Does 'MP3' Audio Feedback Enhance Students' Learning Skills? An International Case Study

Tomayess Issa, Curtin University, Australia

Pedro Isaias, Universidade Aberta (Portuguesse Open University) and ADVANCE - ISEG, Portugal

Theodora Issa, Curtin University, Australia

Abstract: Feedback in higher education, via either traditional or technology approaches, is essential to promote students' skills and knowledge. This study aims to assess students' responses to the lecturer's 'MP3' audio feedback in four postgraduate units in Australia and Portugal. Two methods are used to provide feedback to the students: traditional and audio 'MP3' feedback. The former tracks via a Microsoft word application system, giving academics the chance to include comments regarding what went wrong, and how things might be improved in terms of the topic, structure, layout, style, referencing, grammar and syntax, and proofreading requirements embedded within the assessment. The 'MP3' approach, on the other hand, recodes the feedback message using the free software 'Audacity'. This 'MP3' contains a personalized message highlighting the good and bad points, and provides suggestions for improving the final submission. This study provides empirical evidence based on three sources: informal and formal student feedback, and an online survey. The 184 students who participated in the study appeared to be pleased and quite satisfied with the 'MP3' audio assessment feedback approach as their learning outcomes and their writing, research, listening, and technology skills were enhanced.

Keywords: MP3 Audio Feedback, Learning Skills, Australian and Portuguese Higher Education

Introduction

The main intention and goal of this study is to investigate students' attitudes to two methods used by lecturers to provide feedback: the traditional MS Word application and the MP3. It was noted that these approaches have become essential in the learning sector, especially in higher education. A particular software, 'Audacity', is required to record an MP3 audio feedback, which allows students to review and listen to their lecturer's feedback using any device (Siwinski 2008). Robinson & Ritzko (2009) confirm that using Audacity software in the current learning environment will enhance students' learning skills as the listening aspect is important, especially for ESL (English as a second language) students as well as students of English language. It provides unlimited opportunities for feedback, and lecturers can use this software to record lectures for students to 'clarify difficult topics or to explain complex concepts or processes step-by-step' (Brooks and Hestnes 2010, 21).

This occurs in the Information Systems (IS), Information Technology Seminar (ITS) Technological Infrastructure (TI) and Web site Planning and Development (WSPD) postgraduate units, where both traditional and audio 'MP3' feedbacks are used to provide feedback for the assessments. Furthermore, each week the first and second authors recorded a review of the lecture notes for students. This assisted students to review and revise the lecture notes before attempting the final exam and mid-semester test. It revealed that the MP3 audio facility has several advantages in teaching and learning since it is more flexible; it is user-friendly and motivates and engages students; it has mobility, and achieves better cognition and learning compared with the other styles (Hulsmann 2009). This study will make a valuable contribution to higher-education teaching and learning literature, in terms of the methodological, theoretical and practical perspectives, especially in providing lecturer-to-student feedback via audio. This study is organized as follows: technology in higher education, methodology and research question,

COMMON GROUND

participants and assessments, results, and discussion and recommendations, limitations and conclusion.

Technology for Higher Education

Technology plays a major role in the higher-education sector these days since the majority of students are predominantly from the Y generation which depends fully on technology, including the Internet. To capture their interest, the teaching and learning strategies utilized in the universities are integrating technology in each unit to engage and motivate students and make their studies more interesting and appealing. It was observed that by adopting Audio Feedback technology into the teaching and learning sector, especially in higher education, students were becoming more interested in their studies and in sharing their knowledge and skills with their colleagues, thereby making classes fully interacting. By using audio feedback, lecturers are able to use their time more efficiently, as confirmed in a recent study by Lunt & Curran (2010, p.761) stated that 'one minute of audio is equal to six minutes of writing'. Merry & Orsmond (2007; 2008) confirm that audio feedback is more practical compared with another feedback as its electronic format makes it easy to archive, copy and distribute.

