

## **Students using digital audio interventions to enhance their learning experience**

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## **Students using digital audio interventions to enhance their learning experience**

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### **Conference Theme**

Students of the future

### **Summary**

Previous studies of the impact of audio on student learning have focused on academic generated and centred resources. This approach can significantly impact on academic workloads in both the generation and the distribution of the media, but can also result in narrowly focused learning resources for the students. Students are exposed to many learning opportunities in and outside of the classroom; in order to promote and support learner autonomy, students need to be encouraged to intervene in their own learning experience. Creating audio interventions is an effective way of achieving this. This learner-centred approach enables the students to record, reflect and develop their learning as and when the learning opportunities arise.

Student volunteers at both the University of Sheffield and Sheffield Hallam University were invited to record their experiences for themselves and were supplied with digital audio recording devices. The University of Sheffield project focus was on supporting HE transition for a cohort of first year engineering students. The Sheffield Hallam University project focus was on supporting learner autonomy amongst groups of disabled and non-disabled students. Volunteers were sought from all levels of study and from across the University.

In examining the evidence from both universities the majority of students initially believed the main learning opportunity was in employing the audio devices to record lectures. As the project progressed students did record lectures and this allowed them listen to the lectures again and reflect upon them at their leisure. However, the audio devices have been deployed in a wide variety of ways including the recording of personal notes and group-work discussions with their peers. In this project students typically re-listened to their recordings every few days, when reflecting on their studies or when preparing for or completing an assessment or homework.

Students typically recommend carrying the audio device at all times and using the device to record any learning opportunities as and when they arise in the course of the day.

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### **Abstract**

Many studies indicate the value of academic-generated audio for providing supplementary methods of engagement, but this can impact on academic workloads through both the generation and the distribution of the resource. This paper discusses the efficacy of an alternative solution whereby the audio recorders are placed in the hands of students to promote learner autonomy, flexibility and creativity.

### **1. Introduction**

Research in US HE institutions and experience in Sheffield have identified that language, culture and learning practices can be barriers to international student learning. Learning technologies have the potential to ameliorate these barriers. Preliminary studies at Sheffield Hallam University indicate that academic-generated audio resources, such as 'audio notes' and 'audio feedback', can help to address these issues, (Fidler *et al.*, 2006; Nortcliffe and Middleton, 2008). However, there is a danger that these recordings can be overused resulting in a teacher-centred approach to learning. In addition, the opportunity for one-to-one tutor-student feedback conversation, as is found in some models of audio feedback, is limited by the time they take to produce and the mechanisms available for their distribution, especially where this involves large cohorts (Nortcliffe and Middleton, 2008).

This paper considers an alternative approach that gives the students the opportunity to take responsibility for recording their own formative audio interventions. The students are encouraged to make audio recordings whenever they feel it is useful and wherever they are. This approach demonstrates an alternative and rich form of note making, and potentially facilitates better self-reflection.

The project will identify if audio notes have the same valuable impact on student learning as the action of making written notes, which are known to increase cognitive recall (Intons-Peterson and Fournier 1986).

### **2. Methodology**

Student volunteers at The University of Sheffield and Sheffield Hallam University were each supplied with a simple to use MP3 recording device with a built in microphone and 4GB memory, each costing approximately £30. Both institutions' project aimed to promote autonomous learning skills, an expected outcome of Higher Education, Race (2001). The motivation for the pilot project at The University of Sheffield was to support a cohort of 50 Year 1

engineering students, in their learning transition to Higher Education. The Sheffield Hallam University pilot project aimed to research and develop audio recording methodologies designed to promote more autonomous learning amongst both disabled and non-disabled groups of students. 50 volunteers were sort from Faculties across the institution.

At both institutions students were briefed as to what learning opportunities they may wish to record, and particular emphasis on recording etiquette; specifically students were asked to respect the wishes of staff or their fellow students who may not wish to be recorded. Each student was also required to sign a project protocol agreement defining the student role in the project and agreement on how the student may use the audio device, that is, appropriately and professionally throughout their studies. The students were also advised that the recordings officially belong to the Universities and thus cannot be shared beyond the Universities. However, students were encouraged to share their recordings with their peers in order to encourage further opportunity for peer conversation (Middleton and Nortcliffe, 2009).

Several methods have been used to capture the various experiences of participants. Some were interviewed about their expectations on induction to the project and have subsequently been surveyed online, whilst many have taken part in mid-project review focus groups.

### **3. Initial Project Results**

This paper reports on the initial project results for both institutions' projects and identifies the students' initial perceptions of the learning opportunity and the methods that they adopted. These initial results indicate that there is significant potential for enhancing learner autonomy amongst all students, whether they are international, home, disabled or non-disabled.

