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## Using audio email feedback in formative assessment

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### Short paper proposal : abstract

The importance of formative assessment in promoting student learning is well recognised within pedagogical communities of practice [1] and continues to be noted by researchers (e.g. [2, 3]). Formative assessment is specifically intended to produce feedback on student performance thereby improving and accelerating learning [1]. 'Surface' approaches to learning which often characterises other assessment approaches is discouraged and increased learning can be achieved [4]. Despite the importance ascribed to formative assessment, very few formative assessment opportunities are generally made available to students in HE [5]. A commonly cited reason for this is the limited time lecturers have within semester-based systems to produce and deliver the feedback necessary to affect changes in student learning behaviour, often within increasingly large student cohorts [3]. For 'formative learning' to occur and the benefits of formative assessment to be achieved, feedback needs to be timely, relevant and delivered to students prior to summative assessment.

Ameliorating the above stated problems in HE formative assessment therefore provides the motivation behind our work. A number of researchers have reported positively on the use of a variety of emerging technologies within HE formative assessment and feedback strategies [6, 7, 8]. In this paper we report on the use of audio email feedback as a means of delivering detailed formative feedback to students. In particular, we focus in the deployment of Wimba Voice [9] to deliver formative feedback as voice emails to level one undergraduate students studying within the domains of business and web technologies. Preliminary results of a formal evaluation of audio email feedback on student learning will also be summarised.

### References

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- [2] Gijbels, D., & Dochy, F. (2006). Students' assessment preferences and approaches to learning: can formative assessment make a difference? *Educational Studies*. 32 (4), 399-409.
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# Using audio email feedback in formative assessment

*Audio Feedback: A Word In Your Ear  
Conference 2009*

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# Introduction

- Reporting on early results of pilot study exploring efficacy of audio email feedback
  - [ExAEF project](#)
  - Funded by the [HEA Subject Centre for Information & Computer Science](#) (ICS)
- Research motivation
- Research aims and findings
  - Pilot incomplete; overview of some preliminary findings
- Further research

# Research motivation

- Feedback on student learning
  - Improving and accelerating student learning
  - ‘Surface’ versus ‘Deep’ approaches
  - Importance in learning indisputable [1]
- Few formative assessment opportunities for students
  - Semester based systems [2, 3]
  - Formative feedback: timely, relevant and delivered to students prior to summative assessment [1]
  - Audio provides scope for greater feedback detail, quicker delivery, etc. thus holding potential for learning
- Principal motivation of work

# Nature of work

- Growth of audio technology use in HE
- Use of audio email technologies in formative feedback not well understood
- Explore and evaluate use of audio email feedback as means of delivering detailed formative feedback to students
  - Pilot of larger experiment to be conducted in semester two
  - Follows anecdotal evidence [4]
  - Improved student learning?

# Methodology

- Quasi-experimental repeat measure study design
  - Cohort: Information Management, level one
    - Formative – summative assessment link
  - Formative assessment set for week 7
  - 24 student participants
    - Control group (n=12): written feedback
    - Treatment group (n=12) : audio email feedback (Wimba)
    - Feedback delivered in-line with Nicol & Macfarlane-Dick [1] model of formative feedback
    - Marks recorded; not disclosed (as per [1])