An 'MP3' file can be very easily produced using 'Audacity' software. A lecturer can prepare notes relevant to the assessments and later record these for 10 to 15 minutes depending on the nature of the assessment. Later, the file can be saved as MP3 or WAV format (Nightingale 2009; Sha 2010) and later uploaded to the blackboard to allow the students to listen to it. From the educational perspective, it was documented that the use of 'MP3' audio feedback in learning is 'relatively easy and inexpensive; instructors could easily use them for distribution of supplemental information or review of previously covered materials' (Robinson and Ritzko 2009, 38). To sum up, audio 'MP3' and traditional feedback (tracking via Microsoft word) can be a challenge to lecturers in terms to time, style, voice, quality and how these feedback methods will enhance students' learning skills. It was noted that this exercise assisted lecturers and students simultaneously to learn from each other in terms of their attitudes and methods of report writing and presentation. Lecturers indicated that the integration of audio MP3 and traditional feedback in their unit allowed them to have more time to focus on other aspects, including research and collaboration with colleagues in teaching and research locally and globally. By the same token, Hulsmann (2009) concludes that integrating technology in learning is mutually very helpful and interesting for both students and lecturers.

Methodology and Research Question

This study will consider the question 'Does 'MP3' audio feedback enhance the learning skills of postgraduate students in Australia and Portugal?' To address this question, three approaches for collecting data are adopted, namely: formal feedback, informal feedback, and an online survey designed and approved by the university ethics committee to examine students' responses to MP3 audio feedback. Qualitative and quantitative methods were employed to collect the necessary data to address the research question. The formal and informal feedback collected from IS, IT and ITS units in Australia, while the online survey responses from TI, IS and WSPD students for the 2011 and 2012 period, with the response rate being 71%, 29% and 100% respectively.

Durham, Tan, & White (2011, 5) posit that a combination of research methods will assist 'to address the research question in sufficient depth and breadth'. Furthermore, these methods will decrease the chance of discrepancies between the findings, and enhance their strengths and reduce their weaknesses (Hesse-Biber 2010; Maudsley 2011; Sullivan 2011; Teddlie and Tashakkori 2009; Wiggins 2011). The use of both approaches in this study will allow the researchers to obtain a comprehensive understanding of students' reactions to the MP3 audio

feedback method. It is anticipated that students' feedback will assist the researchers to improve and enhance their teaching strategies in the future.

The study data was derived from three sources: formal feedback, informal feedback and a survey. The formal feedback is a method used by the university to collect feedback from students regarding their learning outcomes, learning experiences, learning resources, assessments, feedback, workload and overall satisfaction. As for the informal feedback, this is a teaching and learning initiative. This feedback is intended to assist the lecturer to improve and enhance the unit before the end of the semester by refining certain aspects of the course to cater for students' needs and improve the methods teaching and learning. The third source is an anonymous online survey which was distributed to students following the upload of the 'MP3' feedback (i.e. the embedded comments and track changes on their assessments and the 'MP3' audio files). The survey was divided into three parts: part 1: the demographic information; part 2: 'MP3' Feedback, which allowed the researchers to examine students' reactions to listening to 'MP3' assessment feedback and their reactions to the particular characteristics of 'MP3'.

A Likert five-point scale was used for each section, and the participants were also given the opportunity to provide additional comments after each section. All the pages of the survey contained instructions at the top of the page and a progress bar at the bottom to provide feedback to users about their proximity to completion. A formal letter was emailed to the students with the survey link. Pages 1-5 presented the survey items with three questions per page to minimize scrolling, and the concluding page thanked respondents for their participation. A description of each part was provided to the participants to explain its purpose.

Participants and Assessment Tasks

This study involved students enrolled in four postgraduate units in Australia and Portugal; the units comprised IS, ITS and TI in Australia, and WSPD in Portugal. The 184 participants were mainly from Australia, Asia (Including India), and Europe, Middle East, America (North and South) Mauritius and Africa. A mixture of different nationalities and cultures plays an important role in these units as each participant interacts and shares his/her knowledge, skills, experience, and cultural perspective with their colleagues in person or via online discussion. Table 1 provides several demographic details of the IS, ITS, TI and WSPD students for the 2009-2012 period.

Table 1: Postgraduate Units Participants – Australia and Portugal (2009 – 2012)

Unit	Students #	Gender		Nationality						
		Female	Male	Australia	Asia (Including India)	Europe	Middle East	America (A) /North (N) and South (S)	Mauritius	Africa
IS	52	15	37	1	37	0	6	1(NA), 1 (SA)	2	4
ITS	36	9	27	1	29	0	3	2 (SA)	0	1
TI	84	22	62	13	50	0	16	3(SA)	0	2
WSPD	12	2	10	0	0	9	0	1(SA)	0	2
Total	184	48	136	15	116	9	25	8	2	9

Prepared by the authors

The units' assessments and syllabus are mainly designed with university graduate attributes in mind (see Table 2).

