Are audio-files a more useful method for providing feedback?

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A Research & Development Project

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Abstract

The aim of this research project was to see if audio-files are a more useful way of providing feedback to students in a secondary school setting compared with the researcher's standard form of written feedback. Feedback is a crucial part of the learning process and should always aim to be as useful as possible. Clarity and precision are the two key parameters used in this research to ensure feedback is useful and easily understandable. The literature emphasises there is a lack of knowledge with understanding student perspectives when receiving feedback, especially with regards to receiving audio-files. This research hopes to provide more evidence towards the usefulness of audio-file feedback at secondary school level. A class of Year 9 Geography students completed three GCSE style 8 mark questions and subsequently received both written and audio-file feedback. Student views on audio-files were gathered through group interviews; teacher views were collected through an online questionnaire. The data collected from these qualitative methods were analysed through a coding process which led to particular themes being identified. The principle finding that 78% of students valued the audio-files and believed them to be more useful compared with the written feedback. The recordings provided more detail and the verbal nuances added greater clarity. The remaining students preferred written feedback because they could see the comments written down. Teachers found audio-files to be useful and highlighted how recordings sped up the feedback process together with providing a personalised piece of feedback.

Contents

Description	Page Number
Abstract	i
Contents	ii
List of Figures	v
1.0 Introduction	**1**
1.1 Background	1
1.2 Context	3
1.3 Wider Relevance	4
1.4 Initial Questions	5
2.0 Literature Review	**6**
2.1 Rationale of study: Why study feedback	6
2.2 Defining feedback	7
2.3 What is 'useful feedback'?	8
2.4 Could audio-file feedback be 'useful feedback'?	10
2.4.1 What is audio-file feedback?	10
2.4.2 How is audio-file feedback perceived?	11
2.4.3 What are the weaknesses of audio-file feedback?	15
2.5 Methods of providing audio-file feedback?	18
2.6 Conclusion	20
2.7 Research Questions	22
3.0 Methodology	**23**
3.1 Action research	23
3.2 Research Design	25
3.2.1 Context	25
3.2.2 Pre-Intervention Setup	25
3.2.3 The Intervention	27
3.3 Forms of Collaboration	28

3.4 Ethical Considerations 29

3.4.1 Myself 29

3.4.2 Teachers 30

3.4.3 Students 31

3.5 Data Collection Methods 32

3.5.1 Staff Questionnaire 33

3.5.2 Student Group Interviews 34

4.0 Findings 37

4.1 Staff Questionnaire 37

4.1.1 Research Question 3 - Do staff think audio-file feedback is useful? 40

4.2 Student Group Interviews 40

4.2.1 Research Question 1 - Which feedback method do students find more useful? 46

4.2.2 Research Question 2 - Which feedback method do students find easier to understand? 46

5.0 Discussion 47

5.1 Research Question 1 - Which feedback method do students find more useful? 47

5.2 Research Question 2 - Which feedback method do students find easier to understand? 49

5.3 Research Question 3 - Do staff think audio-file feedback is useful? 51

5.4 Future Options 54

5.5 Limitations of the study 56

6.0 Conclusion 58

6.2 Implications for future research 59

6.3 Implications for practice and context 60

7.0 References 62

8.0 Appendices 70

Appendix 1 Letter to Headmaster 70

Appendix 2 Email to Teaching Staff 72

Appendix 3 COVID-19 Safeguarding Policy 73

Appendix 4 Staff Questionnaire Responses 74

Appendix 5 First intervention student group interviews 77

Appendix 6 Second intervention student group interviews 80

List of Figures

Description		Page Number
Figure 3.1	An action research cycle adapted from Lewin (1946).	23
Figure 3.2	An example of the format in which written feedback is provided to the students.	26
Figure 3.3	An example of part of an 8-mark answer with the relevant Assessment Objective ticks.	26
Figure 3.4	The difference between what a comment looks like on a Google Doc compared to a 'Mote' voice note/audio file.	28
Figure 4.1	Graph showing the coded responses to the staff questionnaire.	38
Figure 4.2	Graph showing the sub-categorised responses for positive views.	42
Figure 4.3	Graph showing the sub-categorised responses for negative views.	44

1.0 Introduction

1.1 Background

Anyone involved in education knows that feedback is an integral part of the learning process and is a major player in a student's intellectual development (Hepplestone *et al*, 2011). However, in light of the COVID-19 outbreak, feedback has become more important than ever across all contexts. Feedback from the Government to the public, from individuals to the National Health Service and employers to their staff has been paramount during this difficult time. This highlights the importance of communication between individuals so that clarity and understanding can be achieved swiftly. Similarly, communication between examination boards, schools and students has been crucial to ensure the welfare of all those involved in the education system. With many schools moving to remote learning, feedback has become a really hot topic within the teaching community (Taylor, 2020; Lim, 2020). Although my research topic was planned prior to the COVID-19 outbreak, the findings could be applied to the wider, and now current, debate concerning feedback.

During my Part 2 MLT research project (Moore, 2019), I studied which type of feedback students benefited more from - verbal or written feedback. I concluded that students believe verbal feedback offers more benefits because the interaction between student and teacher provides a more personal connection. Research has shown that the relationship between these two parties is key to a student's motivation (Stipek, 1996, O'Donnell, 2006; Wentzel, 2009). Misconceptions can be easily clarified because they can be explained through two-way questioning. On the other hand, teachers believe written feedback benefits students more because there is a safe store of information in their books for them to refer back to (Buckley, 2012). However, teachers do understand the importance of verbal feedback.

I wanted to continue my research into one of the methods of feedback I came across during the review of the literature for the Part 2 research project. Lunt and Curran (2010), Merry and

Orsmond (2007), and Ice *et al* (2007) all investigated the use of audio-files to provide verbal feedback. Although Lunt and Curran's (2010) research reported a high level of student satisfaction (75%) to the use of audio-files because they believed the audio-files provided far more detailed feedback compared to previously written comments, the research has limitations. Only 26 students of a sample of 60 responded to their survey after receiving audio-file feedback, reducing the validity of their findings. There were similar concerns with the studies by Merry and Orsmond (2007), and Ice *et al* (2007) where there were low response rates in relatively small sample populations. Therefore, further research into the use of audio-file feedback needs to be conducted. The need for additional research is also highlighted by Lunt and Curran (2010) because only two tutors were involved in obtaining tutor views towards audio-file feedback. Considering this is such a small sample size, it is bold to conclude that using audio-files reduced their overall marking time. Their take home message was 'one minute of audio is equal to six minutes of writing' (Lunt and Curran, 2010: 761). The tutors stated that writing comments within the body of a piece of work and on a marksheet takes up to 30 minutes. However, for the same piece of work, it only takes five minutes to provide an audio-file which, they suggest, more often than not has better quality of feedback within it.

I had originally planned this project prior to the COVID-19 outbreak but now that schools have moved into remote teaching, audio-files seem to be an ideal way of providing detailed feedback to students. The overall aim of this research project is to see whether audio-files are a more useful way of providing feedback to students compared with my standard form of written feedback.

I am still early in my teaching career and always willing to try new methods to improve my teaching practice. The Masters in Learning and Teaching has broadened my knowledge base and understanding of pedagogy through the literature we have read and the collaborative nature of the course. One area I found particularly interesting was the provision of feedback. Discussions with teachers at different schools allowed me to understand the various ways in which feedback

is delivered in different settings. All teachers are individuals and have their own ways of doing things, but there is always the opportunity to try something new potentially to improve your teaching. The outcome of my Part 2 research motivated me to look more deeply into the ways feedback is provided and audio-file feedback is a method I have never used before. I wanted to investigate this topic to increase the amount research conducted at Secondary School level, and to try something new to see if it would improve my understanding of pedagogy and my teaching practice.

1.2 Context

Since completing the Part 2 Masters research project, I have been in continuous discussion with the Director of Teaching and Learning (DTL), her assistants (aDTLs) and my Head of Department about my findings and developing a plan for this year's research. With the school's teaching and learning aim focussing on feedback, they decided my proposed topic fitted in perfectly and were happy to support my research to determine the usefulness of audio-file feedback. The school's aim is to emphasise the development of pupil voice and allowing for students to have an active role in the feedback process. The idea of the 'four Rs' (Review, Reflect, Respond, Remember) was introduced to encourage the students to communicate with their teachers if they have any questions about the feedback they have received. The reason the Teaching and Learning team decided my research would suite the school's focus was because they wanted to see if audio-files would provide easily understandable feedback for the students to complete the four Rs. Overall, the four Rs have been received well by both students and teachers, but there are always different ways to provide feedback, hence the backing from the Teaching and Learning team. Furthermore, the school's Director of eLearning said the school's infrastructure lends itself to the use of audio-files.

The school where I work is an independent day and boarding school for boys aged 11-18; it operates a 'bring your own device' policy for the students in Year 9 and above. For those boys

who do not have access to their own device, the school provides a Chromebook. As a result of this technologically focussed environment, the school makes very good use of Google's 'G Suite for Education' service and utilises fully all its features. This service allows every student to have their own Google Drive in which their work is stored and documents from teachers can be shared directly to them. The process I envisage is for a student to share a completed piece work via Google Docs with their teacher; this can be a word-processed document, a scanned PDF or even a photo of a hand-written piece of work. The teacher would then read and mark the work as normal. However, instead of the feedback being written on to the work, detailed feedback would be recorded onto an audio-file and sent back to the student. This would provide a more personal connection between the student and teacher. The other benefit of sharing an audio-file to a student's personal drive means that there is a safe store of this verbal feedback. This elegant solution meets the needs of both the students and the teachers mentioned in my research last year (Moore, 2019).

My aim is for feedback to be more useful for the student because it will be clearer and more precise. The feedback will be clear in the sense that the students will be able to appreciate the positive aspects of their work and the areas they need to work on more easily; the feedback will be precise because teachers are able to include more detail in the audio-files compared with a written comment. These two parameters will be measured through student opinions after receiving both written and audio-file feedback on similar pieces of work.

1.3 Wider relevance

As previously stated, feedback is a fundamental part of our everyday lives. In terms of the education sector, there is an extensive list of research papers providing evidence on the usefulness of audio-files as a method of feedback to students in higher education all over the world (Emery and Atkinson, 2009; Francis, Shannon and Murison, 2008; Ice *et al,* 2007; King, McGugan and Bunyan, 2008; Merry and Orsmond, 2008; Nortcliffe and Middleton, 2008;

Ribchester, France and Wheeler, 2007; Rotheram, 2007; Knauf, 2016). The research is based in universities in the United Kingdom, United States of America, Australia, Germany and many more. I will analyse these papers in the literature review because many of them report great success using audio-files, and how students enjoy the personal connection between teacher and student. The advantages highlighted in these research papers emphasise the potential audio-files have and how they could be considered for use in secondary schools.

I believe that the current phase of remote teaching could potentially revolutionise teaching methods and ways of providing feedback. Audio-files are a relatively untried way of giving feedback in secondary schools but there is clear evidence of success in higher education.

The findings of this research will provide the Teaching and Learning team, and the rest of the teaching body at school, an evaluation of the usefulness of audio-file feedback as a way of providing feedback to students. Furthermore, although it is a small-scale piece of research being conducted in a very specific environment, I hope it will contribute to a field of education research that is currently lacking in the literature (Lefroy *et al*, 2015).

1.4 Initial Questions

The following questions guided the literature review:

- What does useful feedback look like?
- Is audio-file feedback found to be useful feedback? Student and Teacher perceptions.
- Are there different ways of providing audio-file feedback? Other formats?

2.0 Literature Review

This review will examine a range of literature focussed on the usefulness of audio-file feedback, and with the perceptions of key stakeholders on its use in the education sector. Initially there will be a general overview of feedback and its component parts, followed by a more detailed review of the literature specific to audio-file feedback.

2.1 Rationale of study: Why study feedback

High quality feedback has been consistently identified as a key element of quality teaching and has been well documented by many meta-analyses (Astin, 1991; Black and William, 1998; Ramsden, 2003). Hounsell (2003: 67) states that 'we learn faster, and much more effectively, when we have a clear sense of how well we are doing and what we might need to do in order to improve'. There is extensive research studying the different variables towards providing feedback, and Gibbs and Simpson (2004) highlight the importance of feedback being understandable, delivered in a timely fashion and acted upon by students. Despite all of the previous research looking into its importance, there is still a large gap in understanding the usefulness of feedback because we do not fully appreciate the receiver's perceptions of feedback (Carless, 2006). Several studies record dissatisfied students because they receive feedback which lacks specific advice, is difficult to interpret and has a negative impact on a student's self-confidence (Higgins *et al*, 2001; Chanock, 2000; James, 2000).

There is a need for research to be conducted and focussed with student perceptions in mind. This is highlighted by Mory (2004) in an extensive review of the literature around feedback research. The majority of studies are aimed at the delivery side of the equation with reference to what is provided, how it is provided and when it is provided (Poulos and Mahony, 2008). There is little recognition of the student's view and how they respond to the feedback. Student views should be taken into consideration because they are very much a part of the feedback process. Therefore, this study will examine both sides of feedback.

Using the 'Search Oxford Libraries Online' database, few studies were identified which focussed on student views in an education setting. Many of these studies initially found had a medical background which were not relevant to my research project. The majority of the remaining educational studies were based at a university or high-education level. Carless (2006) reported a clear difference in the views of tutors and students at Hong Kong university for the feedback being given in response to assessed work. O'Donovan *et al* (2001) found that students on a Business Studies programme at Oxford Brookes desired a more reliable marking process with clearer guidelines on the assessment requirements and criteria for their assessments. Although these findings are useful, studies based at secondary school level would be more appropriate so more research needs to be conducted.

2.2 Defining feedback

According to Clynes and Raftery (2008), there are many different definitions of feedback with the same underlying aim of providing learners with an insight into their performance. One of these definitions centres on how feedback is used to fill the gap between the expected level of performance and the actual performance demonstrated (Gopee, 2010). Unfortunately, this is a fairly negative viewpoint because it implies that the learner has not reached their expected level. A more positive and useful definition of feedback which has been used in several other studies relates to information being presented in a way which allows for comparison between the actual outcome and the desired outcome (Ramaprasad, 1983; Mory, 2004). The difference between the words 'expected' and 'desired' is important because feedback is very much an emotional experience for the learner (Butler, 1998). Many students invest a huge amount of time and effort into pieces of work, especially assessed work, and the feedback they receive does engage with them on a more emotional level (Higgins *et al*, 2001).

In this research project, the latter of these two definitions is suitable because understanding that the feedback process can be an emotional experience for some students is crucial because

emotions could affect their views on the feedback they receive. Therefore, it is vital to ensure that the feedback provided is useful and given in a way which is easily understandable for the student (Gibbs and Simpson, 2004).

2.3 What is 'useful feedback'?

The title of this research project is based on the idea of 'useful feedback'. This section will start to unpick what useful feedback is and the key elements behind it. As previously mentioned, Gibbs and Simpson (2004) highlight the importance of feedback needing to be understandable, delivered in a timely fashion and acted upon by students. Fluckiger *et al* (2010: 137) provide more detail by saying that feedback must be 'specific, simple, descriptive, and focused on the task'. For a teacher, ensuring every single piece of feedback meets all these prerequisites can be daunting. For the student, making sense of feedback can be a very complex process (Pokorny and Pickford, 2010). Feedback can cause an emotional response (Higgins *et al*, 2001) which has the potential to be detrimental to the student's confidence and progress.

To start with, what feedback is not useful? There continues to be a great debate between researchers about whether feedback which contains a student's standing relative to the rest of the class is beneficial or not. Two studies report that this certainly does impede learning and there is the potential impact on the student's emotional state (Williams, 1997; Butler, 1987). This manifests as; lack of motivation, lack of interest in the tasks given, and a reduction in the performance of tasks. It is understandable how disheartened a student would feel if they knew they had come towards the bottom of the class. On the contrary, DeBellis and Goldin (1997) suggest that feedback which could lead to students knowing their position within the class may be a reality check and will lead them to be more committed with their work. However, the majority of literature on this issue supports the concept that feedback linking a student to their rank in the class can have a negative effect on the individual. Dowden *et al* (2013) emphasise the influence feedback has on a student's emotions and making sure teachers understand this is

crucial for effective teaching and learning. Students recall positive comments more readily compared to negative feedback (Fritz *et al*, 2000). This is supported by a number of studies, namely, Varlander's (2008) study looking into student emotions after formal feedback. She reported how emotion can have a significant impact on cognitive function. Specific impacts also relate to decision making and memory (Duncan and Barrett, 2007). Student positioning in class should not be included in feedback because of the possible impact on a student's emotional state. This risks the student being discouraged and not reacting positively to feedback.

