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The background of the slide is a nighttime photograph of the Liverpool cityscape, showing illuminated buildings and a large dome, likely the Cavern Club or a similar landmark, reflected in the water in the foreground.

Enhancing the student learning experience: Evaluating the impact of voice email technology in formative assessment strategy

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Introduction

- Speaker introductions...
 - [ExAEF Project](#), HEA Subject Centre for Information & Computer Science
 - Dissemination materials
- Context and audio email technology for assessment feedback delivery
 - Opportunities
 - Wimba Voice and 'Voice Emails'
- Research motivation
- Embedding technology
- Evaluation: learning impact and results

Formative assessment

- Role of formative assessment significant in promoting student learning (e.g. [1], [2])
 - Produce feedback to improve / accelerate learning
 - Promote ‘deep’ approaches
- Few formative assessment opportunities provided at universities
- ‘Formative learning’ requires ‘conditions’ of formative feedback to be met [2]
 - Detailed, understandable, ‘when it still matters’, etc.

Audio tech. opportunity?



Motivation

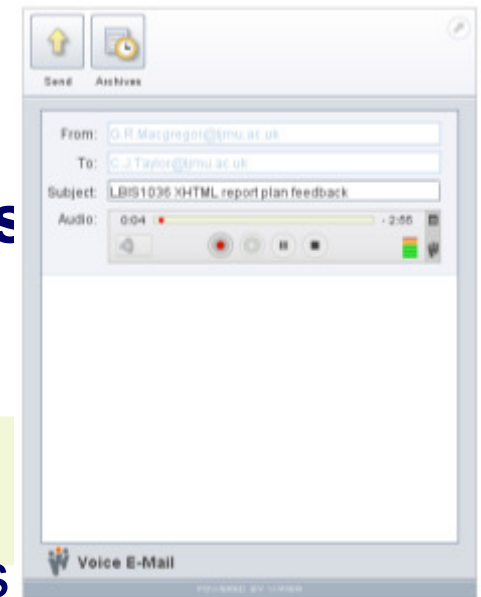


Research motivation

- **Factors combine to motivate research**
 - Recent research: Merry & Orsmond [3], Rotheram [4], Ice et al. [5], Sipple [6]
- **Relevant questions:**
 - Audio feedback enhance formative learning experience?
 - Conform to models of 'good' formative feedback? e.g. [1, 2]
 - Improvements in students' learning?
 - Further insights...

Wimba Voice Email

- **Wimba Voice [3] plug-in**
 - ‘Building block’ of [Blackboard \[4\]](#)
 - Enables the delivery of **voice emails**
 - Streamed in browser, download to mobile device, no MP3 attachments
 - Feedback archive
 - Students can reply with voice emails
 - Student-tutor dialogue possible [2]



Methodological overview



Methodological overview

- Redevelopment of degree module to embed Wimba in assessment strategy
 - Module content on Web technologies
 - **Two** assessment points, with **formative** assessment point at week 6 (XHTML report plan)
 - Voice email feedback turned around in a week
- Quasi-experimental design
 - Control group (written); treatment (voice email)
- Participants (n = 66) drawn from:
 - BA (Hons) Business Management & Information
 - BA (Hons) Business & Public Relations

Methodological overview (2)



- Specially designed web-based survey
 - Informed by formative feedback models [1, 2]
- Interviews provided qualitative data for triangulation
 - Coding taxonomy
- Analysis of students' assessment performance post-formative feedback delivery




Survey instrument

Survey instrument

- Generally positive results
- Statistically significant differences between groups (MWU test)
 - ‘I considered the feedback to be sufficiently personal and relevant to me’ ($U = 400$, $Z = -2.104$, $p = 0.035$)
 - ‘I found the feedback to be easy to comprehend’ ($U = 414$, $Z = -2.184$, $p = 0.029$)
 - ‘I found the feedback to be too brief’ ($U = 388$, $Z = -2.126$, $p = 0.033$)
 - ‘The feedback was cryptic or difficult to interpret’ ($U = 314$, $Z = -3.292$, $p = 0.001$)

Academic performance

A chalkboard with a hand-drawn diagram of a tree or branching structure. The diagram consists of a central vertical line that branches out into several horizontal lines, which then branch out again into smaller lines, creating a tree-like structure. The lines are drawn with white chalk on a dark, textured surface.