Table 2: Assessment Tasks Activities for Postgraduate Units - Australia and Portugal (2009 – 2012)

Unit	Assessment Tasks / Plus the Mark	Mark	Unit Syllabus
IS	Mini Tests	25%	IS unit is primarily centred on usability and human-computer interaction (HCI) principal's design toward users interface including website
	Reflective Journal (7 Individual and 3 Teamwork)	40%	
	Contribution to Group Discussions – Blackboard	10%	
ITS	Three Journals	30%	The ITS unit is mainly focused on issues relating to strategic development, IT business, sustainability tools and Green IT and other related issues
	Individual Presentation of a IT Sustainable Strategy and Report Writing	55%	
	Wiki for Collaborative Writing	15%	
TI	Mid Semester Test	20%	TI unit is focused mainly on Local Area Network, Wide Area Network, Security and the latest technologies in the market.
	Presentation and Report Writing	40%	
	Exam	40%	
WSPD	Six Group Activities	60%	The WSPD unit is mainly focused on issues relating to Web Site Planning and Development through and Human Computer Interaction approach and other related issues.
	One final individual work	40%	

Prepared by the authors

Results

This study focuses mainly on the lecturers' use of MP3 audio feedback method to provide feedback to students in four postgraduate units in Australia and Portugal. This study aims to examine students' attitudes to MP3 audio feedback method. To conduct the research study, the researchers used three methods namely: informal feedback, formal feedback and the survey.

Students Informal Feedback

As indicated previously, the informal feedback was distributed during week 4 of the semester to obtain students' anonymous feedback to teaching style, assessment tasks, 'MP3' audio feedback, and discussion board. The majority of students confirmed that receiving feedback via 'MP3' for assessment purposes or to review material, improved and enhanced their understanding of course content, and their learning skills.

Via the informal feedback, students provided the following comments in relation to the 'MP3' audio feedback and the lecture summary:

> 'Listening to MP3 often assist me to improve my learning and teaching and is easy to understand the message from the lecturer'

> 'Excellent imitative, we can receive the presentation and capture important information', 'Excellent and Great way for assessment's feedback to improve our second submission'

> 'It was really helpful for me, especially MP3 files'; as I said, Like the MP3 files, it is cool', 'It is a good idea having MP3 files makes us listen and read lectures at the same time, also you can replay, rewind and review the recording if something is unclear'.

> 'Yes the voice is clear, and I have learned something I need to modify and pay more attention to', also

> 'MP3 files are good as they provide a personal touch and help understand more'.

> 'This is very useful as a summary or to revisit the material covered in the lectures'; 'I can have an overview on my studies with lecturer MP3 files are good, clear and explains what is needed'.

This type of feedback indicates that students are pleased with the audio feedback as they consider that it provides a better personal touch. Moreover, students can enhance their learning skills by being able to listen to their feedback more than once using any device at a convenient time and place. Rotheram (2007 5) posits a similar argument: 'my students very much liked getting an MP3 file from me containing a few minutes of feedback on their Assessment Tasks. They appreciated the personal touch, without it being, perhaps uncomfortably, in person. Withholding the mark until near the end made them listen to my comments, rather than skimming or skipping what I was saying. They valued being able to replay my words until they understood the point I was making'.

Students Formal Feedback

The second method is the formal feedback, which is collected by the university at the end of each semester. This feedback is anonymous and provides qualitative and quantitative information in respect to the unit. Table 3 shows the quantitative results from the feedback in 2009 to 2012

which ranged from 80% to 100%. This shift in the quantitative results indicated that students are pleased with the lecturer feedback and methods which are used, and that this feedback assists them to achieve their learning outcomes. Table 3 confirmed that the present feedback, including the overall satisfaction, indicates that 'MP3' audio is more acceptable compared with the previous feedback methods. From the researchers' perspective, the current strategy is easier and more enjoyable method, since the recording equipment is easy to use, simple to set up, captures all comments, and the tone and voice adds a personal touch to the assessment feedback. Currently, the university provides training in the use of the latest technology and encourages lecturers to integrate this technology in their learning and teaching strategies to cater for the new Y generation who are the predominant users of these technologies. The formal feedback produced these qualitative comments from students:

> 'The feedback for IS the unit is running every week, which is useful for improving the student satisfaction and to improve his/her learning'.

> 'Lecturer was at all times available to answer queries via MP3, email or personally to improve our learning knowledge'; MP3 summaries of concepts are very useful for reviewing topics covered', 'I really support the MP3 files that were sent after each session'.