Another area within the feedback debate is the level of specificity and detail to be included in feedback. Shute (2008) states the effectiveness of feedback is significantly reduced when feedback is vague and has no real purpose other than indicating whether the work is right or wrong. Heron (2011) supported this idea finding accurate and specific feedback far more meaningful to students. Unfortunately, generic feedback is more readily given compared to specific feedback (Shute, 2008). A few studies report a positive response to the more generic style of feedback (Knight and Yorke, 2003), although this feedback was potentially more structured compared with normal whole class feedback because it was linked to future assessments. Overall, the majority of studies involving student perceptions, at a university level, report the need for specific and personalised feedback which gives clear advice on how to improve (Ferguson, 2011). Ferguson's study invited 566 students at a major Australian university to comment on their perceptions of the effectiveness and quality of feedback they were receiving on their assessed work. Along with the need for feedback to be specific and personalised, the students suggested feedback should be 'positive, clear and constructive with a focus on acknowledging their success and guiding them towards future improvement' (Ferguson, 2011: 60). They also suggested feedback should contain positive praise to encourage self-confidence and motivation. Most of the students admitted they were disappointed with feedback when it was too brief, unclear and did not inform them of ways to improve their future attempts. Ferguson's study clarifies the ways feedback may not be useful and does not help the students.

To summarise, the literature is quite clear with what is not useful feedback. Generic, non-specific and performance revealing feedback has a negative impact of student learning.

So, what is useful feedback? Returning to Ferguson's study, 566 students found feedback which was specific, personalised, positive, clear and constructive to be useful (Ferguson, 2011). Many studies reiterate these points and emphasise the importance of useful feedback being: provided soon after the task is completed; presented in a way which meets all of the students' learning styles without causing any emotional anxiety; identifies the strengths and weaknesses; suggests areas for improvement and is constructive and motivating (Hattie and Timperley, 2007; Parikh *et al*, 2001; Rucker and Thompson, 2003; Boud and Molloy, 2013). Higgins *et al* (2002) express the importance of useful feedback and how students really value and appreciate good quality feedback, especially when it does not contain conflicting advice with ambiguous comments using complex academic vocabulary.

2.4 Could audio-file feedback be 'useful feedback'?

2.4.1 What is audio-file feedback?

Hennessy and Forrester (2014: 778) provide an informative definition for what audio-file feedback is: 'a digital sound file containing formative or summative verbal feedback'. There is a growing literature indicating the merits of audio-file feedback and how the limitations of other forms of feedback can be addressed using audio-files (Hennessy and Forrester, 2014). They are a way in which feedback can be given to students in a more effective and memorable way. The most common format of recording audio-files is the MP3 file and this has been well documented in many studies using audio-files (Parkes and Fletcher, 2017; Oomen-Early *et al*, 2008; Hennessy and Forrester, 2014; Voelkel and Mello, 2014). According to Rotheram (2009: 14), the MP3 format is the easiest format to use because it is 'compact' and 'widely-playable'. MP3 files are a condensed versions of WAV files (standard to Microsoft operating systems) and AIFFs (for the Apple system). Among other benefits MP3 files are usually 10% of the size of a standard WAV/AIFF file and can

be played on a broad range of devices compared with restrictions put on the two larger file types (Rotheram, 2009).

We know there is a lack of research assessing student perceptions of feedback; there is even less research looking into student perceptions of audio-file feedback. Lefroy (2019) highlights the emphasis of research studies being focussed on higher education systems and distance learning courses compared with the secondary school classroom. Lefroy *et al* (2015) call for more attention to be paid to how students react to audio-file feedback because it has the potential to be a very effective way of providing feedback.

2.4.2 How is audio-file feedback perceived?

What does the literature tell us about the use of audio-file feedback so far? Merry and Orsmond (2008) explain how the use of readily available technology makes sense to improve a student's experience of receiving feedback. It removes issues such as students being unable to read a teacher's handwriting. Middleton (2009) agrees with the concept because audio recording software is easy to use and recording devices are easily accessible. However, this is a point of conflict in the literature. Some studies record that both students and teachers experience technical difficulties accessing the audio-file itself and do not have headphones to listen to the audio-file (Hennessy and Forrester, 2014; Carruthers *et al*, 2015). These problems will depend on the infrastructure in schools or, in many published cases, in universities. On a computing and engineering course at Sheffield Hallam University, Nortcliffe and Middleton (2011) reported no technical issues delivering and receiving audio-file feedback. This is to be expected with the types of individuals anticipated on this course who will have access to all necessary equipment. In my research project, there should no difficulty receiving the audio-files because every student involved in the study has their own Google Drive in which the files are stored. However, some institutions may experience issues with receiving audio-files because they do not have access this system. Most students and teachers have access to a school email system through which these

files could be shared, and Ice *et al* (2007) report that students liked receiving audio-files via email. The literature relating to the provision of audio-files in different school environments will be explored in a later section.

Another obviously successful aspect of the receipt of audio-files by students is the ability for feedback to be personalised (King *et al*, 2008; Lunt and Curran, 2010). Hennessy and Forrester (2014: 782) state that students consider the feedback to be 'bespoke' and provides evidence that teachers have 'clearly read the submission and appreciated their efforts'. Many studies record similar reactions to audio-file feedback (Rotheram, 2007; Merry and Orsmond, 2008; Nortcliffe and Middleton, 2008; Dixon, 2009; Lunt and Curran, 2010) which confirm the findings of Ice *et al* (2007) that audio-file feedback creates a student perception that the teachers really care about them and their work on an individual basis. Another benefit of personalised audio-files is noted by many students across different studies who say how they liked being spoken to and hearing a friendly voice rather than reading words on a page (Cavanaugh and Song, 2014). The nuances which are not detectable in written feedback, can be in an audio-file. Tone, expression and emphasis on key words add to the clarity and quality of feedback (Rust, 2001). Emphasising certain words plays a big role in allowing the student to understand how important key messages are when conveyed in the audio-file (Merry and Orsmond, 2008). The ability to review files many times makes it more likely students will refer back to them and seek further understanding through pausing, rewinding and listening again (Merry and Orsmond, 2008). Students can then prioritise and enact the necessary changes having clarified key points.

A good example in a secondary school environment of where student views have been recorded after using audio-files compared to written feedback comes from Lefroy's (2019) study. She explores how audio feedback: 'promotes resilience and active participation'; 'may provide greater clarity and depth of feedback'; 'depends on the relationship between teacher and learner' (2-3). Student views were collected through whole class questionnaires (28 students) and semi-structured group interviews; this inspired the methodology for my research study. The

questionnaire and interview responses were coded with prefigured and emergent categories (Crabtree and Miller, 1999) to identify key themes in the student responses. After reviewing the data, the findings suggested a clear preference towards audio-file feedback with 75% of the class preferring it to previous written feedback. Of that 75%, 64% indicated a strong preference towards audio-files explaining that they found it to be 'more effective' because of 'its social and relational character' (6). These ideas support Hennessy and Forrester's (2014: 782) views of the benefits of audio-files result from it being 'bespoke'.

To be more specific, the students in Lefroy's (2019) study highlight many benefits of using audio-file feedback. They found it easier to cope with criticism, and the audio-files made their work feel more valued and motivated them to improve. Specific comments from interviews emphasised how the detail of the personalised files inspired the students to take a real responsibility for their learning. This relates to the emotional response to feedback identified by Varlander's (2008) study and how there is an emotional response to feedback. Students relate to audio-file feedback, are inspired to improve and find negative feedback easier to cope with.

The students in Lefroy's (2019) study continue to highlight other areas of success. The personal nature of the audio-files creates an extra sense of the student being supported as an individual through the learning process rather than just a member of the larger group. One student emphasised how he felt the audio feedback helped him to feel more confident because the teacher and student were able to work together as a team in the feedback process. Contrast this with the comment of an interviewee who reflects that written feedback removes the sense of empathy and human connection. This study highlights how audio-files create a friendlier environment to providing feedback, confirmed in other studies (Gould and Day, 2013; Dixon, 2009; Lunt and Curran, 2010), which identify a key link between the emotional connection to the feedback and the impact on learning. Although this is a small-scale study conducted in a comprehensive secondary school, the findings are relatable to my project because it is focussed

at secondary school level. However, studies on feedback are very specific to their individual contexts because every teacher is different, be it at a school or at a higher education level.

One final benefit which emerges from the literature is the impact of audio-files on the delivery time and quantity of feedback. Many studies documented teachers/tutors and students commenting on the volume of feedback and the speed in which it is delivered (eg Cooper, 2008). In Lefroy's (2019) study, students comment on how there is a lot more information in audio-files compared with written feedback. Students understand you can say a lot more than you can write in a certain amount of time. In the introduction the finding by Lunt and Curran (2010) that it takes six times longer to write a one-minute piece of verbal feedback is identified. Therefore, if a teacher allocates 5 minutes to record an audio-file, that will contain more information to create useful feedback. Emery and Atkinson (2009) confirm this in their study concluding that audio-files provide a more comprehensive and specific review of a student's work than 5 minutes of written feedback. Emery and Atkinson (2009) continue to suggest how the extra explanation available in the audio-file allows students to make more sense of the feedback and decipher what could be improved more easily compared with written feedback.

There are many forms of marking which essentially waste time and have little to no impact on student progress; 'acknowledgement marking' is an example of this and is reported to add to a heavier workload (Elliot *et al,* 2016). Providing comments such as 'good effort' does not have a significant impact on the improvement of student work, however, it is clear that offering information on how to improve their work is far more effective (Elliot *et al,* 2016). This level of detail is achievable in a short audio-file recording.

Kerr (2017) made similar suggestions from her research saying the feedback was more accessible to students because of the more informal nature of the audio-file. Rather than receiving 'cold' written feedback (Gould and Day, 2013: 561), the audio-file presents the feedback in a friendlier way. However, Gould and Day (2013) also comment that students found reviewing audio-files

stressful because they had to keep rewinding and re-listening. I believe, this highlights the importance of ensuring audio-files adopt a structure which students can understand and follow.

Hennessy and Forrester's (2014) study on developing a framework for effective audio feedback provides a good model structure, but it is focussed at university level rather than secondary school. Their structure is aimed at first and final year undergraduate students reading Early Childhood Studies after completing a piece of work for formative assessment. Nevertheless, the majority of the points which address the structure of audio-file feedback are transferable to different levels of education. Their findings suggest that the opening statement should involve thanking the individual for the piece of work, creating the friendly atmosphere which is developed elsewhere in the literature (Gould and Day, 2013; Dixon, 2009; Lunt and Curran, 2010). The good elements of the work should be acknowledged but the important part is ensuring the explanation of the gaps and ways for improvement are conveyed in a positive way. Ensuring this is not done negatively will avoid the emotional and memory issues highlighted by Varlander (2008) and Fritz *et al* (2000) respectively.

Overall, the literature on the use of audio-files involves them being compared to another form of feedback, namely written feedback. The majority of the studies are small scale and specific to the institutions they were conducted in, meaning they may not be universally applicable. However, the overriding consensus of the findings from the available literature indicate a positive reaction to the use of audio-files.

2.4.3 What are the weaknesses of audio-file feedback?

A couple of negatives points have been identified in the previous section. A key theme which appeared in many studies is the technical difficulties which come with recording, sharing and listening to the audio-files.

Firstly, there have been difficulties in relation to the recording stage of the feedback process. The importance of having good quality audio-files is emphasised by Hennessy and Forrester (2014)

because trying to record an audio-file in a shared office during standard working hours is almost impossible owing to background noise. A good quality recording would require the individual teacher finding a quiet place in school or taking the work home to record where it may be equally noisy. However, Nortcliffe and Middleton (2011) report no difficulties when recording audio-files in a study with computing and engineering students. There are conflicting views in the literature but it ultimately comes down to a what each individual set-up is like. Conversely written feedback can be produced in many places both inside and outside of school where background noise is not a limiting factor (Hennessy and Forrester, 2014). Another issue relating to the creation of audio-files is the technical ability of the individual user. Teaching staff may be unfamiliar with the steps in creating and sharing an audio-file with their students and reluctant to try something new (Cann, 2014). Recent research in teacher training has indicated a need to revamp the programs to support new teachers with twenty-first century learning (McKenney *et al*, 2015; Cavanaugh and Song, 2014). However, there is hope future teachers will be more technology able with researchers developing ways to improve their expertise with using technology alongside their teaching job (eg. Koehler *et al*, 2007). With new technological opportunities embedded in their teacher training, teachers are more likely to adapt their practice, try new things and explore innovative possibilities (Goodyear and Markauskaite, 2009; Mishra *et al*, 2007; McKenney *et al*, 2015).

Secondly, limitations have been reported with file sharing owing to incompatibility of audio-files with some email systems (Merry and Orsmond, 2008). Hennessy and Forrester (2014) found that some students were not only unable to access the audio-files because they did not know how to, but also they experienced unforeseen and inexplicable issues. These were most likely due to the inconsistent software and hardware on the student's side. Another area of concern directly relating to the sharing of audio-files is the size of the individual files. In attempts to reduce the file size, there is the potential to remove the personalised nature of the feedback which would remove one of the key positive characteristics of this type of feedback (Merry and Orsmond,

2008). This call for a reduction in file size has come from studies reporting that students were reluctant to store large amounts of feedback on their personal devices (Ribchester, France and Wheeler, 2007). Students in my research project may have similar thoughts because of the 'bring your own device' policy at the school. However, the files for my students would be stored on the individual's Google Drive, which does not interfere with their personal device's memory.

The final technical issue reported in the literature relates to listening to the audio-files. The process of listening had the fewest practical problems, exemplified by one study which reported no technical issues for students (Cavanaugh and Song, 2014). However, this is not true for all studies. Similar to the recording stage, listening to the files requires a quiet space, which not all students are able to access. If this is not possible, students will require headphones to listen to the feedback. This has been one of the main limitations to audio-file feedback (eg. Hennessy and Forrester, 2014). Listening to audio-files can be difficult for students with hearing impairments (Lunt and Curran, 2010). So there is a need for high quality recording, which as we have discussed already is contentious. From a teachers' perspective, there is little evidence to suggest that students will listen to audio-files many times compared with the number of times they would re-read written feedback (Rodway-Dyer, Dunne and Newcombe, 2009). Conversely, Merry and Orsmond (2008) conclude students listen to audio-file feedback with a copy of their work in front of them and make the necessary changes as they listen. These differences result from the different circumstances in which the listening is conducted. Listening to audio-feedback in a classroom setting enables students to review their work effectively, however, at a university level, students are more independent.

An additional limitation of the listening process is linked to the structure of audio-files. Students said they find the feedback 'time-consuming' and difficult to review (Rodway-Dyer, Knight and Dunne, 2011: 229). The length of the recordings can lead to frustration with students having to skip around to try and remember all of the points covered (Lefroy, 2019).

The structure of audio-files requires clarification. Some studies (eg. Hennessy and Forrester, 2014) have tried to provide clarity with a sensible step by step guide as to what should be included in audio-files, but there continues to be uncertainty. The length of recordings requires resolution because Rodway-Dyer, Knight and Dunne (2011) directly contradict Rotheram's (2009) view that an undergraduate essay needs more than three or four minutes for feedback to be meaningful, detailed and useful for the student. A balance needs to be to be struck between the quality and quantity of audio feedback because many students consider recordings being too long or difficult to review (Parkes and Fletcher, 2017). These studies report experience at a higher-education level, not secondary school level. More research is needed at a secondary school level because there are big differences in the essays written at university, and the variety of essays written at school. In my research study, iGCSE Geography does not require the students to write as detailed essays as an undergraduate student.

