Edinburgh Napier UNIVERSITY

Investigating the Use of Audio Feedback in Engineering Mathematics Modules

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OVERVIEW

- Method
- Attempt 1
- Feedback
- Attempt 2
- Feedback
- Conclusions

METHOD

- Write text summarising each student's performance

Percentage Range	Opening sentence
0 - 14	An extremely poor piece of work
15 - 29	A very poor piece of work
30 - 39	A poor piece of work
40 - 49	A fair piece of work
50 - 57	A reasonable piece of work
58 - 64	A good piece of work - well done
65 - 79	A very good piece of work - well done
80 - 99	An excellent piece of work - well done
100	A perfect piece of work - well done

- Record using Sony^{R} MP3 IC recorder (ICD-UX200)

(Picture courtesy of e-bay)

METHOD

- Upload files to PC via USB connection
- Check and re-label
- Upload to VLE
- Selectively release each file
- Timings:

ACTIVITY	TIME REQUIRED
Writing time per student	3 mins
Recording time per student	3 mins
Uploading to PC per file	2 mins
Uploading to VLE per 10 files	5 mins
Setting viewing privileges per file	2 mins
Total Time for 30 students	315 mins
Total Time for 22 students	235 mins

ATTEMPT 1:Test 1

- 30 first year students studying Foundation Mathematics
- About 20 words per file
- Audio files available before tests returned

> A very good piece of work. Make sure that you have your calculator in the same units as the question.
>
> A reasonable attempt. You made lots of silly mistakes and you must always sketch the Cartesian complex number before converting it to polar form.

ATTEMPT 1:Test 3

- About 20 words per file
- Graduated sentences used
- Audio files available before tests returned

A reasonable piece of work. Quite a lot of silly mistakes. Integration rules and applications need some practise.

An excellent piece of work - well done! There were some silly mistakes but you did very well with the applications questions.

ATTEMPT 1: Student feedback

- Focus group run February 2011
- Liked lecturer's voice summarising performance
- Audio feedback helpful and good
- Audio feedback was something different
- Files could have been a little longer

ATTEMPT 2:Test 1

- 22 second year students studying Intermediate Mathematics
- About 20 words per file
- Audio files available before tests returned

A fair attempt. When calculating the determinant it is the leading diagonal elements multiplied together minus the off diagonal elements.

A perfect piece of work nicely presented and with thorough workings - well done!

- Test 2: About 30 words per file

> An excellent piece of work – well done! Question 5b was asking you to evaluate the partial derivative of z with respect to x – you didn't need to find the second derivative. You made some errors in the second derivatives in question 8 and hence incorrectly classified the stationary points.
>
> A reasonable piece of work overall. You need to revise the chain rule and try not to make silly mistakes. Proving hyperbolic identities requires using exponential form and multiplying out brackets.

- Test 3: Between 20 and 30 words per file

> An excellent piece of work – well done! Your only errors were in the maximum and minimum question – you didn't use the range of t values given in the question.
>
> A very good piece of work – well done! Your graph needed axis labels and a scale and the final question you crossed out the right answer and replaced it with a wrong answer.

ATTEMPT 2: Student feedback

- Focus group March 2011
- Audio feedback personal and private
- Audio was more memorable
- Giving audio feedback before returning the test gave time to come to terms with mark.
- Found having common mistakes pointed out useful

CONCLUSIONS

- Audio feedback has a powerful impact
- Audio feedback more memorable
- Time-consuming to provide audio feedback.
- Students' enthusiastic reception makes it worthwhile