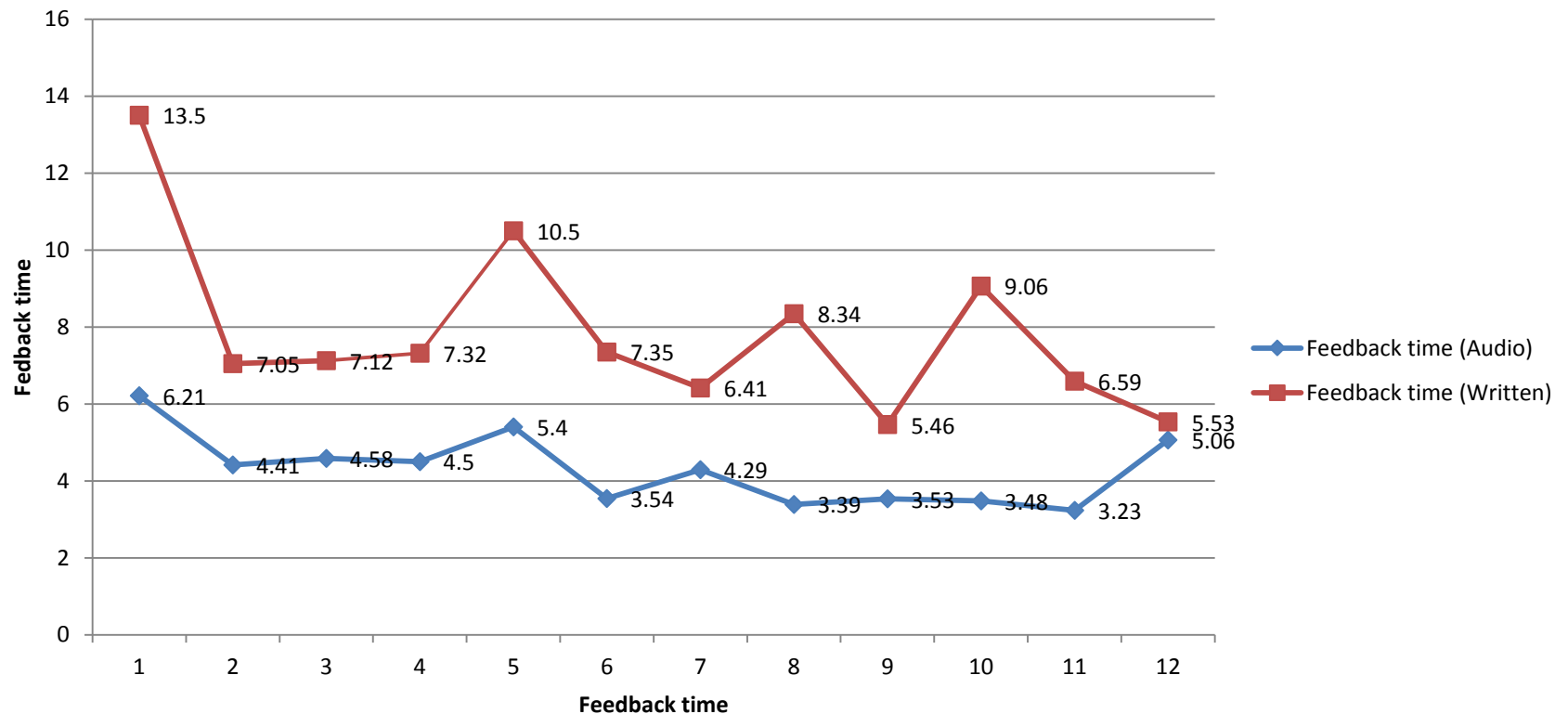
# Methodology (2)

- Delivery of specially designed survey instrument (week 8)
  - Detail shortly...
- Tutor feedback delivery (audio/written) times recorded
- Summative assessment marks recorded for comparative analysis
- Semi-structured interviews – analysis ongoing

# Results: pilot evaluation

- Feedback time comparison
- Preliminary results of survey instrument
- Observed differences in student learning / assessment performance

Measure	Student feedback numbers	Mean time (min/sec)	Range (min/sec)
Mean marking time (all feedback)	24	6.19	10.27
Mean marking time (written feedback)	12	8.50	7.57
Mean marking time (audio feedback)	12	4.32	2.57



# Effect on student learning, satisfaction, perceptions

- Survey instrument designed to capture data on effect, satisfaction, perceptions of written and audio email feedback
  - Other data collect but not reported today
- Test assumptions about audio as feedback format
- Summated scale (Likert)
  - (5 = strongly agree; 1 = strongly disagree)
- Design based on Nicol & Macfarlane-Dick's model and '7 principles of formative feedback' [1] and early research by Cryer & Kaikumba [5]

Summative scale instrument	Mean response (Written)	Mean response (Audio)
I was satisfied with the feedback provided	4.25	4.08
I found the feedback to be clear and understandable	4.16	4.08
Feedback I received helped me 'troubleshoot' or self-correct my performance on the module and the final assessment	3.75	<b><u>3.92</u></b>
Feedback clarified or made explicit what is required of me in order to improve my academic performance on the module and the final assessment	3.92	3.58
The feedback helped me reflect on my learning	4.08	3.58
Feedback helped me understand where to focus my efforts so that I can better improve my university coursework	4.00	3.92
I considered the feedback to be sufficiently personal and relevant to me	3.75	<b><u>4.12</u></b>
I found the feedback to be easy to comprehend	3.75	<b><u>3.92</u></b>
I felt the feedback was sufficiently detailed	3.42	<b><u>3.58</u></b>
I found the feedback to be too brief	3.12	<b><u>2.50</u></b>
The feedback was cryptic or difficult to interpret	2.67	<b><u>2.00</u></b>
The feedback helped to increase my interest in the module I am studying	3.58	2.83
I felt motivated after reading/listening to my feedback	3.34	3.00