One final disadvantage of audio-file feedback is that students do not like how the feedback is often separated from the original piece of work (Ribchester, France and Wheeler, 2007). This can lead to confusion when students find it difficult to identify which part of their work is being discussed in the feedback (Rodway-Dyer, Dunne and Newcombe, 2009). If a teacher is vague in the feedback with no direct reference to identify it in the work, the feedback is considered unclear (Lefroy, 2019). A way to resolve this is to add number points onto the work, and then refer to these numbers while recording the feedback (Rodway-Dyer, Knight and Dunne, 2011). This will reduce the confusion as it gives a focus to the different points within the audio-file feedback.

2.5 Methods of providing audio-file feedback?

I have already described how MP3 files are the main format in which audio-files can be recorded with relative ease because of its wide availability (Rotheram, 2009). Studies have considered alternative methods of recording audio-files for teaching, assessment and learning purposes (Saunders and Lemming, 2003; Knight, 2006; Nortcliffe and Middleton, 2011). For example,

Nortcliffe and Middleton (2011) propose the use of smartphones as an efficient way of recording and sharing feedback. Smartphones combine 'the flexibility of MP3 recorders and the connectivity of a PC in a discrete handheld device' (281). They recorded a positive response from their participants with 53 of 56 students who thought the audio feedback was useful for their personal development. However, this research was conducted in a university setting and many schools, including mine, have policies whereby mobile phones are not allowed in school. Although my school does have the 'bring your own device' policy, laptops do not offer the same capabilities highlighted by Nortcliffe and Middleton (2011).

One of the limitations identified earlier was the incompatibility of some audio-files and host email systems (Merry and Orsmond, 2008). For example, one research project reported two out of fifteen students were unable to receive their audio-files because the audio-files were too large for the email system to manage (Merry and Orsmond, 2008). Moreover, a more alarming percentage of students (32% of 112 students) indicated some sort of technical issue when trying to download their feedback (Carruthers *et al*, 2015). These are the types of experience which deter teachers and students from using audio-file feedback. These problems have encouraged research into alternative methods of sharing audio-files. Cann (2014) promotes the use of a cloud-based storage system, which had a direct impact on the plan for my research project as Google Drive is a cloud-based system in which the feedback is shared.

Cloud-based systems usually have a large data storage for files. An example is Google's 'G Suite for Education' which offers free unlimited storage (Google, n.d.). Other options are available at minimal or zero cost, for example, SoundCloud and DropBox (Cann, 2014). Cann's (2014) research suggests there are several pedagogical reasons why these platforms are superior to email. One reason is that the platforms allow the teacher to see when the student has accessed and listened to the recording. The second reason is they allow recordings to be uploaded to the Cloud offline, allowing teachers to provide feedback without an internet connection.

However, this brings into question the availability of these hard-ware and soft-ware systems for both students and teachers. There is a clear relationship between social position and the use of technology for work with those from a higher socio-economic status being more likely to use computers in their daily life (Selwyn, 2005). Similarly, young people whose parents are highly educated are found to have a better autonomy with using technology because of having access to these technologies at home (Gui and Argentin, 2011). On the contrary, those from a lower socio-economic status are less likely to have access to computers at home, resulting in fewer opportunities to practice and experience the differing technologies (Hargittai, 2010; Robinson, 2009). In summary, an individual's ability to learn using technology is very much shaped by their local social context (Eynon and Geniets, 2012). This is where weaknesses in Rotheram's advice with how audio-file feedback works begin to appear. He states, 'students will need access to a computer equipped with a sound card, speakers or headphones, and a suitable soft-ware' (Rotheram, 2009: 13). Students from a lower socio-economic status may not have access to any of these resources meaning audio-file feedback may not even be possible.

Audio-file feedback is heavily reliant on technology and the situational infrastructure. Although there are still inequalities with the quantity and quality of computer equipment in schools, the gap is gradually decreasing (Cuban, 2001; Warschauer *et al*, 2004). As a result, there is still potential for audio-file feedback to be provided more widely across all settings as more students begin to have access to technology.

2.6 Conclusion

Throughout this review, the majority of studies I have referenced are based at university level (Nortcliffe and Middleton, 2009; Hennessy and Forrester, 2014; Merry and Orsmond, 2008) with only two at secondary schools (Kerr, 2017; Lefroy, 2019). All are small-scale studies involving reasonably small sample sizes. There is a well-defined gap in the literature because of a lack of research examining schools in areas with a lower socio-economic status. Audio-file feedback is

very difficult to provide when there is a shortage of technological resources. This may be the reason why there is an absence of literature at secondary school level, because some schools may not have the infrastructure to support audio-file feedback. I will now conclude by answering the questions which guided the literature review.

What does useful feedback look like? It is important for feedback to be useful because otherwise it could have a detrimental impact of a student's confidence and progress (Higgins *et al*, 2001). Several studies highlight key characteristics which make feedback useful (Hattie and Timperley, 2007; Parikh *et al*, 2001; Rucker and Thompson, 2003; Fluckiger *et al*, 2010). The uniformity of the findings of these studies makes them all the more reliable. Useful feedback is provided shortly after the submission of the work, presented in a way which best meets the student's learning style while identifying strengths, weaknesses and methods of improving any issues in a constructive and motivating way. It can be difficult to ensure all of these individual elements are covered in feedback and there is evidence of one alternative method, acknowledgment marking, having little to no impact on student progress (Elliot *et al,* 2016). Ultimately, students have the best idea of what useful feedback is because they are the ones who read it. Higgins *et al* (2002) explain how students in their study summarised useful feedback to be clear and easy to understand. It is important to understand how feedback can be an emotional experience for a student (Butler, 1998) and great care needs to be taken to ensure teachers provide feedback which is useful and offers encouragement (Fritz *et al*, 2000).

Is audio-file feedback found to be useful feedback? Firstly, students across many studies express a great deal of satisfaction towards the use of audio-files and confirm the feedback is indeed useful (Rotheram, 2007; Merry and Orsmond, 2008; Nortcliffe and Middleton, 2008; Dixon, 2009; Lunt and Curran, 2010). The main benefit identified across these studies is how the feedback was preferred because students can detect tone, expression and the emphasis of key words. Research based in secondary schools suggests students found audio-files to be more accessible because of

the more informal nature of the feedback (Kerr, 2017). The personalised aspect of the recordings made students feel supported through the process in a friendlier environment because the feedback was 'bespoke' and clearly 'appreciated their efforts' (Hennessy and Forrester, 2014: 782). Teachers also found feedback to be useful because a 5-minute audio-file allowed for a more comprehensive review of the work compared with 5 minutes of written feedback (Emery and Atkinson, 2009). The extra explanation available in a recording provides a greater opportunity for students to understand and decipher feedback (Emery and Atkinson, 2009), compared with the potential pitfalls of illegible handwriting (Rodway-Dyer, Knight and Dunne, 2011). Speed of feedback is certainly an additional bonus to the usefulness of audio-file feedback from a teacher's perspective (Lunt and Curran, 2010).

Are there different ways of providing audio-file feedback? The most common method is for an MP3 file to be sent by email to the student (Parkes and Fletcher, 2017; Oomen-Early *et al*, 2008; Hennessy and Forrester, 2014). A number of hard-ware and soft-ware technical issues have been reported and students can struggle to download files owing to compatibility reasons (Merry and Orsmond, 2008). However, research has identified alternative methods for sharing the recordings; one promising method involves cloud-based systems where no email is involved (Cann, 2014).

2.7 Research Questions

This review of the available literature on using audio-file feedback has led me to create the following research questions which I shall attempt to answer in the subsequent sections.

1. Which feedback method do students find more useful?
2. Which feedback method do students find easier to understand?
3. Do staff think audio-file feedback is useful?

3.0 Methodology

3.1 Action Research

This project is a small-scale piece of action research. There are many definitions of what contributes action research. According to McNiff and Whitehead (2011: 7), action research is 'a form of inquiry that enables practitioners in every job and walk of life to investigate and evaluate their work'. Bednarz (2002: 103) constructed a more specific definition towards education saying it is a 'systematic classroom-based inquiry to solve teacher-perceived problems'. The 'teacher-perceived problem' I have identified for this research is the provision of feedback to students. I believe audio-files have the potential to provide feedback which is clearer and more precise making it more useful to the students. From my experience, I found that I am not able to provide as much detail as I would like in my written comments because of the amount of time it takes to write feedback for a large class. The literature review shows that along with providing more useful feedback, audio-files also use less time to include more information. I believe the structure of my written feedback enables me to provide good feedback, but I think it could be improved to be more useful.

Action research was originally designed by Kurt Lewin (1946) and his idea involved a cycle of planning, acting, observing and reflecting. There have been many adaptations of this model but they all follow the same theme. Figure 3.1 below shows the model followed in this research.

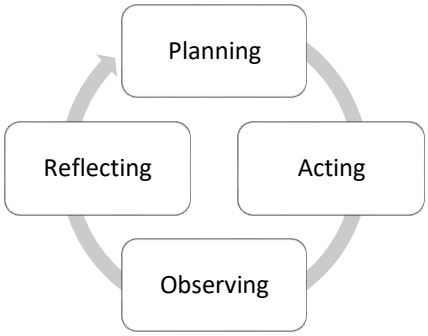

Figure 3.1: An action research cycle adapted from Lewin (1946).

Action research is appropriate for this project for two reasons. Firstly, the way in which teachers at my school try to improve their own teaching practice follows the theory of action research. The Teaching and Learning team at the school aim to assist positively any teacher looking to try and improve their own practice. They have created what Kemmis and McTaggart (1992: 22-25) call a 'self-critical community' in which there is collaboration between the individual and the Teaching and Learning team throughout the whole process. The teaching staff are encouraged to try new things through observing other teachers, planning how to use a new technique, implementing these new techniques in a series of lessons, and critically reflecting on the techniques. These steps are all completed with the guidance of an aDTL so each member of staff is supported as they try something new. I had this same support throughout this research study. I believe feedback should be provided for all pieces of work, because infrequent feedback is seen to be not as useful (Gibbs and Simpson, 2004). Action research is a suitable method to determine if feedback can be made clear and precise for the students to understand easily in a timely manner.

Secondly, a benefit of action research is data can be collected at times suitable to the researcher and not on a strict timetable. Altrichter *et al* (1993: 6) mention how the methods used in action research are 'tailored to what is available without overly disrupting practice', therefore confirming how action research is adaptable to the changing situations in schools. Meeting the needs of all the students is a priority for teachers so strict research timings may not be met because some students may take longer with elements of the course compared to others. This means data collection points are reached at different times. Action research allows data collection points to be adapted to accommodate all students. This has been crucial during the COVID-19 pandemic because adapting to the new remote style of working has taken both teachers and students time to adjust. Action research allows modifications to be accommodated easily. A prime example of this adaptation was the timing of the second data collection point. This was originally planned for the start of the summer term, however, the pace we were working through the topic slowed at the start of remote learning. Students were adapting to life at home with extra distractions, less

one to one time with their teachers, and some were struggling to adjust. Therefore, I delayed the data collection from the start of the summer term until just before half term.

3.2 Research Design

3.2.1 Context

The Geography Edexcel iGCSE examinations requires students to answer 8-mark questions which are crucial because they make up a significant amount of the total marks available. As a result, a lot of time is spent helping the students understand what these questions are asking and endeavouring to achieve as high a mark as possible. The best way to do this is through practice and providing feedback. My normal method is through written feedback on their work and verbal feedback in the classroom. For this piece of action research, the intervention was to provide feedback via an audio-file instead of my normal written feedback. As mentioned in the literature review, audio-files provide the opportunity to give detailed feedback in a way the students find more useful (Higgins *et al*, 2002; Emery and Atkinson, 2009; Kerr, 2017; Gould and Day, 2013). From my experience so far since moving to remote learning, I believe audio-files have provided a method to give in-depth feedback while experiencing less face to face time with students in the online classroom.

For this research project I decided to introduce the 8-mark question to my Year 9 class and treat them as I would the Year 10 class. I selected the Year 9 class because they were the most suitable year group to attempt a GCSE style question while their learning was not going to be disrupted as much as it would be if they were currently doing the GCSE course. Spending time outside lessons to reflect on audio-file feedback may have had a negative effect on the Year 10 students.

3.2.2 Pre-Intervention Setup

I followed my normal procedure for introducing the 8-mark style question. During a lesson (before remote learning) I thoroughly explained the two Assessment Objectives which are linked to the 8-

mark questions and provided examples of model answers to ensure they understood the key features of an 8-mark answer. They then received a question related to the topic they were currently studying and completed it for homework. The students received feedback on their answers in the next lesson as detailed written feedback. An example of the feedback sheet is shown in Figure 3.2. Each tick represents a mark given and matches up to a corresponding tick in the piece of work labelled with a number, 3 or 4, to refer to the relevant Assessment Objective (Figure 3.3). The written feedback provides a comment on What Went Well, Even Better If and an overall comment for praise or encouragement.

8 Marker Feedback			
AO3 *Knowledge and understanding*	///	**What Went Well**	Excellent work with your explanations and effort to use data. Well done.
AO4 *Refer to the resource*	✓	**Even Better If**	Try to use more data. Good initial start with this. Make sure you give 4 parts.
Comment	Good first attempt! Well done. Excellent explanation. Just use more data from the resource!		

Figure 3.2: An example of the format in which written feedback is provided to the students.

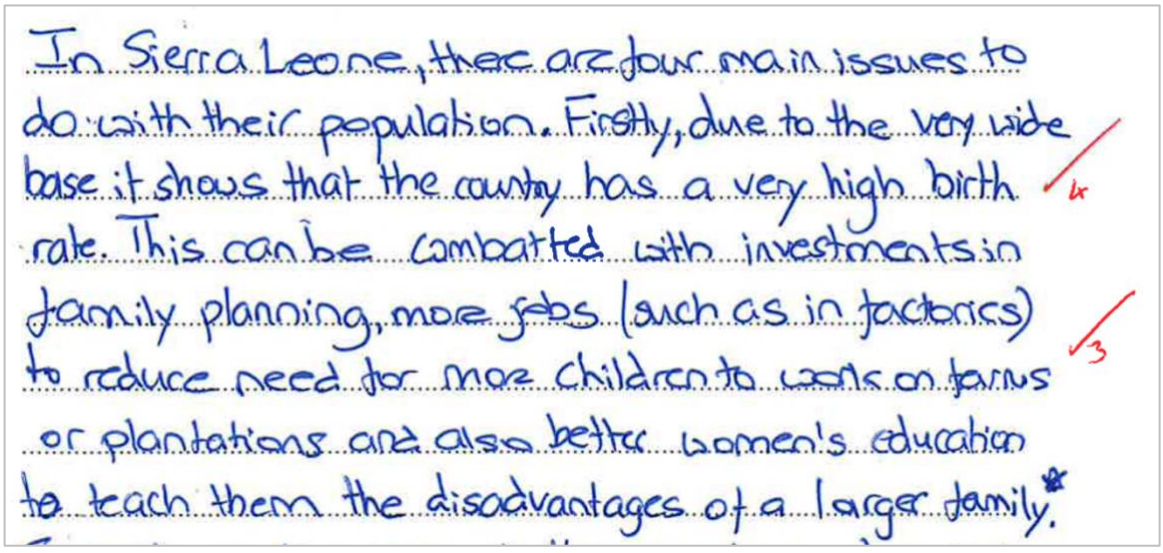

Figure 3.3: An example of part of an 8-mark answer with the relevant Assessment Objective ticks.

The aim of the pre-intervention setup was to provide the students with a piece of written feedback prior to the intervention. This would allow students to recall a piece of written feedback when asked about how it compared with the audio-file intervention.

3.2.3 The Intervention

The intervention involved providing feedback via an audio-file rather than my normal written feedback sheet. Once the school moved to remote learning, I set up an individual Google Doc for every student in the class. All work was completed in these documents so that I could use a Google Extension known as Mote to give audio-file feedback; how Mote works is explained in the next section. As emphasised in the literature (Rodway-Dyer, Knight and Dunne, 2011), I continued to use numbered ticks in their written answers so students could see how their answers compared with the Assessment Objectives, and identify the parts of their work referred to in the audio-file feedback.