> 'What made TI unit as good as it is not is definitely the teaching style and the numerous feedback we received from the lecturer', 'Lecturer was at all times available to answer our queries via various methods, i.e. MP3, discussion board (under the blackboard) and email'.

By the same token, a recent study indicates (Allen and Bentley 2012; Morrissey 2012) that using 'MP3' technology for assessment feedback will assist students to identify their weakness(es) and encourages them to perform better in the next submission; and this can lead to students quickly developing independent learning skills. Table 3, confirmed that students were pleased with lecturers' feedback in general, as this feedback help them to achieve the unit learning outcomes and improve their skills. Furthermore, item 11 "Overall Satisfaction" confirmed that lecturers' feedback play a major role to increase students' commitment and satisfaction with the unit.

Table 3: eVALUate Results for Period 2009 – 2012

Year/Semester/unit	Students Enrolled	Responses Rate	Item 5: Feedback on my work in this unit helps me to achieve the learning outcomes		Item 11: Overall, I am satisfied with this unit.	
			Unit	University Average	Unit	University Average
2011/1 – IS	18	56%	100	78	100	83
2010/1 – IS	15	47%	100	78	100	83
2009/1 – IS	20	55%	100	76	100	83
2011/2 – ITS	18	72%	92	78	92	84
2010/2 – ITS	17	59%	90	79	90	84
2012/1 – TI	13	54%	100	78	100	84
2011/1 – TI	22	59%	92	78	92	83
2010/1 – TI	25	48%	100	78	100	83
2009/1 – TI	19	26%	80	76	100	83

Prepared by authors

Students Audio Feedback – Online Survey

The third source used to obtain students' reactions to 'MP3' audio feedback is the online survey. The online survey responses were elicited from TI, IS and WSPD students for the 2011 and 2012 period, with the response rate being 71%, 29% and 100% respectively. The online survey was divided into three parts: demographic information was sought in the first part, while part two and three used the five-point Likert scale (ranging from Strongly Disagree, neutral, to Strongly Agree) to gauge students' reaction to the MP3 audio methods of feedback, and the concluding page thanked respondents for their participation. Besides using the Likert five-point scale for this survey, the researchers provided a section where participants could include other comments regarding each section. SPSS software (v.19) was used to analyze and evaluate the online survey results. Furthermore, to test the differences in medians between the three postgraduate units, the Kruskal-Wallis Test was used (Acar and Sun 2013; Swinnen et al. 2013).

The results confirmed that listening to 'MP3' files assists students to enhance their learning skills, in particular, their writing and learning skills, as well as satisfying students' needs so that they can perform better in the next Assessment Tasks/submission. Using MP3 files in the higher education provides a personal touch as the three units confirmed with high mean that definitely MP3 files are good and assist students to understand the weakness and strengthens in their assessment task from the lecturer's tone of voice. The only significant issue regarding the MP3 method of feedback is the practical aspect of listening to the MP3 files via various devices. The SPSS results confirm that IS and TI students can listen to lecturer feedback from anywhere, anytime and using any device. However, the WSPD students have a different opinion, as their mean is less than that of IS and TI students as shown in Table 4.

Table 4: Online Survey: The Use of the MP3 Feedback

The use of the MP3 feedback:	Unit	Res #	SD	D	N	A	SA	Mean	SD	Kruskal-Wallis Test
										P Value
Has improve my writing skills	IS	9	0	1	5	3	0	3.22	.667	0.25
	TI	22	0	1	12	7	2	3.45	.739	
	WSPD	7	1	2	2	2	0	2.71	1.11	
Has enhance my learning skills	IS	9	0	0	2	7	0	3.78	.441	0.28
	TI	22	0	1	3	12	6	4.05	.785	
	WSPD	7	0	1	2	3	1	3.57	0.97	
Has saved my time, as I can listen to MP3 assignment feedback from anywhere, anytime and in any device	IS	9	0	0	1	4	4	4.33	.707	0.04
	TI	22	0	1	3	10	8	4.14	.834	
	WSPD	7	0	2	3	1	1	3.14	1.069	
Has satisfy my needs and to perform well in the next assignments	IS	9	0	0	0	6	3	4.33	.500	0.64
	TI	22	0	1	4	10	7	4.05	.844	
	WSPD	7	0	0	2	3	2	4	0.816	
Has provide a personal touch	IS	9	0	0	1	3	5	4.44	.726	0.82
	TI	21	0	1	1	10	9	4.29	.784	
	WSPD	7	0	0	1	2	4	4.4	0.786	

Prepared by authors

The following are comments from the TI and IS students regarding the use of MP3:

'The best benefit is that an MP3 can be paused and rewarded, especially for sections that I have difficulty understanding. It gives me some time to think or do a Google search for the topic where we cannot do in lectures'.