#### 3.1 Perceived Learning Opportunities

A sample of the student volunteers at Sheffield Hallam University were interviewed at the start of the project as to why the Student Audio Notes project was attractive to them. Within a few weeks of the students embarking on the project at University of Sheffield the students took part in focus groups to identify and highlight the potential learning opportunities of this approach across a range of scenarios. The following student quotes from both institution illustrate the perceived learning opportunities and benefits of student initiated audio recordings:

##### Sheffield Hallam University

*Student A: "[It provided] a different way of remembering... [and] enables you to dissect it [conversation] afterwards."*

*Student B: "Being an International student you are sometimes last in the class... it is important to record [lecture]... then go home listen again to make something clear."*

*Student C: "I am struggling to make good lecture notes to refer back to... [audio] means to go back whenever you want to... also feedback from lecturer is sometimes hard to take it all in and remember it."*

*Student E: "When I go to lecture I forget [to make] notes... after the lecture I don't really know how it all connects... To record [the] lecture would be really useful because I could go back and reflect on it again."*

*Student G: "I wear a hearing aid, [lectures are not the quietest place]. ...I find I am sometimes missing half or sections of the lecture which are quite important to me."*

*Student H: "[After the lecture] I look at the notes. I understand in theory but it would be really helpful... to listen to their [academic] interpretation of the slides [again]."*

#### University of Sheffield

*Student A: "There was this oral presentation. So I could practice by listening to my speech. I recorded my speech and listened to myself."*

*Student B: "I tend to remember things... more easily when I am listening to them."*

*Student C: "Tutorials, someone explaining something so that we can record it and then do the problem again. Then we can listen to it and see what exactly they said."*

*Student D, "When you hear it over and over again you know exactly what they are saying. If you miss some words because of the language barrier then you can hear it again."*

The typical observations made at both institutions in the focus groups were that the majority of students perceived the main learning opportunity would be the ability to record lectures, being able to re-listen to the lecture, reflect upon the lecture and increase their understanding of the lecture again.

### 3.2 Evaluation strategy

Focus group studies with the University of Sheffield students took place six weeks after the project initiation and involved 40% of the cohort of students. Students at Sheffield Hallam University were surveyed 3 months after the start of the project; 50% of students responded. This was followed by semi-structured focus group discussions (Cohen *et al.*, 2000, p.288) with a sample of ten students from the project.

### 3.3 Quality of student audio recordings

The majority of students indicated that the quality of the recordings has been satisfactory for the purpose. However it is dependent upon the room acoustics, level of background noise, level and number of simultaneous student discussions. A strong recommendation for lectures is that a recording device should be close to academic, or better still that the academic should use the lecture theatre or classroom microphone where possible. At Sheffield Hallam University students reported that, for recordings taken in a tiered lecture theatre, the quality was not adversely affected by their position in the theatre. However, in large flat teaching rooms the quality was significantly reduced according to the proximity of the device to the academic. Therefore students generally recommended placing the devices near the academic, ideally un-obscured on a table. Using this technique, however, means that

students cannot edit the audio live, as happened in some cases where students initiated a new audio file each time the lecturer changed slide. This technique makes it easier for the student to navigate the material when replaying and searching later (Fidler et al., 2006).

As a result of practical experience in one-to-one situations or group discussions, some students recommended placing the device on a table to keep it still, as the devices were found to be highly sensitive, picking up extraneous noise from the slightest movement during the recording, consequently adversely affecting the listening experience.

### 3.4 Audio Interventions; different scenarios and student uses

Both the survey results and focus group studies indicated that the students have employed the devices in a variety of ways, supporting learning from,

- personal audio notes;
- peer conversations and group-work;
- tutor feedback, i.e. art crit, project supervision, corridor conversations, lab discussions, etc;
- lectures, seminars, tutorials, workshops, and laboratories;
- guest lectures;
- work placements.

Some students also used the devices to record one-to-one project supervision meetings, interviews, role-play activities, their own voice to improve communication skills, and more personal activities. The survey results and focus group results correlate with the students' initial perceptions of device deployment in that the majority have also used the devices to record lectures.

The following gives a little more detail on how the devices have been used and the students' experiences.

**Lectures** – Students have found audio recording lectures really helpful, providing new learning opportunities based upon clarifying their understanding, reconsidering what was said, or reviewing misheard or missed sections of the lecture. In general this process seems to promote student reflection upon the lectures. For one international student the mere act of recording has increased their focus and attention in the lecture and their subsequent recall of it. Others have said that it has enabled them to understand an academic with a strong accent and to share the lectures with peers who did not attend.

**Guest lectures** – The University of Sheffield students have reported recording guest lectures. The students have found this particularly beneficial, as there is little or no opportunity to speak to the lecturer after the lecture for clarification. Nevertheless, the students recommend that in future the guest lecturer should be “mic-ed up” and recorded by the institution and that the recording should be distributed via a podcast.