The action research involved two cycles of interventions. The first cycle took place in the early remote learning period with students being set an 8-mark question on the Conflict in Iraq. Once the work was completed in their individual Google Docs, it was marked using the comment section to show Assessment Objective marks and an audio-file for the more detailed feedback. The audio-file referred to the same elements in the written feedback of 'What Went Well' and 'Even Better If' but would go into a greater amount of detail for each. The next step was a data collection point soon after the students had received their audio-file feedback. In terms of the first cycle, group interviews were organised for the day after the lesson in which they received the feedback. The process for the data collection is fully explained in section 3.5.2 Interviews.

The second cycle took place later in the summer term while studying a topic on Oceans. The whole process was repeated to give another opportunity for the students to experience audio-file feedback and provide more information on whether they thought it was useful.

3.3 Forms of Collaboration

Collaborating ideas, plans and results are necessary steps in any type of action research (Kemmiss and McTaggart, 1988) because they are crucial to ensuring the different stages have been thought through and rigorously checked by others and not just the researcher. Furthermore, collaboration allows for the findings to be shared and utilised by other teachers so the students can benefit from better quality feedback.

In the early stages of planning, the Director of eLearning talked me through the various ways in which the school's infrastructure could be used to achieve the aims of this project. The use of individual Google Drives seemed the most sensible way to receive work and provide audio-file feedback, especially if the pieces of work are being submitted in a variety of formats (Microsoft Word, PDF or photo). However, since the switch to remote learning, he discovered an extension to Google Docs known as 'Mote'; a Google Chrome extension for adding voice notes to documents which are directly linked to a specific item within the document (Mote, 2020). They work in exactly the same way as a normal 'comment' but rather than leaving a typed message, there is an audio-file of up to 90 seconds attached for the student to listen to. Figure 3.4 below shows the difference between the two. Once I discovered this extension, I decided this was how to provide the audio-file feedback to my students. Thereafter I ensured that all pieces of work were completed on a Google Doc so I could use this extension.

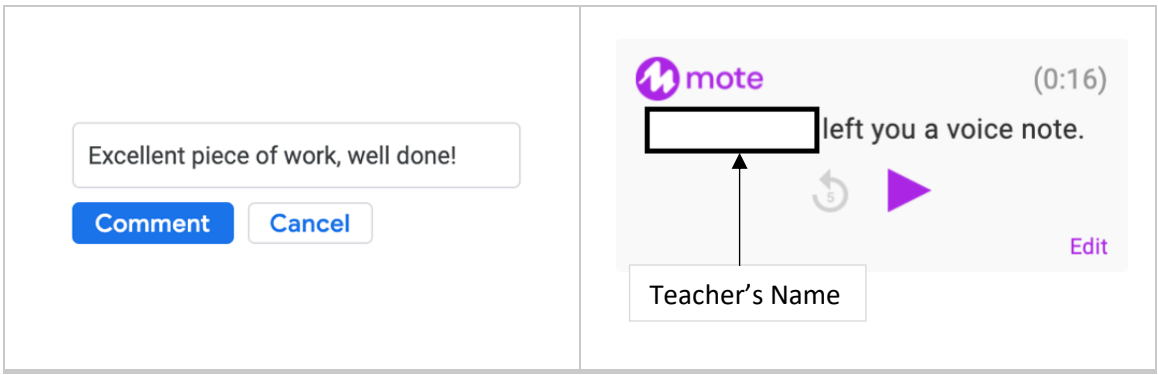

Figure 3.4: The difference between what a comment looks like on a Google Doc compared to a 'Mote' voice note/audio file

Mote has only been running since January 2020 and resulted from the COVID-19 outbreak and the need for a tool to help work remotely without sacrificing human contact (Mote, 2020). It was initially designed for organisations to collaborate without meetings but the education sector have adopted and found it really useful.

As previously mentioned, the Teaching and Learning team helped me enormously throughout the whole planning process. The DTL was involved in discussions with the Director of eLearning to discover how Mote worked and mentioned it in her 'Teaching and Learning Bulletin' for the rest of the teaching staff potentially to use for their feedback provision. This meant that when the questionnaire for staff opinions on audio-file feedback was sent out, more responses than anticipated were received.

In the latter stages of the research, the team checked the group interview questions and the rationale behind them to ensure I was asking the correct questions and not wasting the students time outside of normal geography lessons. They insisted the interviews were no longer than fifteen minutes to minimise the impact on the student's own time during the school day.

3.4 Ethical Considerations

Before any data collection took place, the methodology of this research project was shown to both the headmaster and the central universities research ethics committee (CUREC). I wrote to the headmaster explaining all the ways in which the school would be involved and how it would be anonymised (Appendix 1). I sent an ethics proposal form to CUREC covering the ethical considerations. Both parties approved and all project data were collected using the ethical guidelines laid out by BERA (2011). The research involved a variety of different individuals: myself, other teachers from the school and the students. Considerations for each group were as follows.

3.4.1 Myself

I am very much a participant in this action research but I also had the responsibility of educating my students to the best of my ability. In terms of my participation, I had to bear in mind that I

must not unduly affect the outcome of this research with any bias. The unconscious biases that could influence me included; the data collection phase by entering the interviews with a pre-conceived mentality that audio-files are more useful; the results stage by only highlighting the positives of audio-files and not the negatives; and finally, in the conclusion where I could not focus on any of the drawbacks noted by the students. Bias cannot be completely removed from any investigation (Homfrey, 2008), therefore, as the researcher I will do my best to be as objective as possible and uphold my personal values towards the research. Smith (1989) highlights the importance of good research maximising objectivity and reducing researcher subjectivity as much as possible. Bunge (1996) explains how it is easy to be objective about what goes on in natural science, but it is far more difficult to be objective when human affairs are being analysed. The literature emphasises that it would be difficult to remain completely unbiased, however, one way in which I tried to reduce the chance of bias was to involve the Teaching and Learning team in formulating the interview questions. They checked the questions to ensure they were fair and not leading in any way.

There were several times during the project when I took time away from the research to focus on the quality of my teaching. The best example of this occurred when COVID-19 started to influence how schools operated. My sole focus was to ensure I could teach all my classes competently and effectively before trying any form of intervention. If I had not taken this time away, I might have been distracted in trying to use the intervention before I was able to teach a class in an online environment. This would have had a negative impact on my students' education.

3.4.2 Teachers

The Teaching and Learning team helped by encouraging the teaching staff to give their views on using audio-file feedback. Together we composed an email informing the staff about the aims of the research, that any responses would be used entirely confidentially (Appendix 2) and their

involvement was entirely optional. A link to a Google Form questionnaire was attached to the email for them to open and complete.

There were both ethical and methodological elements to this decision. The methodological reasons are explained in section 2.5.1 Questionnaires. Ethically, the email address of those who did complete the questionnaire were not recorded so their responses were anonymised. This allowed teachers to answer the questions freely. Group interviews would have been hard to organise and put undue stress on some teachers who were still adapting to online teaching when the questionnaire was sent out early in the summer term.

3.4.3 Students

Student education is my primary role at the school. Of the different year groups I teach, I decided that the Year 9 class would be the least affected by my research. Although I give audio-file feedback to all my classes, I thought it would not be appropriate for the GCSE groups to spend time outside of the geography lesson to reflect on the different ways they have received feedback. Accordingly, I chose the Year 9 class as the most suitable year group to complete the GCSE style 8-mark questions.

The most extensive ethical considerations focussed on the students because the research centred on them and their views. The headteacher's permission to conduct the research meant that I already had approval to do student group interviews. However, I still obtained the consent of each individual student prior to any interview. Before the research started, the aims of the project and the roles of the student were explained to check whether each student was happy to participate or not. It was made clear that I would be recording the interviews to make transcripts of what was discussed, but names would be removed and recordings would be deleted once the research had finished. The students were reminded of these points at the start of the interviews and there were no objections throughout.

To ensure I abided with the school's COVID-19 Safeguarding Policy (Appendix 3) the interviews were conducted during the school day. There were 6 different time slots the students could select so they were not being forced into a certain time. The interviews were conducted through Zoom and in groups of three or four to provide the interviewees peer support rather than on their own. A further reason to conduct interviews of this group size was to achieve a meaningful discussion between those involved (Bloor, 2001), as well as ensuring the interviewees all have sufficient time to participate while keeping the interviews to the 15-minute time limit. The Teaching and Learning team were aware I was conducting interviews during each time period and video cameras remained off to ensure the student's privacy.

3.5 Data Collection Methods

One study which guided the data collection methods was Lefroy's (2019) study on the use of audio-files in a secondary school English class. She uses a 'whole-class questionnaire and semi-structured interviews' to 'qualitatively explore a range of student responses' (Lefroy, 2019: 6). Her questions were loosely based on the research questions and the themes gathered from the literature. Open and closed questions were used in both methods for students to express their own opinions and allow more open conversations to begin in the interviews. She highlights how group interviews allow for greater discussion and students are able to critique and build on each other's ideas. These methods are supported by Hennessy and Forrester (2014) because they use both a questionnaire and focus groups in their study to determine an effective framework for audio feedback.

In my study, I used both data collection methods because I wanted to discover if audio-files are a useful method for providing feedback. The questionnaire was adapted and tailored towards obtaining teacher views, and the group interviews were used to gather student views. The interview groups contained three or four students rather than pairs because of numbers and the more limited time available. Many of the questions in the student group interviews were linked

directly to the research questions and open questions were used as in Lefroy's study. The following two sections explain the rationale behind using these two methods.

3.5.1 Staff Questionnaire

I used a questionnaire to obtain staff views of using audio-file feedback because I did not want to take up much of their time during a very challenging period with lots of on screen time. Questionnaires are a good way to collect data quickly and I did my best to structure it in a way to encourage members of staff to complete it. This questionnaire contained three short open-ended questions and one closed question. It was quick to complete because the participants were not obliged to write in great detail. The first two questions can easily be answered in just a list of points. The participants could spend more time answering the questions if they wished but were not obliged to do so.

The questionnaire was also designed to answer the third research question; did colleagues find audio-file feedback to be useful. I had not previously encouraged teachers to use audio-file feedback for this research project so only those who had used this method of feedback could comment.

The questionnaire consisted of the following questions with their relevant rationale:

1. What have you found the most beneficial about using audio-files when providing feedback to student work?
2. What difficulties have you come across while using audio-files when providing feedback to student work?

    These questions were for the teacher to explain the benefits and difficulties experienced when using audio-files. There was no limit on the amount they could write which hopefully would encourage them to provide lots of their thoughts.
3. Do you think you will continue to use audio-files when we are back in school?

This question was to see if audio-files would be used only during remote learning or if teachers would use them in the future. The responses would provide some evidence for whether these teachers were going to make changes to their own teaching methods.

4. Do you think the students find audio-files useful? Why?

   This question was aimed to discover the initial views of how teachers thought the audio-files were being received by their students. Their responses may have been influenced by any feedback they have received from their students since they started using audio-files, or just from the individual teacher's opinion.

3.5.2 Student Group Interviews

The reason for conducting the interviews was to ask open questions to gather more understanding of the student's feelings towards receiving audio-file feedback compared with the previously given feedback. Interviews provide a better opportunity to explore a participant's perception of a topic because a dialog can be established compared with a questionnaire where there can be no discussion. If conducted correctly, interviews can provide richer data capable of demonstrating both student meaning and understanding of complex entities (Goldman and McDonald, 1987).

The main platform for teaching during remote learning was Zoom, a program for video communication with many benefits for teaching. The interviews were all conducted through Zoom; students were in groups of three or four depending on how many signed up for the fifteen-minute sessions. To improve accuracy, interviews were all recorded and transcribed into a separate Word document for analysis on a password protected computer. Another reason for the recordings was to increase the researcher's engagement during the interview. Once the transcriptions were completed and coded to draw out opinions and related themes (explained in 4.2 Student Group Interviews), the recordings were deleted.

Prior to the interviews the students had been asked to listen to and reflect on the benefits and issues with the audio-file feedback they received in the previous lesson. A sign-up sheet was made available for them to agree to being interviewed and to select a time. They joined the Zoom meeting and were reminded of the aim of the research and their roles within it. It was made clear they would be recorded and were allowed to leave the interview immediately if they did not want to continue. Once all the individuals partaking in the interview were ready, the recording began. The interview was semi-structured, allowing the interviewees to communicate with each other, and consisted of three predetermined questions (Gill *et al,* 2008):

1. Did you like the audio-files you received? Why?

   The rationale behind this question was to discover whether the students enjoyed audio-file feedback and why. The responses would give a clear indication if the audio-files had been a success or not and would help answer the first research question.

2. Compared with the written feedback you received for the last 8 marker, which type of feedback did you find more useful? Why?

   This question asked the students to think more deeply about the benefits and issues concerning each type of feedback and ascertain which they found more useful. This would give me a greater understanding of the reasons for their views. This would provide more information to address the first and second research questions.

3. When school returns to normal, would you like to receive more audio-file feedback? Why?

   This question was to see if students wanted to continue to receive audio-file feedback or if it is just to be used during remote learning. The purpose was for students to think about the feedback they wished to receive in the future and not just reflect on past feedback. This should provide the most honest responses

because the students would feel they are involved in decision about the future provision of feedback. I hope the students answered all questions truthfully, but for the first two questions it may have been difficult to be honest because they would not want to upset me as their teacher.

For the interviews relating to the second intervention, the following questions were used:

1. Which method of feedback (written/audio) do you find more useful? Why?
2. Which method of feedback (written/audio) do you find easier to understand? Why?

   Now that the students had experienced audio-file feedback for a second time, these questions directly addressed the first two research questions for the project. This would provide clear and concise answers to help judge the usefulness of the audio-files.
3. Would you like to receive more feedback like this? Why?

   This question was repeated to allow the students to voice any new or different opinions towards receiving feedback in the future.

4.0 Findings

This section will state the findings from the staff questionnaire and the two rounds of student group interviews. Initial analysis of these findings will occur throughout this section with a reference to each research question. Further analysis and discussion alongside the literature will occur in the next section.

4.1 Staff Questionnaire

Unfortunately, there was a relatively low response rate to the staff questionnaire with only 12 teachers completing the questionnaire. On reflection, I think I did not allow enough time for teachers to adapt to online teaching before asking them to spend time completing a questionnaire. Some teachers may not have discovered audio-file feedback by the time they received the questionnaire. If the questionnaire had been delayed by two or three weeks, more teachers may have been willing to complete it.

As a result of the low response rate, the reliability this data set does need to be taken into account because of the small sample size (Hackshaw, 2008). Nevertheless, the responses to the open questions do still reveal some interesting trends. These trends were highlighted through a coding process of completely emergent themes (Appendix 4).

The themes identified from the responses were categorised into positives and negative themes to the use of audio-file feedback, as shown in Figure 4.1. The positives included the speed with which feedback can be provided, the clarity of explanation, the amount of detail included and the benefit of a personal touch. The negatives highlighted the issues with regards to the technology being used and the limitations to using audio-file feedback. A final category was included as some responses provided some additional ideas for future feedback provision, discussed in 5.4 Future options.