'MP3 Feedback was great! It was as good as having a one-to-one discussion with the Lecturer. Excellent way to provide feedback to students, would definitely recommend this implementation to other units too'.

'In distance learning, based on Forums (written communication), MP3 feedback enables a closer approximation between lecturer and student.

'In my view, the big advantage of feedback via MP3 versus written feedback has to do with the impact on the message since the voice tonality used by the lecturer (of approval or reproved for example) is something that the students (if not all, at least the majority) are quite sensitive. It gives the feedback a more human touch'.

Merry & Orsmond (Merry and Orsmond 2008 2007) posit the same argument that students listened to the audio feedback more than once and took notes as a means of enhancing their work. Furthermore, the survey discussed the MP3's characteristics, including: voice, quality, and size, ease of use, simplicity, cost, practicality, flexibility and speed, all of which favourably compared with the traditional methods. The Kruskal-Wallis Test confirmed that students in the three units have a similar attitude to the MP3's characteristics (see Table 5) except for quality, as IS and TI students indicated that 'MP3' quality is outstanding, while WSPD students are quite pleased by the quality. Students commented on MP3's characteristics as follows:

'It was not easier or simpler; it was nice to have it in addition to traditional feedback. And voice 'sounds with emotions and sends me signals like e.g. 'you do well, keep trying', so I didn't feel frustrated after all the mistakes I did'; 'good...easy to understand... can repeat the mp3 if cannot understand'.

'For me I simple prefer to listen to the feedback than reading it'

'There were some issues with the quality of some of the feedbacks since the sound was not very audible, but we could tune up and listen properly'.

Table 5: Online Survey: MP3's Characteristics

The MP3:	Unit	Res#	SD	D	N	A	SA	Mean	SD	Kruskal-Wallis Test P Value
Voice was clear	IS	9	0	1	1	4	3	4.00	1.000	0.42
	TI	22	0	1	2	10	9	4.22	0.812	
	WSPD	7	0	0	2	4	1	3.85	0.690	
Quality was good	IS	9	0	1	1	4	3	4.00	1.000	0.07
	TI	22	0	2	2	9	9	4.14	.941	
	WSPD	7	0	3	2	1	1	3	1.155	
File size was appropriate	IS	9	0	0	3	3	3	4.00	.866	0.94
	TI	22	0	0	4	12	6	4.09	.684	
	WSPD	7	0	0	2	3	2	4.00	0.8165	
Is easier compared with the traditional marking method	IS	9	0	2	1	4	2	3.67	1.118	0.71
	TI	22	0	2	5	7	8	3.96	.999	
	WSPD	7	0	0	1	4	2	4.14	0.69	
Is simpler compared with the traditional marking method	IS	9	0	2	1	2	4	3.89	1.269	0.97
	TI	22	0	0	7	7	8	4.05	.844	
	WSPD	7	0	0	1	4	2	4.14	0.69	
Is cheaper compared with the traditional marking method	IS	9	0	3	1	3	2	3.44	1.236	0.73
	TI	22	0	2	10	4	6	3.64	1.002	
	WSPD	7	0	0	5	2	0	3.28	0.488	
Is more practical compared with the traditional marking method	IS	9	0	1	1	3	4	4.11	1.054	0.88
	TI	22	0	0	5	9	8	4.14	.774	
	WSPD	7	0	0	2	3	2	4	0.81	
Is more flexible compared with the traditional marking method	IS	9	0	1	0	4	4	4.22	.972	0.35
	TI	22	0	2	3	8	9	4.09	.971	
	WSPD	7	0	0	3	3	1	3.71	0.75	
Is faster compared with the traditional making method	IS	9	0	2	1	2	4	3.89	1.269	0.40
	TI	22	0	0	6	8	8	4.09	.811	
	WSPD	7	0	0	4	2	1	3.57	0.78	

Prepared by authors

From the survey results, it was noted that the adoption of audio feedback in IS, IT and WSPD units reduces the lecturers' workload while simultaneously improving students' learning skills. By the same token, McFarlane and Wakeman (2011, 4) stated that 'producing audio

feedback could make more efficient use of tutor's time, as more detailed guidance and examples of how to improve the work could be offered in a lesser timescale'. There was a mixed reaction to the use of the traditional method of feedback in comparison with audio feedback. Here are some comments from the students regarding the traditional method of feedback:

> 'It is easier for me to understand written words than a speech so it was better for me. But the written feedback is mostly the constitution of the facts. It did not contain advice what I should improve in my skills'

> 'All lecturers' feedbacks are important for the improvement of our capabilities being then in MP3 or traditional format'. These outcomes and statistics indicate that the majority of students were enthusiastic about the new MP3 feedback version compared with the traditional feedback'

Discussion and Recommendations

This study reveals students' attitudes to audio file feedback compared with traditional feedback. Students' feedback confirmed that the audio 'MP3' feedback used in the postgraduate units in Australia and Portugal enhanced students' learning skills. The benefits of 'MP3' audio feedback were identified via the informal, formal and the online survey. Students indicated that such feedback helped them to improve their current submission and learn from their mistakes when preparing subsequent submissions. Using 'MP3' audio feedback allows students to pause, forward and rewind especially for sections that they have difficulty understanding. MP3 is an excellent tool to adopt in higher education to improve the relationship between lecturers and students, since the lecturers' tone and voice will bring a personal touch to the assessment feedback. This is indicated by the student's comments and confirmed by the reviewed literature.

The MP3 feedback method in higher education could be influenced by a range of variables, including the unit assessments, class size, facility and, most importantly, the students' reaction to the feedback. Students who receive the MP3 feedback are required to listen carefully and act on the advice and suggestions in order to improve the quality of subsequent submissions. The majority of the online survey respondents indicated that MP3 feedback assists them in various ways; it improves their listening and writing skills, and fosters a better interpersonal relationship between the lecturers and students. Finally, the acquired and improved skills are transferable to the students' future workplaces. Munoz-Organero, Munoz-Merino, & Kloos (2010 63) indicate that students will 'no longer passively consume learning materials but actively create and disseminate knowledge', while (Riddle 2010, 23) indicates that podcasting has quickly found its way into the classroom, and why not? Moreover, it is 'free, easy and accessible, and it has the ability to improve education for students from kindergarten to college'.

Overall, it was concluded that audio feedback is very effective for students' learning processes and improves assessment submission, thereby confirming the study's aims and objectives. (Allen and Bentley 2012; Gould and Day 2012; Lynch, McNamara, and Seery 2012). From the authors' perspective, this method is more effective and efficient compared with the traditional methods, as lecturers need to be fully engaged in the process in order to ensure that students receive the benefits and support provided by the audio feedback. Finally, students confirmed that audio feedback is essential, flexible and easy, simpler, cheaper, practical, flexible and faster.

The key recommendations for using MP3 feedback in higher education are (Allen and Bentley 2012; Beaumont, O'Doherty, and Shannon 2011; Gould and Day 2012; Handley and Williams 2011; Lynch, McNamara, and Seery 2012; Merry and Orsmond 2007):

1- Familiarize yourself with the audio equipment, and test it before you proceed.
2- Agree on timing and feedback content.

3- Make your feedback concise and succinct.
4- Relax and ensure that your speech is well-paced.
5- Ensure that file size is appropriate.
6- Ensure that file quality is good.
7- Ensure that your voice is clear and well-defined.
8- Ensure that you provide positive feedback for good aspects of students' work.
9- Make sure to provide some feedback examples to improve his/her submission.
10- Make sure to personalize your feedback by introducing yourself, the assessment task, and make sure to refer to the student by his/her name.

Limitations

This study was limited to four postgraduate units in Australia and Portugal. The online survey evaluation and other sources confirm that there was a correlation with the research questions, especially in relation to the Audio feedback usage "MP3." In future research, larger and more diverse groups of students are required in order to confirm the research aims and objectives.

Conclusion

This study examined students' reactions to the MP3 feedback method of assessment. It was noted that the majority of students were keen to learn how this method could assist them to improve their learning skills. Students' feedback indicated that the use of audio feedback in the current teaching and learning environment, as this feedback assisted students to improve their assessment tasks submission and develop new different innovation toward teaching and learning, as listening to the lecturer's notes motivated them to think twice before submitting the next assessment task. Furthermore, this style of feedback enhances students' writing, reading, research, searching and listening skills, as well our study confirmed that audio feedback enhances students learning skills. This study will assist researchers and those in schools and the higher education sector to become aware of the benefits of audio feedback in teaching, as well a list of recommendations for using MP3 feedback in higher education is provided. This study was conducted using students in four postgraduate units in Australia and Portugal only, with limited student numbers; however, the lecturers intend to include more units and students in future studies to be conducted in Australia and Portugal to examine students' reactions to the MP3 assessment feedback.

