



# Impact of an online tutorial on postgraduate students' literature research skills

Leah Marks<sup>(1)</sup>, Maria Jackson<sup>(1)</sup>, Douglas Marks<sup>(2)</sup> and Douglas Wilcox<sup>(1)</sup>, Division of Developmental Medicine, University of Glasgow <sup>(1)</sup> and Social Sciences, University of the West of Scotland <sup>(2)</sup>

## Summary

An online tutorial was created using Adobe Captivate software to supplement traditional teaching of scientific literature searching skills to postgraduate medical genetics students. The use of this tool was evaluated and while no statistically significant differences were found between students taught in different ways, the student response to the online programme was very positive. A major difficulty noted by several students related to the ability to select appropriate articles from the plethora of available literature. In the future more emphasis will be placed on selecting papers as well as combining the computer and traditional teaching approaches.

## Introduction

Searching the scientific literature to obtain relevant and useful references is a skill which students need to acquire as a key component of the transition to scientific/medical professional. A number of studies have examined the acquisition of these skills, and highlight the frequent initial inability of students to identify and retrieve useful literature (reviewed in Chu and Law, 2008).

In recent years online tutorial technology has increasingly been used in higher education. Programmes such as Adobe Captivate can be used to record and deliver tutorial sessions that can be viewed as many times as students wish. Interactive activities can facilitate a learning experience not possible in a conventional classroom-based setting. Using a combination of online tutorials and traditional teaching methods may be useful in aiding students learning (Li and Atkins, 2005; Ernst, 2008)

In past years of the MSc in Medical Genetics, students have received a traditional tutorial in which the basics of PubMed, Web of Science and Reference Manager packages are 'taught' and practised. However, experience has shown that many students still struggle with these skills and are hindered by their inability to perform literature searches. This year these 'face-to-face' tutorials were supplemented with a computer based tutorial package using Adobe Captivate which provides instruction/examples of literature searches. Before and after each session students completed an exercise in literature searching, the analysis of which is presented along with feedback from students.

## Methods

- Students were randomized to two groups and completed a baseline questionnaire asking about their experience/perceived proficiency in searching the scientific literature. They then completed a 30 min literature search on an unseen topic and reported the key references they obtained.

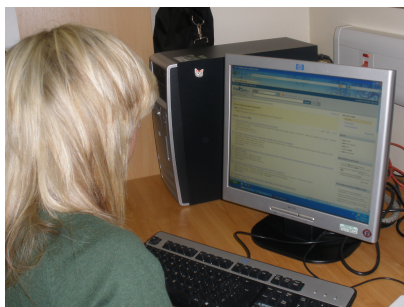
- Students in group 1 received the same class based tutorial session on literature searching that was used in previous years. Students in group 2 completed an online Adobe Captivate tutorial covering the same material.

- Students in both groups were then asked to carry out a further short literature search on an unseen topic, to submit a short report on this activity and to complete a follow-up questionnaire.

- Each student's submitted lists of references were graded independently by two university teachers who assigned a grade of 1-7 (where 1 was poor and 7 was excellent).

- The results were then analysed using T- tests on SPSS software to allow comparison between the students who were taught using different methods. Further to this the student's comments on their perceived literature searching skills and on the different types of tutorial were analysed.

- Ethics permission for the study was granted from the University of Glasgow Faculty of Medicine Research Ethics Committee.



## Results

When the 'before' and 'after' scores and 'improvement' scores for both groups were compared there were no significant differences found. This may be due in part to the small sample size (24 students).

Despite the lack of significance in the results, interesting trends were noted. There was an average improvement of 0.8 points for the 'face-to-face' group who had started out with an average score of 3.3 and improved to 4.1 after the tutorial, a figure which tended towards significance ( $p = 0.11$ ). The 'computer based' group actually started out with an average score of 4.4 and showed virtually no change after the tutorial. In terms of the difference between a score of '3' and one of '4' this is the difference between 'poor' and 'reasonable attempt'.

Student comments on the different types of tutorial and on their own ability to search the literature were reviewed and show that the ability to carry out adequate literature searches is an area of significant concern for masters students.

## Discussion

Students were invited to comment on their previous experience of searching the literature and on what they found most difficult. The comments below are reflective of those obtained:

- "Can't recognize the important papers"
- "Determining the best papers from hundreds of results"
- "(Difficulty in) refining a search"

These comments highlight the fact that while students may be able to access databases successfully and possibly even use reasonable initial search terms, they encounter problems when it comes to deciding which of these will be fit for purpose. Perhaps this is the important factor in the transition and that which more of our teaching should focus on.

Following the tutorials students commented very positively on the computer based tutorial in comparison to the face to face session. In particular the ability to 'replay' the session was valued and many students expressed a desire to have a personal copy of the file.

However, it was noted by several students that the computer based experience was still a relatively passive one and suggestions were made that a combination of the two types of tutorial was used.

This would perhaps comprise of chapters played online followed by practical exercises for students to complete. We have taken these suggestions on board and in session 2010-11 we plan to use Camtasia software rather than Adobe Captivate as we feel it will allow us to realize these aims more effectively.

Clearly the fact that students in the group who undertook the face to face tutorial did tend to subsequently have higher scores than when they had started suggests that this type of traditional method still has some validity. Indeed when the 'Cone of experience' (figure 1) is reviewed it perhaps emphasizes that 'watching' and 'participating' may be the best way forward.

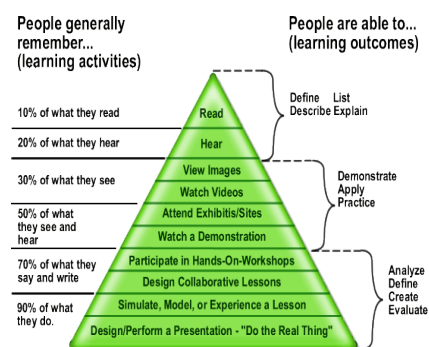


Figure 1: Cone of Experience

As further point of interest we noted the students who received the online teaching tended to present their references much more acceptably than those who had not received this type of tuition. This may be due to greater familiarity and ease with Endnote Web software after viewing demonstration of it online.

In conclusion, it seems that becoming a 'competent literature searcher' requires both understanding and practice. If we can incorporate both of these into our teaching we may be able to aid students with this difficult yet vital transition.

## References

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