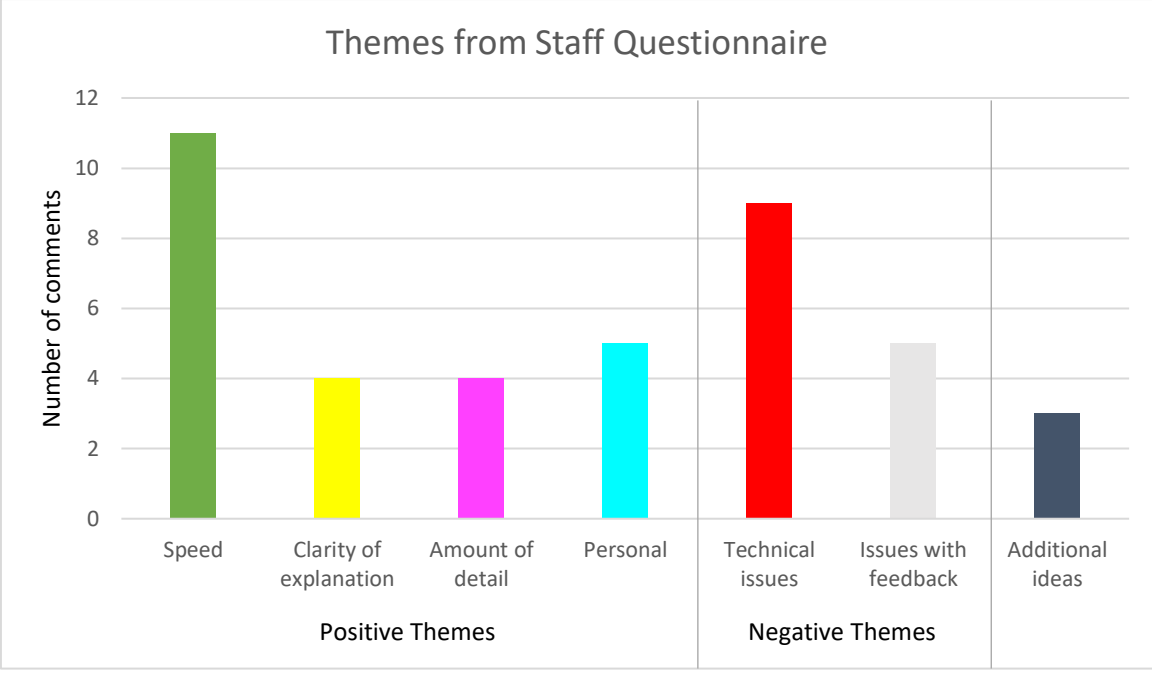

Figure 4.1: Graph showing the coded responses to the staff questionnaire.

Figure 4.1 shows that 11 of 12 teachers highlighted how the speed in which you can provide feedback is a major positive towards using audio-file feedback. Quotes which emphasised this point range from "*The fact that I can say more aloud in the same time it takes to type a shorter comment*" (Teacher 10) and "*I would say it reduces marking time by about 30%*" (Teacher 11). It is clear to see the teachers involved in this study valued the ability to quickly record an audio-file and share it with the student. However, one teacher who mentions speed as a positive, does say "*You aren't always quicker, and your feedback may not always be quite as clear as if you compose and write it*" (Teacher 5). This shows there is an element of uncertainty whether if audio-files are in fact a quicker method of feedback.

Four teachers emphasised the ability for audio-files to provide better clarity within their explanations. The reasons being "*Tone in the voice adds to the message and gives context to the content - written comments are more likely to be misinterpreted*" (Teacher 4), "*Can give a more nuanced, emotional play to the feedback*" (Teacher 7) and "*They know which bits of feedback are most important by the sound of voice*" (Teacher 9).

The responses from three teachers offered views towards how audio-files allowed them to provide more detail in their feedback. Teacher 8 gave a simple positive reason saying "*you can give more detail"* and also provided a reflection on the students' views in response to the last question saying *"Some pupils liked the greater depth*". Other comments were more simplistic such as "*It seems quicker to give more detailed feedback*" (Teacher 3) and "*Being able to provide more information at once like in 'real' context feedback*." (Teacher 6).

The final positive theme discovered from the coding was the personal aspect the audio-files offered. Five teachers stated these views in their responses, for example, "*yes - like to hear your voice - more personal*" (Teacher 3) and "I think they appreciate hearing the teacher's voice" (Teacher 12). As with the previous theme, Teacher 8 also provided a reflection on the students' views "*it felt more like you were in the classroom getting personal feedback*" (Teacher 8).

Compared with the high positive response rate in relation to the speed of audio-file feedback, these three positive themes do only have four of five teachers mentioning their importance in their responses. In turn, this does reduce the reliability of these findings. However, their views do match those found in the literature so there is evidence to support the usefulness of audio-file feedback (Hennessy and Forrester, 2014; Emery and Atkinson, 2009; Lefroy, 2019).

Figure 4.1 also shows the limitations for the use of audio-files with technical issues accumulating the most comments from teachers. All nine comments from teachers are related to the transcript which is written by the system Mote (an additional extra which can be turned off). "*I have switched off the 'transcript' option because when I say Latin or Greek words it doesn't recognise them!*" (Teacher 1), "*Mote translates very badly! In French you need to see the grammar points written down*" (Teacher 7) and "*Transcriptions not being accurate, so having to go back in and edit them*" (Teacher 12). From the nature of the comments, we can see that language-based subjects have struggled with the accuracy of transcripts. However, these are issues with Mote's

transcript conversion, not the audio-file itself. No issues with sharing the feedback were reported, as in Merry and Orsmond's (2008) study.

The final negative theme covered a variety of different responses which were best categorised as issues with the audio-file feedback itself. They ranged from: "*90 seconds means in depth feedback is tricky and you would need to feedback multiple times*" (Teacher 11); "*it wouldn't be so good for revising at a later stage as you can't just flick back through work to see your feedback easily*" (Teacher 8); and "*trying to sound positive and personal, so that the pupil receiving the audio bothers to listen to it and isn't put off!*" (Teacher 4). In total, five teachers commented on these issues with one teacher being very subject specific with their comment, "*If students have done a spelling mistake in Spanish, only with voice feedback they will not be able to know how the word has to be written correctly*" (Teacher 6). As you can see, a number of issues are raised here by the teaching staff towards the usefulness of audio-file feedback.

4.1.1 Research Question 3 - Do staff think audio-file feedback is useful?

The overall feeling towards the usefulness of audio-file feedback was positive. Though teachers found the transcript writing to be the main limitation, they suggested there are more positive aspects to the feedback. Teachers emphasised the speed in which feedback is completed and the personal element. Responses also confirmed audio-file feedback is clear due to the ability to explain feedback in greater detail.

4.2 Student Group Interviews

Overall, 18 students from my class of 21 were involved in at least one of the student group interviews, with 14 students able to take part in both. The remaining students were not able to attend one or both interview sessions due to other school commitments out of my control, for example, online music lessons or pastoral meetings. Like the staff questionnaires, the sample size

is reasonably small, so conclusions from the data must be handled carefully, as implied by the literature. Many previous studies occurred in very specific contexts and have used small sample sizes which means their findings must be viewed critically and with reservation (eg. Lefroy, 2019; Hennessy and Forrester, 2014; Lunt and Curran, 2010).

I used a coding process for the interview transcripts which was inspired by Lefroy's (2019) research where she used prefigured and emergent categories (Crabtree and Miller, 1999) to identify key themes from the student responses (Appendix 5 and 6 – Hereinafter A5 and A6). My coding process had two prefigured categories; Positive views and Negative views. These two categories were best suited to the first two research questions because they enabled a clear grouping of student views on using audio-files.

Two emergent categories were discovered during the analysis of the transcripts which I had not appreciated at the time of interviewing; Student experiences outside the research and Student opinions on future feedback. One student referred to another teacher using audio-file feedback and the student explained his experience of it. I found this an interesting reflection from the student as he drew upon more examples of audio-file feedback in his response to the question posed in the interview. The student did not find the audio-file useful from this teacher because it was not detailed and only contained vague comments. The final question of the interview tried to get the students to think about the types of feedback they would like to receive in the future. Their responses provided many interesting thoughts ranging from merging audio-file feedback with written feedback, ways to make audio-file feedback more easily accessible when not working online, and the different types of question for which audio-file feedback can be used. These ideas will be discussed more in 5.4 Future options.

To gain a better understanding of the different positive and negative views students had, these two categories were divided into emergent sub-categories. The breakdown of the responses into

these sub-categories are shown in Figures 4.2 and 4.3 with the number of comments representing the individual reasons rather than the number of students. Some students gave multiple reasons to one or more sub-categories.

Overall, student perceptions of the audio-file feedback were positive. Out of the 18 students interviewed, 14 of them preferred audio-file feedback and found it more useful when compared to written feedback.

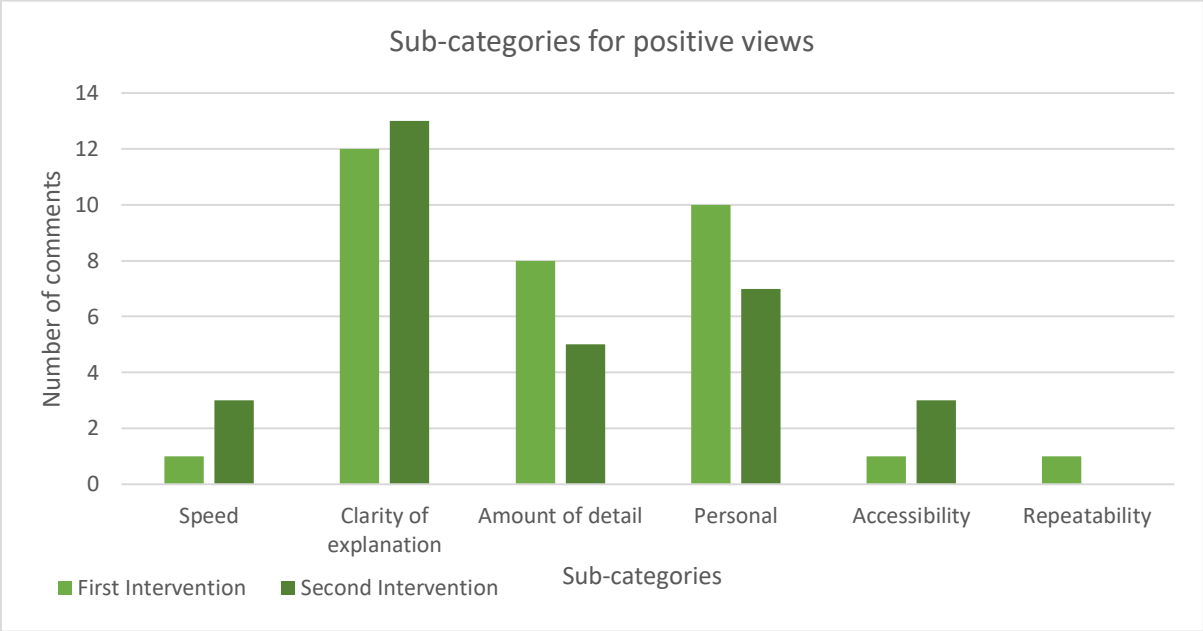

Figure 4.2: Graph showing the sub-categorised responses for positive views.

Figure 4.2 shows both differences and similarities between student and teacher views on the positives to audio-file feedback. Speed is something which students do not regard as important with only four referring to it in their responses. Student C stated "*you have a bit more time just to explain the details for each person and you can basically get a bit more done*" (A5: 78). Only one comment from Student E focussed on the speed of listening to the feedback, saying it "*saves quite a lot of time*" (A6: 87). The rest were aimed at the process from the teacher's perspective. Audio-files allowed their teacher to add more detail in the same amount of time a written comment would take.

Clarity of explanation was found to be the most important reason for why students liked the use of audio-files. A simple statement came from Student J, saying "*when you use audio, you can explain what the feedback means, so I can understand it a bit more*" (A6: 92) shows how students value the extra clarification. Student N says "*I liked it because you can understand the tone and like, what you mean by the words because of the way that you said them*" (A5: 84). Several other students mention the idea of tone of voice and its importance for clarifying key points. For example, Student E remarks how "*You can tell the tone of the voice. A lot of the time you can express a lot more with that*" (A6: 86). Further thoughts into the reasons why there was more explanation came from student C as he said "*The boxes [in written feedback] don't have infinite space but you can say as much as you want verbally*" (A5: 78). Students emphasised how the extra explanation made feedback clearer.

Like the staff views, students also explained how they received more detailed feedback through audio-files. Student I states "*I think this is a lot more detailed so you actually know what you need to change for next time*" (A5: 82), while Student K states "*It is a lot more in depth with audio instead of sort like bullet points and brief targets to work on*" (A6: 88). The ability to include more detail makes the feedback more precise and useful for the students because with the extra explanation as well, the feedback is easily understandable.

Figure 4.2 demonstrates that the personal aspect is highly valued by students. However, the specific reasons why students find the personal aspect useful do vary slightly. For example. Student F says "*it is sometimes reassuring hearing the teachers voice going through it with you*" (A6: 90). The focus here is on the one-to-one contact audio-file feedback provides. Whereas, Student A states "*you can hear your voice like you would in a classroom*" (A5: 78). This student suggests how audio-file feedback helps recreate the friendly environment of the classroom while students are working remotely. A final example comes from Student H, saying "*I love how you did a separate one for each of us, not just like a whole class thing. .... It shows that you read all of it*

and critiqued all of it" (A5: 82). There are many similar comments referring to how students liked the individualised element of the audio-files compared to a whole class piece of feedback.

Two final sub-categories relate to accessibility and repeatability. These are not valued as highly as the other sections however, Student E mentions "*it was very easily accessible, you just click play and hear the feedback*" (A5: 80). Student A also states "*I liked the audio-file more. Because you can listen to it more than once*" (A5: 78). As you can see from Figure 4.2, there are not many comments referring to these sub-categories, however, they do support the evidence found in the literature.

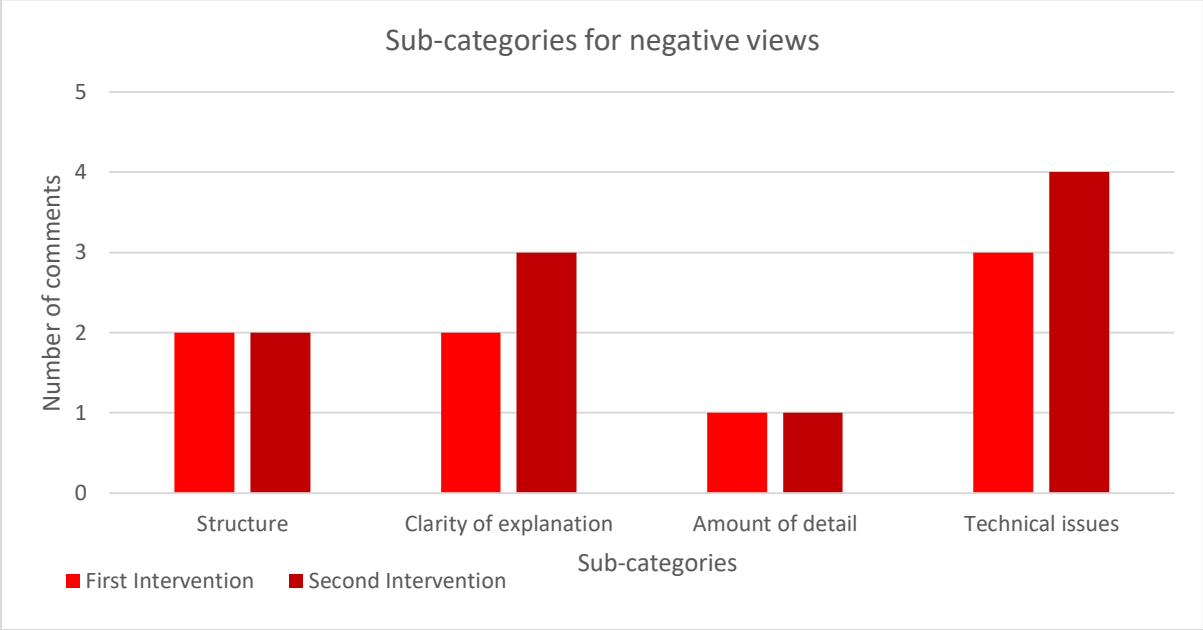

Figure 4.3: Graph showing the sub-categorised responses for negative views.

Figure 4.3 shows the negative student views towards audio-file feedback. As with the positives, there are similarities here with these sub-categories and the themes found in the staff questionnaire. The limitations with the feedback itself are more clearly defined through the students' responses and so this theme is broken down into structure, clarity of explanation and amount of detail. These responses include both the negatives of audio-file feedback but also when written feedback was perceived as the more favoured method of feedback. Overall, four students

preferred written feedback but several other students did mention some negative points of audio-file feedback within their responses.