REFERENCES

Acar, Elif F., and Lei Sun. 2013. "A Generalized Kruskal–Wallis Test Incorporating Group Uncertainty with Application to Genetic Association Studies." *Biometrics* 69 (2): 427-435. doi: 10.1111/biom.12006.

Allen, Robert , and Steve Bentley. 2012. "Feedback Mechanisms: Efficient and Effective Use of Technology or Waste of Time and Effort " In *STEM Annual Conference 2012 London*

Beaumont, C, M O'Doherty, and L Shannon. 2011. "Reconceptualising Assessment Feedback: A Key to Improving Student Learning?" *Studies in Higher Education* 36 (6): 671 - 687.

Brooks, P, and B Hestnes. 2010. "User Measures of Quality of Experience: Why Being Objective and Quantitative Is Important." *IEEE Network* March/April: 8 - 13.

Durham, J, BK Tan, and R White. 2011. "Utilizing Mixed Research Methods to Develop a Quantitative Assessment Tool: An Exmaple from Explosive Remnants of a War Clearance Program " *Journal of Mixed Methods Research* 5 (2): 1 - 15.

Gould, Jill, and Pat Day. 2012. "Hearing You Loud and Clear: Student Perspectives of Audio Feedback in Higher Education." *Assessment & Evaluation in Higher Education*: 1-13. doi: 10.1080/02602938.2012.660131.

Handley, Karen , and Lindsay Williams. 2011. "From Copying to Learning: Using Exemplars to Engage Students with Assessment Criteria and Feedback " *Assessment & Evaluation in Higher Education* 36 (1): 95 - 108.

Hesse-Biber, S. 2010. "Emerging Methodologies and Methods Practices in the Field of Mixed Methods Research." *Qualitative Inquiry* 16 (6): 415 - 418.

Hulsmann, T. 2009. "Podcasting for Learning in Universities." *Distance Education* 30 (3): 451-458.http://www.informaworld.com/smpp/content~content=a915714799~db=all~jumpty pe=rss.

Lunt, T, and J Curran. 2010. "Are You Listening Please? The Advantages of Electronic Audio Feedback Compared to Written Feedback." *Assessment & Evaluation in Higher Education* 35 (7): 759 -769

Lynch, Raymond , Particia Mannix McNamara, and Niall Seery. 2012. "Promoting Deep Learning in a Teacher Education Programme through Self-and Peer-Assessment and Feedback " *European Journal of Information Systems* 35 (2): 179 - 197.

Maudsley, G. 2011. "Mixing It but Not Mixed-Up: Mixed Methods Research in Medical Education (a Critical Narrative Review) " *Medical Teacher* 33 (2): 92 - 104.

McFarlane, K, and C Wakeman. 2011. "Using Audio Feedback for Summative Purposes " *Innovative Practice in Higher Education* 1 (1): 1-20.

Merry, S, and P Orsmond. 2007 "Students' Responses to Academic Feedback Provided Via Mp3 Audio Files." In *The Science Learning and Teaching Conference* 100 - 114.

———. 2008 "Students' Attitudes to an Usage of Academic Feedback Provided Via Audio Files." *Bioscience Education eJournal* 11: 1 - 11.

Morrissey, John. 2012. "Podcast Streeing of Independent Learning in Higher Education " *Journal of Teaching and Learning in Higher Education* 4 (1): 1-9.

Munoz-Organero, Mario, Pedro Munoz-Merino, and Carlos Delgado Kloos. 2010 "Personalized Serevice-Oriented E-Learning Environments " In *IEEE Internet Computing* 62 - 67.

Nightingale, S. 2009. Podcasting in Education. Laptop Leaders' Academy Accessed 15 Feb 2011,http://sn005.k12.sd.us/Presentations/Podcasting/LaptopAcademyPodcasting%20In %20Education03.ppt.

Riddle, Johanne. 2010. "Podcasting in the Classroom: A Sound Success." *MultiMedia and Internet@schools* 17 (1): 23 -26.

Robinson, S, and J Ritzko. 2009. "Podcasts in Education: What, Why and How?" *Allied Academies International Conference, Proceedings of the Academy of Educational Leadership*, *New Orleans*

Rotheram, Bob. 2007 "Using an Mp3 Recorder to Give Feedback on Student Assignments. ." *Educational Developments* 8 (2): 1-5.