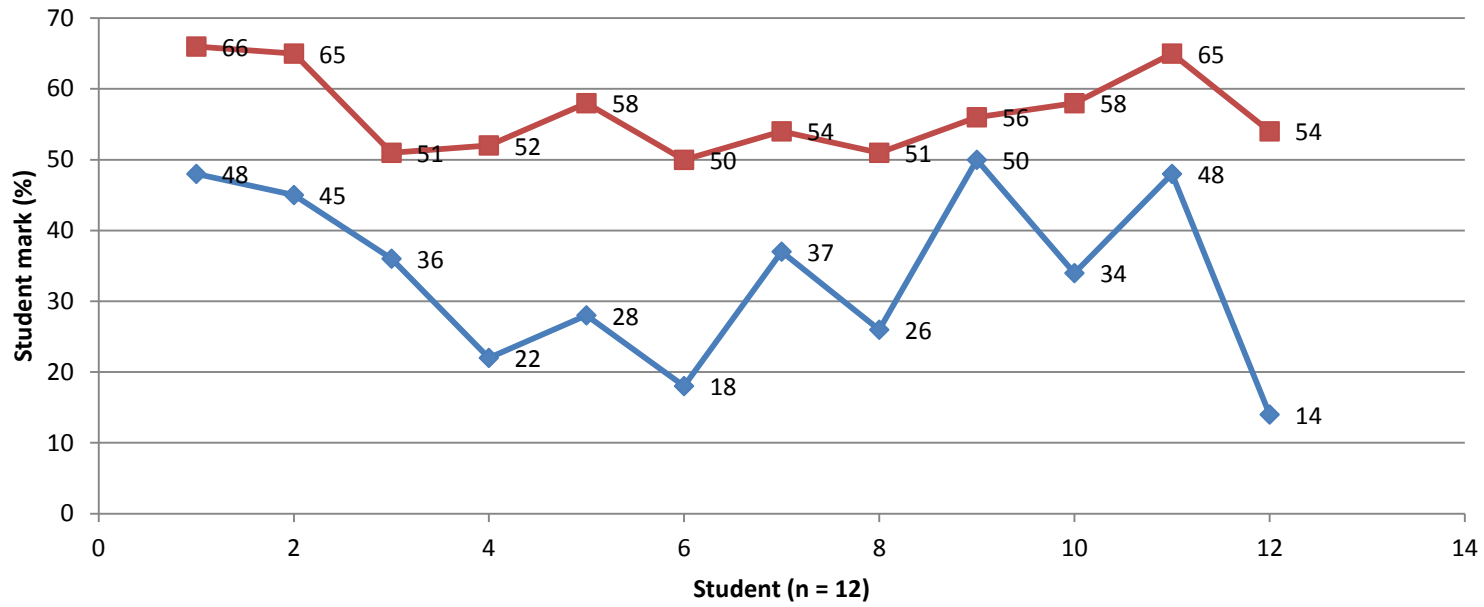
# Comparison between groups responses

- Mean responses appear to reveal preference for written feedback in many cases (pref. for median analyses)
- Further analysis (Mann-Whitney U tests) revealed difference only significant ( $P < 0.05$ ):
  - ‘The feedback was cryptic or difficult to interpret’
    - Audio significant at  $P = 0.0458$
  - ‘The feedback helped to increase my interest in the module I am studying’
    - Written significant at  $P = 0.0455$