The potential lack of structure within audio-files seems to be possible limitation with Student B saying "*Written feedback is better because it is structured well. With audio, you just talk. Written has the boxes and a summary*." (A5: 77). With no visible layout for students to follow, Student Q mentioned "*I struggled with taking all of the points in. I like the structure of the written feedback showing where I went wrong or right*." (A6: 88). As a result, these students were unable to understand the feedback as easily as written feedback, so the audio-file had failed to make the feedback more clear and precise.

Although many students found the clarity of explanation to be the most valuable aspect of audio-file feedback, some students did not agree. Student O explain the reason he found written feedback easier to understand was because "*I can see the key words written down and what is important about the feedback*." (A6: 87). Moreover, Student Q explained the benefit of having written feedback was because "*I can just scan the through comment repeatedly so I can get a more thorough understanding*" (A6: 89). The problem here is not that there is no explanation given in the audio-file, but the students find it easier to understand explanations in written feedback. For example, Student B states how he finds it "*easier to comprehend*" (A5: 77).

Student K mentions how he feels "*written is a more in-depth way of marking it because you have it split into sections*" (A5: 85). There is a link here between the detail included with the structure of the feedback. Because the audio-files do not have the same rigid structure, students may feel that not all the sections in the written feedback are covered. This results in the impression that audio-files do not contain as much detail and act more like a summary. Student O emphasises this point, "*I guess in written you might add a bit more detail because when you are talking you are just summarising*" (A6: 90).

As with the staff responses, technical issues came out as the greatest limiting factor towards audio-file feedback. There were no comments on the accuracy of transcripts because they were not used in the interventions. Students raised the potential issue of accessing the audio-file at a later date. For example, Student E explains:

> "*A potential problem is that it could be a bit inconvenient with looking at your book and seeing a bunch of highlighted things and then have to get out your laptop, put on the audio-file and link them up. A written comment would be easier with it all on one page*." (A5: 81)

The problem here is that if the student's work is written in their books and their feedback is stored online. They will always need access to their laptop. As clarified by Student L, "*if the audio-files are on your computer then you would switch between your book and the audio-files and that takes quite a long time*" (A5: 85).

4.2.1 Research Question 1 - Which feedback method do students find more useful?

Overall, students found the audio-files to be more useful because of several reasons. The extent of explanation with the extra amount of detail meant the feedback was clearer and more precise. They also enjoyed the personal aspect the audio-files provided because they felt valued as individuals and it helped create a friendlier environment to receive feedback.

4.2.2 Research Question 2 - Which feedback method do students find easier to understand?

The majority of students found the audio-files easier to understand because teachers added verbal nuances to the feedback to help with understanding. However, some comments did highlight potential issues of a lack of structure with audio-files compared with written feedback.

5.0 Discussion

A deeper analysis of the findings will now be performed with regard to the relevant literature and the research questions. Responses coded as 'additional ideas' and 'student opinions on future feedback' will be analysed further to determine whether students and staff have proposed ways in which audio-file feedback can be made more useful.

5.1 Research Question 1 - Which feedback method do students find more useful?

As stated in the introduction, the aim of my study was to provide feedback which is more useful for students. Feedback should contain detail which is explained thoroughly, thus being clear and precise. Personalisation and positivity are two further traits which Ferguson (2011) adds to what should constitute useful feedback. All these traits are well documented in the literature and evident in my research project through the answers to the questions posed in the student interviews. Overall, 78% of students preferred audio-file feedback and found it more useful when compared to written feedback.

The ability for audio-files to make feedback clear is supported by the findings in this study because the clarity of explanations given formed the greatest number of positive student comments. The literature notes the importance of how the tone, expression and emphasis on words can really help a student to understand the feedback they are receiving (Rust, 2001; Merry and Orsmond, 2008). These verbal nuances allow the key messages to stand out and be clear to the student. Many of the responses in my research support these claims because students commented on how hearing the tone of my voice was a factor towards making the audio-files clearer compared to written feedback. There were some alternative views with students saying that written feedback provided a more in-depth style of feedback and removed any technical difficulties making written feedback easier to review at a later date. Audio-files could be difficult to find and review much later; without having anything written down, the feedback may be forgotten. The literature does not give any information on this because no studies have been conducted over a prolonged

period. I understand it could be difficult to find and understand past audio-files if there is no immediate and thorough review of the feedback.

Other limitations towards the clarity of audio-files were revealed similar to the experiences of others (Parkes and Fletcher, 2017; Lefroy, 2019). When audio-files do contain generic and non-specific comments, students struggle to pick out the key pieces of information and find them hard to review (Rodway-Dyer, Knight and Dunne, 2011). If students are unable to pick out the important parts first time round, audio-files need to be replayed several times to ensure the message is conveyed. As Merry and Orsmond (2008) suggest, the advantage of using audio-files is that they allow students to gain a deeper understanding by listening to the feedback many times. Although only one student in my project highlights the value of repeatedly playing the audio-files, this is still evidence towards the appreciation of the opportunity to pause, rewind and re-listen.

One possibility which could have impacted the reviewing of audio-files is how students from different linguistic backgrounds perceive audio-file feedback. The reason for this may be because two of the students in my research who had problems with reviewing the recordings were students for whom English is an additional language. Language barriers were highlighted by the staff in their questionnaires, but I had not considered the potential for language barriers to present difficulties when receiving audio-files. Having made this observation, an analysis of the literature review revealed no remarks in any studies with regards to linguistic background. Although this is a small-scale study, it reveals a potential weakness in the use of audio-file feedback because there is little understanding of how useful they are with students for whom English is an additional language. The literature on feedback clearly implies how feedback needs to be presented in a way which meets all of the students' learning styles (Hattie and Timperley, 2007; Parikh *et al*, 2001; Rucker and Thompson, 2003). More analysis on the perceptions of different types of student needs to be done to determine the usefulness of audio-files.

Students in my research liked how much more feedback they received in audio-files. Several students understood how written feedback can limit the amount of detail given because of the time it takes to write it down compared to speaking it, confirming Lunt and Curran's (2010) research. Audio-file allows the teacher to include more detail in their feedback to help get the message across to the student. Being able to give more examples and greater detail in the recording makes the feedback more precise and helps the student know exactly what they need to do to improve their work. The personal aspect of audio-file feedback is something many students really valued with comments explaining how reassuring it was to hear their teacher's voice and recreate the classroom environment. Kerr (2017) indicates this type of environment is more conductive to clearer and more accessible feedback. All my students' comments are in line with those found in the literature and therefore support the usefulness of audio-file feedback (Lefroy, 2019; Gould and Day, 2013; Dixon, 2009; Lunt and Curran, 2010).

My findings suggest that:

- Students find audio-files a more useful method of feedback compared with written feedback.
- The main benefits found are the ability to clarify explanations and make the recordings personal for every student.
- Another key benefit is the ability to include more detail.
- There is a potential limitation towards students with English as an additional language.

5.2 Research Question 2 - Which feedback method do students find easier to understand?

The second round of interviews directly asks this research question and with only 16 students available for these interviews, 12 (75%) of the students said they thought audio-file feedback was easier to understand. This was similar to the number found in Lefroy's (2019) study (85%) meaning these results are reliable with the proviso that both are small scale studies. As expected, the ability

for teachers to use subtle nuances in their recordings is a major factor in the clarity of explanations and why students are able to make more sense of the feedback. Many students commented again on tone and expression in their responses to this question which is well supported by the literature (Merry and Orsmond, 2008).

An interesting comment emerged which identified audio-files to be a more normal way of receiving feedback. Students are used to talking to their teachers face to face to clarify misconceptions in the classroom. It would be unnatural for teachers and students to communicate purely through writing comments back and forth on a piece of work. You would normally discuss ideas so audio-files are a more accurate method to present feedback. Similar to the findings of Lefroy (2019) and Cavanaugh and Song (2014), one student believed he engaged well with the audio-file feedback because he found it easier to understand.

The literature identifies audio-file structure as an area of concern with many students struggling to comprehend all of the feedback contained within a recording (Rodway-Dyer, Dunne and Newcombe, 2009). This also divided opinion in my research. Some found the recordings easy to understand because they were organised like bullet points with targets to work on. Others highlight written feedback contains vague comments with abbreviations which can lead to misunderstandings. Contrary to the majority belief, four students (22%) in my research emphasised their preference for written feedback and why they found it easier to understand. They preferred being able to see and read the comments straight away on a structured feedback sheet without having to listen to a recording and take notes. Lefroy (2019) reported similar reactions to the audio-files in her study with 15% of students preferring their work to be annotated by the teacher because they knew there would be no misunderstanding. They promote this idea by saying key messages could be missed if the teacher is vague with the feedback in an audio-file. Audio-file feedback is perceived by these students as a more summative style of

feedback compared with the clearly structured written feedback which they find easily understandable.

As stated in the methodology, the audio-file intervention also involved writing the Assessment Objective numbers down on the individual pieces of work so they could act as reference points for the students. This method has been used before and has been seen to reduce confusion when reviewing work and the relevant feedback (Rodway-Dyer, Knight and Dunne, 2011). One student in my research reflected on this in his response and liked how he could listen to the feedback alongside reading through his work and could clearly see what the audio-file was referring to. There were very few adverse comments relating to the structure of audio-file feedback in my study, perhaps because of the methodology of linking audio-files alongside the Assessment Objective numberings.

My findings suggest that:

- Students find audio-files easier to understand compared with written feedback.
- Accompanying an audio-file recording with reference points in the text will help students understand the feedback.
- Some students prefer written feedback because the clear visible structure makes it easier to understand.

5.3 Research Question 3 - Do staff think audio-file feedback is useful?

In relation to what constitutes useful feedback, the results indicate that teachers believe audio-files are a useful method of feedback. From a teacher's perspective, they also value the way in which audio-files speed up the feedback process. The vast majority of positive comments from the teachers mention speed or time reduction. These all support the findings in the literature (Emery and Atkinson, 2009; Lefroy, 2019), and having completed these two interventions myself,

I would also agree that using audio-files speeds up the feedback process. I was able to say more in a 90 second recording than I would have been able to write.

However, one teacher does highlight an issue of potentially having to record multiple audio-files to complete a piece of feedback. I understand this drawback because the Mote recording is limited to 90 seconds, whereas an example from another secondary school in the literature use recordings between three and five minutes (Lefroy, 2019). This brings into question the debate between the quantity and quality of feedback (Parkes and Fletcher, 2017) because the ability to say more in one recording could cause teachers to spend too much time on the feedback. Students really value good quality feedback (Higgins *et al*, 2002) so audio-files should remain clear and precise and not include generic or non-specific pieces of information. However, Lefroy's (2019) study involves an English essay question which will require more time because of the length of work compared with the recordings used in the interventions of this study. I believe a 90 second recording is more than enough time to provide feedback for one of the longer questions used in an iGCSE Geography examination. It may be more difficult in an extended writing-based subject or a language subject to keep within a 90 second recording as indicated by some of the teacher comments in this research. Language teachers indicated that it would be very difficult to correct or explain incorrect spellings without writing them down. As a result, more research could be conducted to determine the usefulness of audio-files across a variety of subjects.

The majority of negative comments from teachers related to the transcripts produced by the Mote extension. They were reported to be inaccurate and required editing to ensure they were correct. In relation to the existing literature, this is a very specific issue and I believe it should not diminish the success of audio-file feedback documented in this project because the transcription process is not a central element of audio-file feedback. Transcripts are an additional feature with the Mote extension and they can be turned off, as they were during the interventions. I had also experienced inaccuracies when practising with Mote so I removed the transcripts to resolve the

issue. The recordings I provided to the students were completely verbal. The literature does not highlight transcripts as an issue because no transcripts were provided alongside audio-files in these studies (Lefroy, 2019; Parkes and Fletcher, 2017; Emery and Atkinson, 2009).

The limitation the teachers do suggest in the literature is the sharing of audio-files via email (Merry and Orsmond, 2008). Contrary to experience documented in the literature, this problem was not present in my study because the intervention recordings were attached directly to the student's work, removing the need for emails. Furthermore, the staff questionnaire did not reveal any issues relating to the sharing of audio-files. The success of the audio-files seen in the responses from both teachers and students suggest Cann's (2014) proposed idea of using a cloud-based system to share the recordings is a worthwhile option. Although this research provides some evidence towards the benefit of a cloud-based system, not all schools will have access because of soft-ware and hard-ware availability (Hargittai, 2010; Robinson, 2009). Many schools may not believe audio-file feedback to be a necessity and will focus their resources on more immediate issues. To help those schools who are keen to develop alternative methods of feedback, a more thorough study should be conducted to determine whether emails or cloud-based systems are better at sharing recordings to make the student experience easier.

Returning to Ferguson's (2011) definition of useful feedback, the teachers in my study suggest audio-files enable them to clarify their explanations through subtle verbal nuances which are not available in written feedback. These comments support those made by Emery and Atkinson (2009) because the extra explanation available allows students to make more sense of the feedback. One teacher in my research says how written feedback can be 'misinterpreted' by students, while another suggests that the sound of their voice can emphasise which parts of the feedback are most important. Audio-files provide greater clarity while also personalising it to each student. The literature states this is a key benefit of audio-files because bespoke feedback helps create a friendly environment and supports students in what is an emotional process (Gould and Day,

2013; Lunt and Curran, 2010). The large number of comments relating to the personal impact by teachers helps to support this idea.

My findings suggest that:

- Teachers find audio-file feedback a useful method of providing feedback.
- The main advantage is how it speeds up the feedback process, but also allows teachers to add more detail, explain the feedback more clearly and make it personal.
- Teachers found the transcript feature unreliable and inaccurate but did not have any issues with sharing the audio-files.

5.4 Future options

The interviews and staff questionnaire asked both students and teachers to consider the use of audio-file feedback in the future. Nine of the twelve teachers said they would continue to use audio-files and large majority of students indicated they would like to receive more feedback through audio-files. Opinions on future feedback was a theme which emerged mainly from the student interviews but teachers also expressed some thoughtful views. These opinions provided lots of interesting suggestions towards how audio-file feedback could be made more useful in the eyes of the students.

A potential issue with audio-file feedback is the ability to review the recording after a significant period of time. Many of the students suggest audio-files are used alongside written feedback so they can easily access the key points from a certain piece of work. One particular comment highlights this issue:

> "*Overall I think that is it good to have the audio-file, but I think we also need to keep the written feedback because as easy as audio files are to understand, they are not necessarily easy to refer back to*." (A6: 93)

However, the moment there is a written summary of the feedback, the audio-file may become obsolete because students will not need to listen to the recording as the information is already written down. A potential refinement of the feedback process could involve making the students review the audio-file feedback and note down the key points in their own words. By listening to, abstracting and writing down the key messages within the feedback, audio-files would hopefully be more effective because the students are processing the information in two ways (Merry and Orsmond, 2008). The audio-file will have been successfully listened to, and the key messages noted down in their book so they can be easily accessed at a later date.

Using a mix of both audio-file and written feedback for different types of question was a common suggestion by the students. They believe it would be unnecessary to record an audio-file for every single short answer question because it would only need a sentence or two to explain any misconceptions. The form of feedback could be tailored to the particular work format being assessed. The Geography iGSCE examination is split into sections with each section containing one 8-mark question and a number of smaller questions. If an audio-file was recorded for every question, this would create confusion with students having to review many audio-files. Simple written feedback is suitable for the shorter questions whereas the 8-mark question requires a greater understanding of examination technique which would be more easily conveyed through an audio-file. I believe using a mix of written and audio-file feedback is a sensible suggestion and one I will use in my future practice.

My findings suggest that:

- Students should act upon the audio-file feedback and note down the key messages so they can be easily referred back to.
- Written feedback is more suited to providing feedback to shorter questions.
- Audio-file feedback is more suited to providing feedback to longer questions.

5.5 Limitations of the study

Whilst the findings of this study do correlate with the literature available on the usefulness of audio-file feedback, the results cannot be applied to a wider population because of the limited numbers of students and teachers involved. This research project, like all those in the literature, is conducted in very specific environment which would be very difficult to recreate elsewhere. Therefore, further research using a larger and more diverse group of students and teachers is required to improve the evidence for the use of audio-file feedback.