Sha, G. 2010. "Using Tts Voices to Develop Audio Materials for Listening Comprehension: A Digital Approach " *British Journal of Educational Technology* 41 (4): 632- 641.

Siwinski, C. 2008. Podcasting: A New Genre Exciting Students. Germantown Academy - Curricular Technology Specialist. Accessed 15 Feb 2011, http://www.ga.k12.pa.us/curtech/podcasting08/podcasting08_files/podcasting08.ppt.

Sullivan, Oriel. 2011. "An End to Gender Display through the Performance of Housework? A Review and Reassessment of the Quantitative Literature Using Insights from the Qualitative Literature." *Journal of Family Theory & Review* 3 (1): 1-13. doi: 10.1111/j.1756-2589.2010.00074.x.

Swinnen, Nina, Sophie Smolders, Ariel Avila, Kristof Notelaers, Rik Paesen, Marcel Ameloot, Bert Brône, Pascal Legendre, and Jean-Michel Rigo. 2013. "Complex Invasion Pattern of the Cerebral Cortex Bymicroglial Cells During Development of the Mouse Embryo." *Glia* 61 (2): 150-163. doi: 10.1002/glia.22421.

Teddlie, C, and A Tashakkori. 2009. *Foundations of Mixed Methods Research - Integrating Quantitative and Qualitative Approaches in the Social and Behavioral Sciences*. USA: SAGE Publisher

Wiggins, B. 2011. "Confronting the Dilemma of Mixed Methods " *Journal of Theoretical and Philosophical Psychology* 31 (1): 44-60.

ABOUT THE AUTHORS

Dr. Tomayess Issa; Tomayess Issa is a senior lecturer at the School of Information Systems at Curtin University, Australia. Tomayess has vast experience in Australian tertiary education, teaching Usability and Human-Computer Interaction, Social Network, Sustainability and Green IT, Networking and Operating Systems. Tomayess completed her doctoral research in Web development and Human Factors. As an academic, she is also interested in establishing teaching methods and styles to enhance the students' learning experiences and resolve problems that students face. Tomayess Issa is a member of an international conference program committee of the IADIS International Conference on Internet Technologies and Society and IADIS International Conference on International Higher Education. Furthermore, she initiated the IADIS conference for Sustainability, Green IT and Education. Currently, she conducts research locally and globally in information systems, HCI, usability, the Internet, sustainability, green IT, cloud computing, social networking and teaching and learning. Tomayess participated in a couple of conferences and published her work in several peer-reviewed journals, books, book chapters, papers and research reports.

A/Professor Pedro Isaias: Pedro Isaias is an A/Professor at the Universidade Aberta (Portuguese Open University) in Lisbon, Portugal, responsible for several courses and director of the master's degree program in Electronic Commerce and the Internet since 2003. He is also an invited professor at ISEG – University of Lisbon. He is co-founder and president of IADIS – International Association for Development of the Information Society, a scientific non-profit association. He holds a PhD in Information Management (in the specialty of information and decision systems) from the New University of Lisbon. Author of several books, papers and research reports and headed several conferences and workshops in the information systems. He is a member of the editorial board of several journals and program committee member of several

conferences and workshops. Currently, he conducts research activity related to Information Systems in general, E-Learning, E-Commerce and WWW-related areas

Dr. Theodora Issa: Theodora Issa is a Lecturer at School of Management, Curtin Business School, Curtin University, Australia. Theodora's PhD thesis was on ethical mindsets, spirituality and aesthetics that has been the recipient of the 2010 EFMD/Emerald Outstanding Doctoral research award. Theodora holds a Master of Business Administration, a Master of Electronic Commerce and a Master of Management Research. Theodora's engagement with higher education started with her teaching at the School of Information Systems in the areas of Web Design and Problem analysis, during which period she supervised students who implemented industry-based information systems projects. Thereafter, Theodora moved to the School of Management teaching management and business ethics for undergraduate and postgraduate. Theodora's research interests include teaching, online teaching and learning, ethical mindsets, ethical climate, spirituality, aesthetic judgment, sustainable business development and ethical strategies, which ignited her interest in Green IT and cloud-computing. Theodora participated in several conferences on ethics, teaching and learning, sustainability, and has been the recipient of 'best paper wars in 2009, 2010, and 2011. Theodora has been awarded 'The New Researcher of the Year' prize of the Curtin Business School, Australia. Theodora had published in several peer-reviewed journals, member of editorial committees, and member of different governing bodies.