological and population validity of the findings.

Summary

Receiving feedback and understanding how to interpret that feedback is an essential part in the students learning process. Throughout this report the authors have clearly identified that students consider AVF a superior feedback method when compared to traditional written feedback. Although AVF may not suit all types of assignments, or indeed be suitable for all types of learners, the authors have identified potential avenues for its use. However, an examination of attainment indicated that despite students overwhelming support for the AV method - and believing it would have a positive impact on their next assignment result – it did not actually have any significant impact on student attainment.

Future studies examining the relationship between different types of feedback and performance in other educational settings and with other student populations could provide corroboration of this study's findings. In addition,

collecting and analysing students' attitudes towards different types of feedback and, perhaps more importantly, their perceptions regarding effective use of this feedback, may help us understand the process through which feedback can influence student performance. The authors believe that further examination of the quasi-experiment is needed to ascertain if the experiments findings hold true in other contexts, disciplines and cohort sizes.

It is clear that future research is needed to fully explore the potential powers and limitations AVF has on students' ability to apply feedback to successfully benefit their next assignment result. Consideration should be given to cultural and disciplinary differences that may affect assignment scores. Despite students unanimously being in favour of receiving AVF for future assignments, further research is clearly needed to discover why those who received AVF resulted in a marginal decline in final assignment test scores.

The overall conclusion of this report is that the lack of evidence for attainment does not take away the positive reactions of staff and students and that, if student satisfaction, particularly in relation to feedback, is an area of concern, AVF provides a clear avenue for future practice in higher education institutions.

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