The diversity of students is important because one limitation which appeared in the analysis of the results was the ability for different types of students to understand audio-file feedback. I had not appreciated that some students may find it difficult to pick out the key messages because they may not have been as comfortable with the English language. There is little understanding within the literature of how different types of student respond to audio-file feedback and so this reveals a gap in the research.

I would like to have improved the interaction with the teaching staff at the school. If time had permitted and work patterns had not been disrupted by the COVID-19 outbreak, group interviews with teaching staff could have been conducted to delve more deeply into why teachers thought audio-file feedback may have been useful for students. As previously mentioned by Goldman and McDonald (1987), interviews can produce richer data for analysis. There were some statements from the teachers which I would have liked to have clarified and developed further. However, without the normal day to day interactions with these members of staff, it was too difficult to find a suitable time to organise group interviews.

Unfortunately, I was unable to interview all of the students after each of the interventions. If this had been possible, I may have been able to determine if the opinions of all the students remained the same or changed after the two interventions. Understanding student perceptions is key to determining if an alternative method of feedback should be used because they are the ones who

are affected the most (Carless, 2006; Mory, 2004). However, an additional quantitative approach may have been useful to see the effect of audio-file feedback on student performance throughout the research cycle. Student opinions are important because if the feedback is no improving an individual's marks, then there is a clear fault in the system.

One final limitation is related to the analysis of the interviews. The coding process could have been strengthened by using an independent coder to help decipher the qualitative data. This would have allowed for any discrepancies in interpretation to be discussed and any potential bias to be removed. Furthermore, the additional collaboration may have revealed extra themes in the analysis to be discussed.

6.0 Conclusions

This final section will address the three research questions against the overarching question of this project: “Are audio-files a more useful method of providing feedback?”. The implications for future research along with my teaching practice and context will also be considered.

As highlighted in the discussion, it should be stressed this is a small-scale study in a very specific context so one should be careful about translating the results to the wider student community. However, my research findings give evidence that audio-files are a more useful method of providing feedback to students compared with written feedback. According to Ferguson (2011), useful feedback must be personalised and positive, with clear and precise detail. All these characteristics are revealed in my study and they are comparable to the findings of the existing literature. In addition to greater clarity the literature states audio-file feedback offers a more personal element to create a positive learning environment (Merry and Orsmond, 2008; Hennessy and Forrester, 2014; Cavanaugh and Song, 2014; Lefroy, 2019; Kerr, 2017). The research questions used in this project identified these same ideas.

Research Questions 1 and 2 gathered student perceptions about written and audio-file feedback. 78% of students believed audio-file feedback was more useful for several reasons. These reasons correlate with those covered in the literature but there are some additional aspects which are not included in Ferguson’s definition. The findings clearly show audio-files present feedback in a very personalised way, helping to recreate the classroom environment and so making students feel comfortable. The recordings also allow for more detail to be explained concisely so feedback is clear and precise. As a result, students found audio-file feedback easier to understand compared with written feedback. This study confirms other benefits found in the literature namely that audio-file feedback provides the opportunity for feedback to be accessed and repeated many times, allowing for an improved understanding.

Research Question 3 gathered teachers' perspectives towards the usefulness of audio-files. All teachers involved in the study expressed the primary reason for finding audio-file feedback useful was because it sped up the feedback process. The ability to say more in 90 seconds than can be written allowed teachers to provide more detailed feedback in a shorter period of time. There is extensive confirming this with many teachers and tutors stating how much quicker it was to give feedback to students (eg. Lunt and Curran, 2010). Unlike much of the literature, in my research neither the teachers nor I experienced any issues with sharing recordings because a cloud-based system was used. Difficulties with attaching audio-files to emails and problems with different audio-file formats are the main limitations revealed by the literature (Merry and Orsmond, 2008; Hennessy and Forrester, 2014). The main adverse outcome reported in my research was the inaccuracy of the transcripts provided by the Mote extension. Although this is important to note, transcripts are not a central feature of audio-file feedback and so this finding should not impact the overall usefulness of audio-file feedback.

To conclude, both this study and those presented in the literature provide evidence of the usefulness of audio-file feedback. The literature does state some technical issues which, at times, can distract from receiving the feedback. However, the ability to offer an improved explanation with more precise detail in a personal way enables students to understand and make better use of the feedback.

6.1 Implications for future research

Both the non-technological and technological issues emerging from this study do stress how audio-files are not the perfect way to provide feedback, so more research needs to be undertaken to understand these limitations.

The first avenue to explore is how different students respond to audio-file feedback. As identified in the discussion, two students in my research were those with English as an additional language. They found it harder to understand the recordings because they were unable to see the feedback

in front of them. Audio-file transcripts may be the way forward to help these students because they have a printed version in addition to the audio-file feedback. As this study shows, further improvements in the transcription process are required in order to create accurate transcripts. The continued development and increasing precision of programs such as Google Translate suggest there is potential to improve Google Extensions like Mote.

It would be beneficial for research into audio-file feedback to be conducted over an extended period of time. A study which involves students referring back to an audio-file from several weeks or months previously would confirm how easy or difficult it is to access and review past audio-files. A study of this design would help inform teachers how to instruct students to review their work when listening to the audio-file feedback and signpost the relevant feedback points in their text. The students in my research suggested the audio-file should come with an element of written feedback. However, I believe there is an opportunity for students to gain a deeper understanding of the feedback if they write down the key messages in their own words. Further research to clarify the impact of the time taken by students to review audio-files would benefit the overall understanding of audio-file feedback.

Teacher responses in my study revealed issues with using audio-files in language-based subjects. This is understandable because teachers may be required to correct more spellings compared to an English-based subject. Teachers explained how it is more difficult to correct these mistakes via an audio-file. Therefore, it would be helpful to understand which subjects are best suited to audio-file feedback and it would be useful to find a way in which audio-files could be used in language-based subjects. These subjects may require a mixed method of both audio-file and written feedback.

6.2 Implications for practice and context

For my own practice, this research highlights the importance of what is involved in good quality feedback. My findings, and literature as a whole, show that audio-files are a useful way to give

feedback to students. I agree with other teachers' comments that it speeds up the feedback process, and this is certainly a benefit of this method. However, I believe the ability to explain more information in greater detail is the crucial benefit. I will continue to use audio-file feedback in the future because I consider it has improved my teaching practice and understanding of pedagogy. I will look to improve the value of audio-file feedback by encouraging students to append the key messages from the recording to their written work so they can easily refer back to the feedback at a later date.

In terms of my school context, the findings of this research help support the idea that audio-files can provide easily understandable feedback for students. The nature of the recording lends itself to the school's idea of the 'four Rs' (Review, Reflect, Respond, Remember). Because the audio-files offer a greater understanding of the feedback, students will hopefully be able to carry out these four steps with confidence. The findings from this study are potentially very easy to share during an INSET session and given the whole school is already set up to use audio-file feedback in a cloud-based system, it would be straightforward to put into practice. More widespread use would require an element of training but if teachers are made aware of the potential benefits to their teaching practices, the uptake of audio-file feedback is likely to be greater. Although there benefits and the majority of students in my research liked the audio-files, teachers do need to be aware that every student is an individual and not all of them will take to audio-file feedback as easily.

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8.0 Appendices

Appendix 1 Letter To Headmaster

UNIVERSITY OF OXFORD
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Director Professor Jo-Anne Baird

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2nd March 2020

Dear xxxxxxxxxx,

I am writing to enquire about conducting research in school this academic year. As you know, I am studying for the Master's in Learning and Teaching at Oxford University, supervised by Dr Nicola Warren-Lee. In my final research project, I will explore if audio-files a more useful method for providing feedback. I hope to conduct this research between January and July.

My research study will involve 3rd Year students because this is the year group which we introduce the 8 marker questions (important in the GCSE exam). After completing three assessed 8 markers between March and April I will conduct group interviews and use questionnaires to explore the range of student responses to the two types of feedback provided. To allow for a comparison, the first one 8 marker in March will receive written feedback while the other two will receive audio-files. These audio-files will be recorded and then shared with the students via the school's Google Drive. I will go through the method of responding to the feedback with the students in lessons to ensure it is being done correctly.

By participating in the research, the school would be contributing to a project that will further develop our understanding of the different methods to provide feedback. I know the Teaching and Learning team are heavily involved in trying to improve feedback at xxxxxxx School and if I can provide an alternative method then I would love to help.

Oxford University has strict ethical procedures on conducting ethical research, consistent with current British Educational Research Association guidelines. The University also recognises, however, that my study is a piece of practitioner research, and that schools already operate with the highest ethical standards. Therefore, only your formal consent as headteacher is necessary, and not that of individual parents. However, throughout the research, students will be able to refuse to participate in any research activities at any time.

All participants, including students, teacher and the school, would be made anonymous in all research reports. The data collected would be kept strictly confidential, available only to my supervisor Dr Nicola Warren-Lee (nicola.warren-lee@education.ox.ac.uk) and me, and only used for academic purposes. It will be kept for as long as it has academic value.

If you are happy for me to proceed with this study, please confirm that using the attached reply form. If you have any concerns or need more information about what is involved, please contact me or my supervisor. Further, if you have any questions about this ethics process at any time, please contact the chair of the department's research ethics committee, though: research.office@education.ox.ac.uk

I look forward to hearing from you.

Yours sincerely,

xxxxxxxxxxxxxx

Are audio-files a more useful method for providing feedback?

xxxxxxxxxxxxx

University of Oxford, Department of Education

xxxxxxxxxxxxxx

xxxxxxxxxxxxxx School

xxxxxxxxxxxxxx

- ☐ We do not wish to participate in this project.

- ☐ We would like to find out more about this project.

- ☐ We would like to take part in this project.

_____

Head teacher's signature

Please return this form to me.

Thank you for your help.

Appendix 2 Email to Teaching Staff

Dear all,

I would really appreciate your help with collecting some data for my Masters Research. If you have **not** been using an audio-file feedback system, like 'Mote', to provide feedback on online exercise books then you can stop reading and delete this email - thank you for reading this far!

If you **do** use something like 'Mote' I would be grateful if you could help...

Since the switch to remote learning, I know many of you are using online exercise books. I have also done this and found providing feedback via the 'comments feature' a bit time consuming. xxxxxxxxx shared a video of himself using the feature 'Mote' and showed how easy it was to provide really good quality feedback. Unknowingly, he opened up a door for me in terms of my research this year!

I am looking to see if audio-files are a useful way to provide feedback to students. If you could spare a few minutes of your day to complete this short questionnaire (4Qs), it would be really useful in terms of getting teachers' views on using audio-file feedback.

[Link to form]

Many thanks and I hope you are all well!

xxxxxxxxx

10. Children and online safety away from school and college

It is important that all staff who interact with children, including online, continue to look out for signs a child may be at risk. Any such concerns should be dealt with as per the Child Protection Policy and where appropriate referrals should still be made to children's social care and as required, the police.

XXXXXXX School will ensure any use of online learning tools and systems is in line with privacy and data protection/GDPR requirements.

Below are some things to consider when delivering virtual lessons, especially where webcams are involved:

- Staff and children must wear suitable clothing, as should anyone else in the household.
- Any computers used should be used appropriately.
- Live classes should be kept to a reasonable length of time and should not overrun timetabled lessons. Teachers should be mindful of not being excessive in the use of live streamed classes.
- Language must be professional and appropriate, including any family members in the background.
- Staff must only use school devices/accounts to communicate with pupils
- Staff should aim to stick to the school day and timetables.
- If staff are planning to have a one to one session with a pupil then the relevant line manager should be informed in advance and staff should keep a log of the conversation.
- If staff communicate with pupils outside the normal school hours, then these sessions should be recorded (with the pupils' permission) so that if any issues were to arise, the video can be reviewed. Staff should record the length, time, date and attendance of any sessions held outside the normal school day, and make their line manager aware of this immediately, and should share the recording of the session with their line manager immediately after the session has finished.

All staff in contact with pupils during remote working will be reminded of the following policies:

- Staff code of conduct
- ICT (Staff) Policy
- Social media guidance

Appendix 4 Staff Questionnaire Responses

Coding

Speed

Clarity of explanation

Amount of detail

Personal

Technical issues

Issues with feedback

Additional

Teacher	Question 1	Question 2	Question 3	Question 4
1	It's much quicker than typing (my comments are longer than if I had to type them), and has the benefit of a human voice so a bit less impersonal.	I have switched off the 'transcript' option because when I say Latin or Greek words it doesn't recognise them!	No	They like to hear a voice!
2	quicker and more personable	have to edit a bit as it miss hears me	Yes	Not sure
3	It seems quicker to give more detailed feedback.	translate does not always work well!	Yes	yes - like to hear your voice - more personal
4	speed of giving feedback	trying to sound positive and personal, so that the pupil receiving the audio bothers to listen to it and isn't put off!	Yes	It feels easier to hear comments than read them. Tone in the voice adds to the message and gives context to the content - written comments are more likely to be misinterpreted.
5	time saving	You aren't always quicker, and your feedback may not always be quite as clear as if you compose and write it.	Yes	Generally yes, but maybe because of the novelty. If you get them to act on it and write stuff down then it should be more effective.
6	Being able to provide more	In foreign languages, it is important to provide	Yes	Yes, especially for structure and essay content. They can listen to it

	information at once like in 'real' context feedback.	written feedback especially to explain mistakes in the foreign language. If students have done a spelling mistake in Spanish, only with voice feedback they will not be able to know how the word has to be written correctly.		and at the same time read what they have done right/wrong as they have it in front of them. They also don't feel as overwhelmed when reading extended feedback as they can take notes on the oral feedback that they consider more important for them.
7	Speed of feedback cf to writing. Can give a more nuanced, emotional play to the feedback. Can be illustrating at the same time as talking. Mote is especially good as limits to 1 minute so I need to be specific.	Mote translates very badly! In French you need to see the grammar points written down.	Yes	They can listen to the feedback and make notes on the main comments on their work themselves.
8	It is much quicker than writing/typing and so you can give more detail.	The transcripts are not very good (I have turned them off).	Maybe	Some pupils liked the greater depth and that it felt more like you were in the classroom getting personal feedback. Some pupils feel it wouldn't be so good for revising at a later stage as you can't just flick back through work to see your feedback easily.
9	Time saving	None so far although the transcripts aren't very accurate	Yes	There is evidence to suggest that a voice has more sticking power! They know which bits of feedback are most important by the sound of voice.
10	The fact that I can say more aloud in the same time it takes to type a shorter comment.	Poor internet connection/glitches in recording, and needing to rewrite/proof-read auto transcriptions.	Maybe	I'm not sure whether they like them or not because I haven't asked for feedback about it yet- they seemed fairly unbothered by my shift to audio comments!
11	I have been using Mote and found it easy to use and intuitive - I would say it reduces	The dictaphone is not entirely accurate and so the transcript does not match the oral feedback and also the maximum	Yes	They are notified via email so can reflect and go over several times to ensure they understand the

	marking time by about 30%	limit of 90 seconds means in depth feedback is tricky and you would need to feedback multiple times		message. Having tried it previously feedback was very positive
12	Speed of feedback.	Transcriptions not being accurate, so having to go back in and edit them.	Yes	Yes. I think they appreciate hearing the teacher's voice.

Appendix 5 First intervention student group interviews

Coding

Positive views

Negative views

Student experiences outside the research

Student opinions on future feedback

Student Group Interview 1

Did you like the audio-files you received? Why?

Student A: I liked the passion in your voice. It was good ..erm.. Because when you are writing, you can't really show how enthusiastic you are. With the voice it is better.

Student B: I liked it but I preferred the written one to be honest. I am more used to it because if we are doing some work on the computer, you just write it down ..erm.. so it is easier to comprehend. As well, if you give us Audio, it is clearer.

Student C: I really liked the audio-file. I thought it was really nice to hear your voice and ..erm.. I understood the feedback more.

Student D: Yes, I liked the audio-file feedback. Erm.. because you were able to explain your reasoning more clearly.

Compared to the written feedback you received for the last 8 marker, which type of feedback did you find more useful? Why?