Academic performance

- Sipple [6] and Ice et al. [5] hypothesise potential improvements in learning using audio feedback
 - Reinforce feedback re-use; more likely to correct learning behaviour
- No difference between groups in academic performance in summative assessment
 - ($t(64) = -1.153, p = 1.998$)
- Similar learning gains across groups



Staff time
commitment

Staff time commitment

- Structural constraints can preclude the use of formative feedback
- Extant research inconclusive
- Time requirements of voice emails smaller
 - 34% quicker; less variability per submission
 - Wimba ‘voice email’ time efficiencies

Voice	Dec. (6dp)	Min/Sec	Written	Dec. (6dp)	Min/Sec
<i>M</i>	0.068316	4.06	<i>M</i>	0.10289	6.53
<i>SD</i>	0.011011	0.4	<i>SD</i>	0.01581	1.53
<i>R</i>	0.049444	2.58	<i>R</i>	0.077778	10.3
Total time	2.254444	2.15.16	Total time	3.395357	3.47.50

Qualitative data

<http://www.flickr.com/photos/cornellfungi/477867783/>

Qualitative data (1)

- Interview data gathered from student participants
 - Collect richer data on impact on student learning
 - Feedback use behaviour, perceptions, etc.
 - Conducted by non-teaching member of team
 - Sound recorded, transcribed, uploaded to QSR Nvivo for content analysis

Qualitative data (2)

- Hierarchical coding taxonomy:
 - Principal themes
 - Areas for further research
 - Triangulate other instruments
 - Survey instrument elicited positive data in favour of voice email (supported by qualitative analysis)
 - Increased alignment with conditions of ‘quality’ feedback [1, 2]
 - Other interesting observations – see dissemination

Data themes

<http://www.flickr.com/photos/ableman/4673424141/>

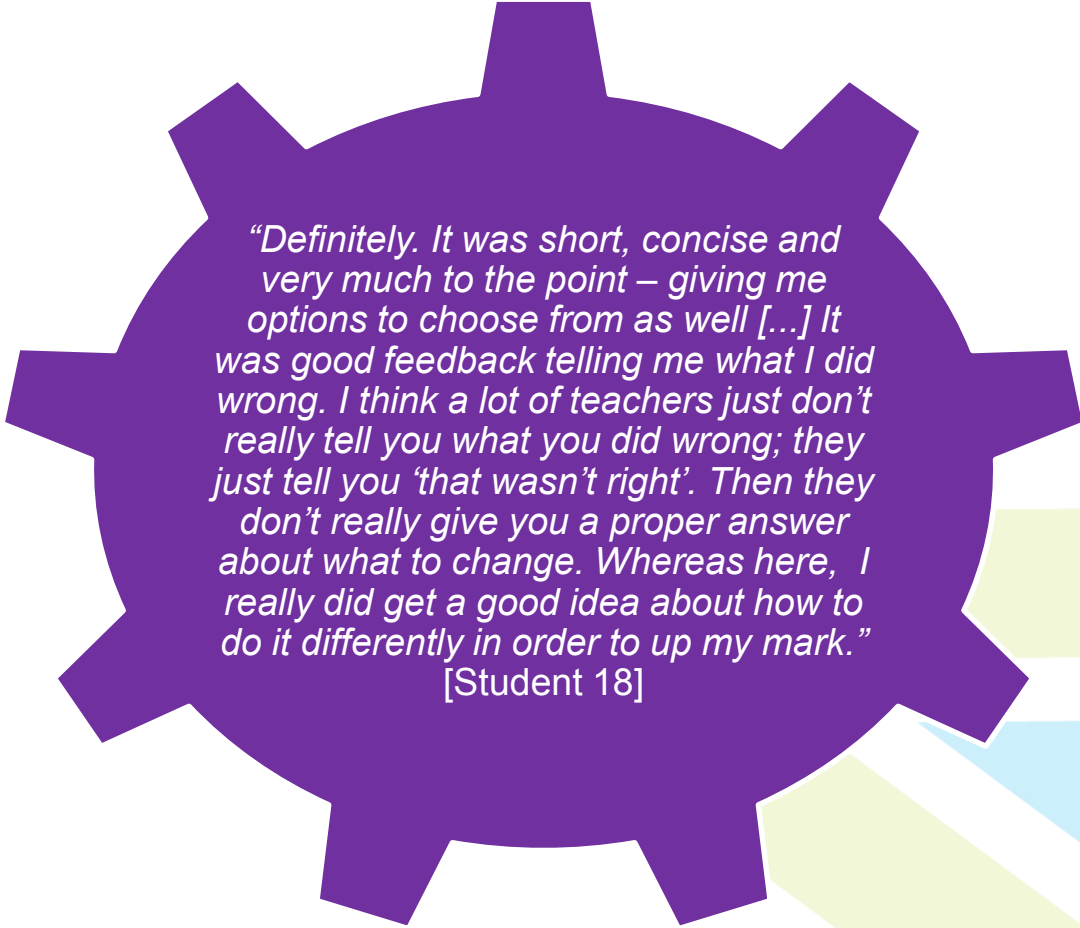
Data themes (clarity)