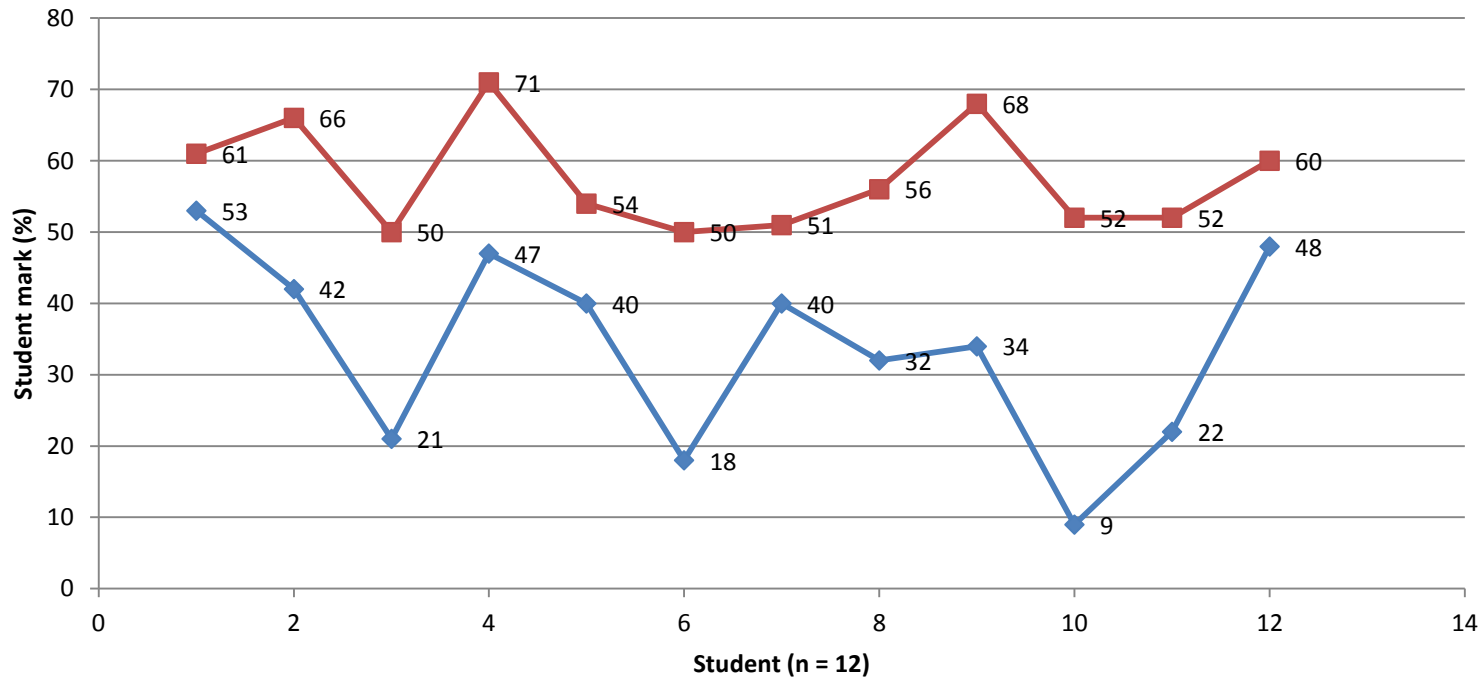
# Effect of audio email feedback on student assessment performance

- Both groups performed poorly in formative assessment
  - Written:  $M = 33.83$ ,  $SD = 12.36$
  - Audio:  $M = 33.83$ ,  $SD = 13.68$
- Expected improvement in summative assessment within groups (*un-moderated*)
  - Written:  $M = 57.58$ ,  $SD = 5.84$ 
    - $t(11) = 2.20$ ,  $p < .0001$
  - Audio:  $M = 56.67$ ,  $SD = 7.46$ 
    - $t(11) = 2.20$ ,  $p < .0001$

Student performance (written)



Student performance (audio)





# Effect of audio email feedback on student assessment performance (2)

- No significant difference between written and audio in summative assessment
  - Written:  $M = \underline{57.58}$ ,  $SD = 5.84$
  - Audio:  $M = 56.67$ ,  $SD = 7.46$
  - $t(22) = 2.07$ ,  $p > .05$
- Written group referred to feedback more after delivery; 92% used feedback once or more
- Only 50% of audio group referred to feedback after delivery, despite multiple device ownership

# Conclusions

- Audio email for formative feedback can be more efficient written
- Effectiveness of audio email for formative feedback uncertain
  - Few significant differences in specially designed survey instrument
  - Some hypothesised benefits of audio as feedback tool not borne out, e.g. role in motivation, increasing module interest, etc.
  - Some preferences for written
- No significant difference in assessment performance
- Summary data is encouraging for audio email feedback
  - Larger participant sample
    - Early qualitative data gathering positive
- Results of pilot; wider study for semester two encouraging
  - Literature publication

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# Thanks!

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