Student B: Written feedback is better because it is structured well. With audio, you just talk. Written has the boxes and a summary.

Student C: I think they are both very good because ..erm.. like how [Student B] said, the written one is very well structured. But the verbal one you can really get everything out that you want to say. The boxes [in written feedback] don't have infinite space but you can say as much as you want verbally. You can get a bit more feedback verbally. But the written a bit easier to decipher in a way.

Student A: I liked the audio-file more. Because you can listen to it more than once and ..erm.. you can hear your voice like you would in a classroom.

Student D: I preferred the audio-file because as useful as a written feedback was ..erm.. it doesn't get across the whole story, if you get what I mean. It doesn't tell you everything what you want to know about how you can improve. Written feedback tells you where you are at, audio-files do more than that.

<u>When school returns to normal, would you like to receive more audio-file feedback? Why?</u>

Student B: I think written feedback should only be used for normal classwork or small mark questions. But if it is a bigger question like an 8 marker or an essay, I think it should be an audio-file. The feedback is clearer. There is no point using an audio-file for a short question.

Student C: I think that is the best way to put it.

Student D: To expand on [Student B] from my perspective, I agree, but I also think that if there is a practice paper of lots of short answer questions, it would also be helpful to have an audio-file on that as well. Because even though it is not one long essay, it is still useful for a practice paper.

Student C: I really like the audio-file overall. From your perspective *(teacher)*, I feel the audio-file is slightly quicker, is it slightly quicker? *(I said yes)*. If it is quicker ..erm.. you have a bit more time just to explain the details for each person and you can basically get a bit more done. And if

you spend a bit more time as you would writing, everyone would get a bit more feedback which could go a long way. Especially when writing 8 markers.

Student B: We are using audio-files in another subject but it wasn't very detailed with what the teacher said. The teacher just said ..erm.. "oh well done, you just need to work on this question". If we are going to do it then it needs to be more detailed.

Student A: I think audio-files are good for like most of the questions but ones that are like one or two markers then there is no point. You could just write a comment on the work.

Student Group Interview 2

Did you like the audio-files you received? Why?

Student E: Yes, it was very easily accessible, you just click play and hear the feedback. I think it could be useful in other subjects where teacher's handwriting isn't the best, so rather than having to run it through a deciphering machine to try and find out what said, you can listen to it and it is a lot easier.

Student F: I think it is a good way of like getting feedback, sort of a long the lines of [Student E] said. It is just like really useful ..erm..to hear your feedback on the work we have been doing. Where you hear the feedback, you sometimes get more than when you read them off the page.

Student G: It is easier listening to someone telling you about what you did well or didn't do well.

Compared to the written feedback you received for the last 8 marker, which type of feedback did you find more useful? Why?

Student E: I preferred the audio-file because you can have it going on in the background while you have the work in front of you and you can just look at it and 'ah yeah, I can see'. For example ..erm.. if I got one of the points wrong you could say, 'you should have included a reference to which figure you were using here' and highlight it in yellow. I can look at my piece of work and see the bit in yellow and in future I can see where I need to include my sources. Whereas in the written one, it is sort of you should include your figures, but where am I meant to? I will have to look up and down this code basically and it is harder to understand.

Student F: Audio is much better just because I take more in from the audio feedback compared to written. I feel like when I'm hearing stuff, I take more in than when I read stuff.

Student G: Both as helpful ..erm.. as long as you can see the connection between which bit of the audio-file relates to which bit of your answer. I don't mind which type I get.

When school returns to normal, would you like to receive more audio-file feedback? Why?

Student F: We could listen to audio-file feedback in sections of a lessons. I think that would help improve our way of working.

Student E: A potential problem is that it could be a bit inconvenient with looking at your book and seeing a bunch of highlighted things and then have to get out your laptop, put on the audio-file and link them up. A written comment would be easier with it all on one page.

Student G: On a handwritten piece of work in your book, it should be a written comment so everything is in your book.

Student Group Interview 3

Did you like the audio-files you received? Why?

Student H: I did, I think it is really helpful to ..erm.. because without the teacher speaking to you in person, it is quite hard. But erm, I love how you did a separate one for each of us, not just like a whole class thing. I thought it was really professional. It shows that you read all of it and critiqued all of it, so it was really good.

Student I: I think it is a lot better because a lot of teachers would speak to the whole class or leave a comment on the piece of work. But I think this is a lot more detailed so you actually know what you need to change for next time.

Student J: I think it was quite a helpful source of information. Obviously, with the online learning, you can't be there in person so it was a good way of, you know, giving feedback on the work. It was definitely more personal.

Compared to the written feedback you received for the last 8 marker, which type of feedback did you find more useful? Why?

Student H: Audio. Writing is still personal but it doesn't tell you exactly everything detail that you have done wrong. And for me it was like a 55 second recording of everything I could have done a bit better. Erm.. so I thought the audio file was really good, especially ..erm.. when you could have just written on our work 'really good', but ..erm.. I think it was, you gave time to do an audio-file for each of us. I thought it was really great that you did that.

Student I: I find that written feedback doesn't go into that much detail, audio does go into more detail.

Student J: Yep, like [Student H] said, each audio-file is personalised so it isn't a broad thing for the whole class. It is actually, you know, this is where you lost marks and this is how you could have gotten the marks.

When school returns to normal, would you like to receive more audio-file feedback? Why?

Student H: I think so yes, because audio-files are a lot easier to put detail into. Writing would take longer and audio-files are more detailed as well. Even if it is hand written work, we could set up a shared folder on google for feedback. Most teachers make you self-assess what you did wrong and what you did right and how you feel about it. They normally put ticks or crosses and just write a little comment 'oh you did great' just like 'remember a few things'. Some teachers just put a list of bullet points that you could do better. That's okay, but I think an audio-file would be really good because it tells you exactly what you did wrong and how you could fix it. That's what you told me, what I did wrong and how I could fix it, not just what I did wrong.

Student J: Yeah, as [Student H] said, it is a lot better because sometimes you just get a mark schemes and refer to it. It is a lot better when it is personalised for each person.

Student I: Basically the same as [Student J] really.

Student Group Interview 4

Did you like the audio-files you received? Why?

Student K: Yep I really liked it.

Student L: I liked it because it felt more like connective, rather than reading something off the page, it felt like you had more of a connection with you.

Student M: It felt more normal because in a normal lesson ..erm.. you wouldn't always just get written feedback. I think it really helps when someone is talking to you. You get a different understanding than when you read something.

Student N: I liked it because you can understand the tone and like, what you mean by the words because of the way that you said them. Also, because I'm lazy so I liked the format of an audio-file, I didn't have to read anything.

Student K: I thought it was quite good. You can tell when some teachers write something and tweak it for each person. Whereas with this, you can tell you made context to what I wrote so it really meant something in the feedback. It felt more personalised.

Compared to the written feedback you received for the last 8 marker, which type of feedback did you find more useful? Why?

Student L: Audio because then you ..erm.. usually in feedback you get areas to improve, in the audio files you can see the strengths and try to keep those up.

Student N: I think [Student L] is right

Student M: I think I prefer the written feedback, because ..erm.. if you are doing another 8 marker you can always go back and look at what you wrote to help you. But if it is just an audio-file it is quite hard to get it back again and listen to the feedback more than once.

Student K: I think I like written, I agree with [Student M], written is a more in-depth way of marking it because you have it split into sections. If that is the only bit that went wrong, then you can pinpoint that and you can have that in front of you so you know what it is.

When school returns to normal, would you like to receive more audio-file feedback? Why?

Student L: I wouldn't because ..erm.. if the audio-files are on your computer then you would switch between your book and the audio-files and that takes quite a long time. The written feedback in your book is all in one place, rather than having to bring out your laptop every time.

Student M: Yeah, I think it would be a good idea to have audio-file feedback, but I think it would be a good idea to have some stuff jotted down in your book. If you are in the middle of a piece of work, like a homework, and you don't have a computer on you and you just want to look back at what you did last time to see what you did well to do it again, I think it would be helpful to flick back in your book to look.

Student K: I think that could be a good idea. I also think that would help people remember more because when you write stuff down it goes into your memory. You don't remember it as well if you just listen to it.

Student N: You can get audio-files back as soon as you mark our books, so that might be quite good because it is immediate instead of waiting a whole week to get the book back.

Appendix 6 Second intervention student group interviews

Coding

Positive views

Negative views

Student experiences outside the research

Student opinions on future feedback

Student Group Interview 1

Now you have received audio-file feedback for a second time...

Which method of feedback (written/audio) do you find more useful? Why?

Student H: Probably the audio-file because ..erm.. I don't think writing includes as much detail. It takes way longer to write a paragraph than say a paragraph. You don't really have to plan it, you can just say it. You can say way more stuff than you could write it.

Student E: I agree with that. You can tell the tone of the voice. A lot of the time you can express a lot more with that. In writing, you can't tell what tone it is in but with audio-file you can so you can express a wider array of things.

Student O: I connect better with the typed ones more because I can ..erm.. just review it by just looking at it. Like the audio one I have to skip to certain points to listen to the feedback again.

Student N: When you are speaking it is more understandable because you can tell from the tone what you are actually saying instead of it possibly being confusing.

Which method of feedback (written/audio) do you find easier to understand? Why?

Student H: Definitely audio, because ..erm.. with writing, you can understand it, but it is harder to see what tone it is in. You say more and you can understand how you got the question wrong and what you can do right. I think it is more considerate because you could have written or typed underneath our work but you actually took the time to do an audio-file. I think it is better.

Student N: Audio-file because of the same reason.

Student E: Audio-file same reason.

Student O: Written because, I find written much easier because ..erm.. I can see the key words written down and what is important about the feedback.

Would you like to receive more feedback like this? Why?

Student O: I don't mind if that is like easier for everyone but if it easier to type it out then. I find written easier to understand.

Student H: I think so, even if we are at school, we can set up a shared folder and then get our feedback through that. I guess it will be quicker for you because it is quicker to say the stuff. For me, it is a lot easier to understand.

Student E: I agree, more audio-files will be a good idea. I like [Student H]'s idea with a shared folder. As well as that, it saves quite a lot of time ..erm.. we can access the audio-files on our phones on the school bus.

Student N: I would like more audio-file feedback. Sometimes when you are marking, you will have our books. But we don't always need our books for when we are listening to the audio-files.

Student Group Interview 2

Now you have received audio-file feedback for a second time...

Which method of feedback (written/audio) do you find more useful? Why?

Student K: I think probably audio because it is literally like talking to a teacher, instead of just writing down. The writing could just the same of everyone but just slightly ..erm.. different with the names and stuff. But with the audio you know it is exactly for you.

Student A: I liked the audio-file because you can actually hear your voice in it, if it is just writing you just read it and you can't always really understand what you are trying to say.

Student Q: I still think I prefer written feedback. I struggled with taking all of the points in. I like the structure of the written feedback showing where I went wrong or right.

Student P: I prefer the audio-file. Because ..erm.. I think it is because it's your voice so you can hear the tone. It is more instructive and I think it is more productive for me because I learn for me.

Which method of feedback (written/audio) do you find easier to understand? Why?

Student K: Audio as well actually. Because ..erm.. with writing it's not exactly how the person would speak and it could be abbreviated because it takes a longer time to write something than speak it. It is a lot more in depth with audio instead of sort like bullet points and brief targets to work on.

Student P: I find the audio-file easier to understand. It is more brief and precise but also quite detailed. I find written feedback harder to interpret.

Student A: I find the ..erm.. audio feedback easier to understand because you can like hear it so it is for you.

Student Q: I find written easier to understand. I can just scan the through comment repeatedly so I can get a more thorough understanding. The feedback stays in my mind longer when I read something. With the audio-file I have to adjust the time.

Would you like to receive more feedback like this? Why?

Student P: I would probably prefer more audio-feedback. I don't mind whichever is easier.

Student K: Definitely. Because of all the points we have discussed.

Student A: I agree, I want some more audio feedback. Same reasons as before.

Student Q: Even though I prefer written feedback ..erm.. I think I would like to try more audio-file feedback because I do like the personal aspect of the feedback. It might be good used alongside written feedback.

Student Group Interview 3

Now you have received audio-file feedback for a second time...

Which method of feedback (written/audio) do you find more useful? Why?

Student F: I think audio because with the audio you can put it on while you ..erm.. read through your work. And it is sometimes reassuring hearing the teachers voice going through it with you. You can take more out of it.

Student R: I also find audio-files easier because when it is like said out loud, you are more attentive, compared to when you are just reading it. It's not as ..erm.. how do I say this.. It isn't as interactive.

Student G: I think it is better as well because when you are listening you can read through the work at the same time. You know what you are talking about, you know which bit you are being given feedback on.

Student L: I think audio-file as well because it is more interactive with you. Whereas you are just reading it off the page with written. A problem is that I could lose it and not go back to it. I might see my notes if I go back at look at it.

Which method of feedback (written/audio) do you find easier to understand? Why?

Student F: Audio because I find it easier to process what is being said.

Student R: I don't think is much of a difference between like how descriptive the audio and written is. They are equally good in how I understand it.

Student G: I agree, I can understand both I think. It doesn't make much of a difference ..erm.. I guess in written you might add a bit more detail because when you are talking you are just summarising.

Student L: I also think it is pretty similar. Except on some occasions the tone of your voice can make a difference.

Would you like to receive more feedback like this? Why?

Student F: Yes definitely I want to have more of this sort of thing going into the future. I find it is easier because you just have to click onto it and you just think about it as you are listening.

Student R: I agree with what [Student G] said, I think more audio feedback would be good because I find it useful.

Student G: I like the way we are doing it now. Having the audio-file with some a comment in the work as well.

Student L: I prefer feedback for online work but written feedback for work in our books. Otherwise it is quite hard to go back onto your computer when you are going through your book.

Student Group Interview 4

Now you have received audio-file feedback for a second time...

Which method of feedback (written/audio) do you find more useful? Why?

Student J: I find the audio is more useful because you can add more detail in a shorter amount of time. You ..erm.. can have more detail without having to write down loads of things. You can really expand on which places you can improve while also telling you what you did well. This is really helpful for the student.

Student B: I prefer the audio stuff because the same as [Student J]. Some of the writing may be harder to read in some ways, maybe you don't understand something as clearly. But with you talking ..erm.. it maybe a bit easier to communicate with you.

Student C: One thing that I find makes audio a little more preferable for me is the fact that the feedback sinks in a bit more. It is like talking to you in person rather than read it off a screen. And it just feels a bit more personal ..erm.. more like a one to one chat.

Student D: I prefer the audio-file because we are more used to talking with teachers rather than ..erm.. it would be a bit weird if the only method of communication in a classroom was a teacher writing something down and you writing something back. You normally talk so it is just easier to understand.

Which method of feedback (written/audio) do you find easier to understand? Why?

Student J: Erm.. I think ..erm.. audio feedback is more helpful. I understand it better because the written feedback is sometimes a bit confusing. But when you use audio, you can explain what the feedback means, so I can understand it a bit more.

Student C: It is kind of a bit of both, I personally understand most of it. I think you can get more information out in the audio-file compared to trying to write it down. I understand the audio more because you get more to say really and you can say more stuff. You also have time to explain what you say so it is easier to understand.

Student B: Written because it was done in a table and so it was more structured so you can see it a bit more clearly. In a audio-file, it is just a few sentences in a line. In the written it is much more structured.

Student D: I would maintain my previous point because we are more used to speaking face to face so it is easier to understand because it is what we do inside the classroom, outside of the classroom.

Would you like to receive more feedback like this? Why?

Student J: Yep, I think for the bigger questions I would prefer audio-files. But for the shorter ones just written notes.

Student B: I think it should be a mix of the two. In your audio-files you say what we did well, but with the writing you should talk about how we got those marks.

Student D: Overall I think that is it good to have the audio-file, but I think we also need to keep the written feedback because as easy as audio files are to understand, they are not necessarily easy to refer back to. For example, if you get an audio-file back in September, but then try to access it when the summer term, then it is then a bit of a faff to go back and find the audio-file. Whereas if the feedback and the work is in the same place then it would be easier.

Student C: I would like to have more of this in the future. I like having the audio-files.