“At first I thought it was quite funny to hear [the tutor’s] voice on my laptop, but it was actually really good. I enjoyed receiving the feedback a lot more than I thought I would. During my time here, feedback has not been given very well and this was the first module that I had feedback I actually understood. I could play it over again to listen and just take really good notes of what I was expected to do and what I could change.” [Student 18]

Data themes (detail)

“[The audio feedback was] more than detailed, yeah. Without giving me the answers, he did give me a lot of guidelines and stuff I should look into and stuff I should take out. Whereas I wouldn’t really get that, like, on written feedback ‘cos it would be hard to, like, say something without giving you the answer. Whereas... It’s weird, you can find more words when you are speaking the feedback.” [Student 9]

Data themes (learning behaviour)

A large purple gear graphic with a white text box inside. The gear is positioned on the left side of the slide, and the text box is centered within it. The background of the slide features a green and blue geometric pattern on the right side.

“Definitely. It was short, concise and very much to the point – giving me options to choose from as well [...] It was good feedback telling me what I did wrong. I think a lot of teachers just don’t really tell you what you did wrong; they just tell you ‘that wasn’t right’. Then they don’t really give you a proper answer about what to change. Whereas here, I really did get a good idea about how to do it differently in order to up my mark.”

[Student 18]



Other themes

Other themes

- Emulated face-to-face meeting with tutor
- Personalised and informal
- Voice intonation was motivating
- Some found they re-used the feedback more than written
- Feedback use behaviour
 - Preference for streaming
- Issues...



Conclusions

<http://www.flickr.com/photos/mugley/2214327028/>

Conclusions

- Voice emails appear to enhance student learning
 - Enabled greater use of formative assessment strategies
 - Role of voice email as an enabling technology for assessment ‘best practice’
 - Enhanced the learning experience of students
 - Further research on *improving* student learning
 - Better met conditions of quality formative feedback
- Research ongoing
 - Conference proceedings and journal article in press
 - Focusing on each cohort of participants

References

1. Gibbs, G. & Simpson, C. (2004). Conditions under which assessment supports learning. *Learning and Teaching in Higher Education*. 1, 3-31.
2. Nicol, D. J. & Macfarlane-Dick, D. (2006). Formative Assessment and Self-Regulated Learning: A Model and Seven Principles of Good Feedback Practice. *Studies in Higher Education*. 31 (2), 199-218.
3. Merry, S. & Orsmond, P. (2008). Students' attitudes to and usage of academic feedback provided via audio files, *Bioscience Education*, 11 (3), <http://www.bioscience.heacademy.ac.uk/journal/vol11/beej-11-3.pdf>
4. Rotheram, B. (2009). *Sounds Good: Quicker, better assessment using audio feedback (Final Report – JISC Project)*, Joint Information Systems Committee, London. <http://www.jisc.ac.uk/whatwedo/programmes/usersandinnovation/soundsgood.aspx>
5. Ice, P., Reagan, C., Perry, P. & Wells, J. (2007). Using synchronous audio feedback to enhance teaching presence and students' sense of community, *Journal of Asynchronous Learning Networks*, 11 (2), pp 3-25.
6. Sipple, S. (2007). Ideas in practice: development writers' attitudes towards audio and written feedback, *Journal of Developmental Education*, 30 (3), pp 22-31.
7. Wimba Voice. (2009). available: http://www.wimba.com/products/wimba_voice/
8. Blackboard. (2010). available: <http://www.blackboard.com/>

Research Links

<http://www.staff.ljmu.ac.uk/bsngmacg/exaef/>

<http://bit.ly/79oZ9p>

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