**Personal audio notes** – Half the students at Sheffield Hallam University reported using the recorder to make personal audio notes; that is, utilising the device as an external memory aid to note personal memoranda, ideas for

assessment, and observations to support their reflection on learning. This was reinforced by some University of Sheffield students.

**Group work** – At both institutions some students have used the equipment to record group work. The recordings enabled them to provide an accurate record who said what, decisions and assigned group tasks. Recording conversations also saves group members from having to take minutes or checking the minutes for accuracy.

**Laboratory sessions** – Some students have recorded the academic support, academic feedback and other learning opportunities from laboratory sessions. However, academic feedback is time and cohort size dependent, limiting the personal feedback that can be given in a laboratory session.

**Seminars and tutorials** – Some students have recorded seminars and tutorials, which can range from academic dialogues to small group discussions. However, the students report that typically the background noise in these situations is louder than in lectures, resulting in poorer sound quality and therefore providing less learning opportunities.

**Tutor feedback** – Where students have had the opportunity to receive verbal feedback, it has been most helpful to record it, combating the difficulty that students can have in recalling everything. The availability of a recording provides the student with the opportunity to review, clarify and reflect on the feedback.

**Work placements** – Some students at Sheffield Hallam University reported using the device to record conversations with industrial tutors, team meetings, feedback discussions and other learning opportunities during their work placements.

**Sharing** - Students at both institutions reported that there is an additional learning benefit from sharing recordings with one's peers to support each other's learning. Nevertheless, it is important to note that students recognised that supplementary nature of the audio recordings; it was not regarded as a substitute for attending the lectures in person.

#### **Other Usage:**

The devices were also used for,

- presentation preparation - recording and listening back to themselves and modifying presentation;
- recording role-play meetings;
- interviewing;
- recording corridor conversations;
- supporting one-to-one project supervision;
- supporting one-to-one or one-to-few tutorials;
- helping to clarify group assignments by sharing the recordings with peers;
- recording academic assessment briefing.

**Reflections** - Some students recommended having recorders with them at all times, so they are readily available for any learning opportunity as and when they arise. The majority of students reported listening to the audio recordings every few days, but not all of the students reported listening to all of the recordings. The students typically listened to the recordings at home during their personal study time as they reflect on a lecture, prepare for or complete an assessment task or homework. Students describe the recordings as an opportunity to reflect upon, re-connect to and clarify their understanding of the material in the recordings. Students at the University of Sheffield recommended using the devices to record one-to-one situations; for example, when a tutor is explaining a difficult maths problem, it can be recorded and used later to help understand other similar maths problems. The majority of Sheffield Hallam University students believed that audio recording has helped them gain a deeper understanding of their studies and had a positive impact on their learning.

Finally, it should be noted that this section gives preliminary and summary evaluation results only; both the project and evaluation are ongoing. A more detailed evaluation report is in preparation.

#### **4. Conclusion**

The results illustrate that the learning opportunities are not restricted to recording lectures. However, the recording of lectures provides rich and enhanced learning resources that are over and above the quality of the lecture notes. The recording of lectures provides opportunities for students to revisit and clarify their understanding and to work up their written notes. Listening a second time to the recording enables the students to reflect upon what was said and to rectify any misconceptions or mishearing, and to reconsider and reconnect to the lecture topic, associated material and their own learning process.

Audio recordings provide rich resources, which are valued by students. This is demonstrated by the observation that the majority regularly review and reflect upon their recordings, often while at home studying.

Students typically recommend carrying the audio device at all times and using the device to record any learning opportunities as and when they arise in the course of the day. To quote one student from University of Sheffield,

*“There was a time when I thought I had lost it and I felt like some part of myself was missing because I was so used to using it. When I found it I was really happy.”*

#### **References**

Fidler, A., Middleton, A. and Nortcliffe, A., (2006) “Providing added value to Lecture materials to an ipod generation”, 6th Conference of the International Consortium for Educational Development, Sheffield, UK , June 2006

Cohen, L., Manion, L., and Morrison, K. (2000) Research methods in education. 5th edition. Routledge and Falmer, London and New York.

Intons-Peterson, M. J. and Fournier, J. (1986) External and internal memory aids: when and how often do we use them? Journal of Experimental Psychology: General, 115(3), pp. 267-280

Middleton, A. and Nortcliffe, A. L. (2008) "Understanding effective models of audio feedback" in Ed Rajarshi Roy (ed.) *Engineering Education*, (forthcoming).

Middleton, A. and Nortcliffe, A. (2009) "Effective assignment feedback through timely and personal digital audio engagement" in John O'Donoghue (ed) *Technology Supported Environment for Personalised Learning: Methods and Case Studies* (forthcoming)

Race, P. (2001) *A Briefing on Self, Peer and Group Assessment* in LTSN Generic Centre Assessment Series No 9 LTSN York. Race P. (2006) *The lecturer's toolkit (3rd edition)* London: Routledge.