ORIGINAL ARTICLE

STUDENTS' PERCEPTIONS OF 'TECHNOLOGY-BASED' LECTURE HANDOUTS

Mohammed Nazrul Islam, Md. Anwarul Azim Majumder*, Rogayah Ja'afar*, Sayeeda Rahman**

Department of Anatomy, *Department of Medical Education, **Department of Pharmacology
School of Medical Sciences, Universiti Sains Malaysia, Health Campus
16150 Kubang Kerian, Kelantan, Malaysia

Lecture handouts are widely used instructional tools. Handouts supplement rather than substitute students' regular reading. It is now a common practice to supply PowerPoint handouts and publish lecture handouts on the web for students' access. A study was conducted among the first year medical students (n=142) of School of Medical Sciences (SMS), Universiti Sains Malaysia (USM) in order to determine their perceptions and expectations with regards to lecture handouts provided to them. The majority of the students reported that they read the lecture handouts as a reference and found them useful as a guide for future learning. More than half (68%) of the students expressed dissatisfaction with the overall presentation format of the handouts which is mainly technology-related i.e. PowerPoint and photocopying. This study indicated that students' expectations and experiences were positive towards the use of handouts. They used handouts as a means of supplementing rather than substituting their learning. Much care is needed when educators supply computer-based handouts, as this study shows a number of limitations when students use them. Medical schools should consider publishing web-based handouts with online and other facilities to make it interesting and effective.

Key words : Lecture; Handout; Medical education, Malaysia

Introduction

In spite of its limitations, lecturing is the most commonly used method of teaching in higher education. As a result of advanced technology, cost-containment pressures and a desire to make innovative improvements in medical education, dramatic changes have occurred in planning and delivery of lecture and its handouts(1,2). Apart from the conventional classroom mode, lectures are now delivered through a number of innovative ways such as making it computer-based, web-based/on-line, video-taped or through video-conferencing.

Lecture handouts are widely used instructional tools. Handouts make the lectures "portable and enduring"(3) and lead to improved recall of information and improved test performance. In traditional settings, written handouts are used as a meaningful supplement of the lectures. Teachers use the handout as a discussion aide to accompany the lecture and as a means of disseminating additional information not included in the lecture. It is now a common practice to supply PowerPoint handouts when teachers rely on computer-based lectures. A well-known basic option of PowerPoint is the ability to make custom handouts of a presentation, which offers a huge advantage to the teachers. Handouts may be made with one slide per page or as many as six per page. Many institutions and individuals are now routinely publishing lecture handouts on the web for students to access. This method of distribution of information provides many advantages over conventional paper-based distribution as it provide links to other online materials e.g. image archives and journal articles(2). In addition, handouts are cheaper to distribute on the web compare to paper form as they are easy to update; offer interactivity with questions and 'click-based' contents; display images, diagrams, video and animated contents; and allow assessment of students'

Table 1:   Students' perceptions on lecture handouts

Statements	Agree (%) (Strongly Agree + Agree)	Undecided (%)	Disagree (%) (Strongly disagree + disagree	Mean
Reading handouts as a reference	96.5	28	0.7	4.16
Handouts are useful	90.9	63	0.7	4.41
Learning objectives are used as guide	71.5	15.5	4.9	4.12
Filling the empty spaces of the handouts, if there are any	49.2	38.8	10.8	3.49
Reading other resources along with handouts	82.9	13.6	3.6	4.07
Satisfactory presentation style	45.1	41.2	13.7	3.37
Good coment sequence	62.7	22.9	8.4	3.63
Appropriale length of text	55	34.5	10.6	3.56
Text is readable	67.6	22.5	9.2	3.68

performance. Although handouts are widely used instructional tools, little research has been done on conventional paper-based(4), and also on computer-based and web-based handouts. A study was conducted among the first year medical students of School of Medical Sciences (SMS), Universiti Sains Malaysia (USM) in order to determine their perceptions and expectations with regards to lecture handouts provided to them.

Method

In SMS, most teachers deliver computer-based lectures for the first year students and supply hard copies of PowerPoint slides as handouts. To evaluate these handouts, students were asked to complete a questionnaire at the end of their first year. The questionnaire consisted of statements to which students listed their level of agreement using five-point Likert type scale as well as two open-ended questions on strength and weaknesses of the handouts provided to them over the past one year.

Table 2:   Students' comments on lecture handouts

"Actually, first year students need to be guided by handouts, because they still don't know how to manage their time and which books need to referred."

"It acts as a guide to my further reading and act as an overall summary to me for my understanding and will encourage me to read more. It helps me to know the important point that we eught to know for that particular chapter."

"The pictures and diagrams were not clear when we Photocopy it."
"Quite often the PowerPoint background presentation is superimposed on the notes which makes the notes difficult to read."

"Lack of picture in the handouts."

"..... sometimes, the next was unreadable. The diagrams/ pictures not clear .... not supplied before the class."

"Printed with 6 slides in a page, they're too small to read."

"Some of the pictures are not clear"

"..... the size of the words especially in PowerPoint handouts are very small"

Results

One hundred and forty two (79%) students answered the questionnaire, where 69% were females and 31% were males. Almost all students reported that they read the lecture handouts as a reference and found them useful. Eighty percent of the students used the learning objectives of the handouts as a guide for future learning. More than 80% of the students read other reading resources along with handouts. However, a majority (68%) of the students has shown their dissatisfaction with the overall presentation format of the handouts. Sixty-three percent of the students are satisfied with content sequence while 68% found the handouts readable. A substantial number of students (45%) was of the opinion that the length of the text is inappropriate i.e. too little information when PowerPoint slides are provided as handouts. (Table 1)

Among the problems which students perceived regarding the overall format of the handouts included: difficult and ambiguous language, fade diagrams in photostat copies, short and incomplete text, illegible handouts printed with PowerPoint background and small letter size, and contradictions between the contents of handouts and standard text books. (Table 2)

The main strengths of the handout from the students view were that it acts as a guide for learning and revision before the examination. The students expected the handouts to be clear, brief, well structured; in simple language; compilation of summary from standard textbooks; outline clinical applications; contain key references and definitions of new terms; and most importantly, should be online for students ready reference. (Table 2)

Discussion

First year medical students are mostly teacher dependent because of exposure to a new curriculum. They also show greater demand for learning resources, especially lecture handouts(5). It is often necessary to guide them through handouts, as they may not be matured enough to manage their time for learning and to look for the right references. Teachers expect that lecture handouts should supplement rather than substitute students' regular reading(5). This study indicated that first year medical students' expectations and experiences were positive towards the use of handouts. However, it was noticed that students' dissatisfaction about

handouts are mainly "technology-based i.e. adequacy of PowerPoint and qualities of photocopies supplied. While technology brings revolution in education, it often needs careful application. Educators should pay much attention when they supply computer-based handouts. Teachers should be trained on producing and presenting lectures using the PowerPoint and other computer programs. Medical schools, especially in Asian, should consider publishing web-based resource materials with online links and up-to-date interactive and click-based contents(6). Other considerations would include graphics, images, video and animated web-based handouts that can be utilized for students' assessment. These areas need further in-depth research by seeking feedback from the students and teachers to ensure effective use of the handouts.

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Correspondence :

Dr. Md. Nazrul Islam MBBS (BD), M.Phil (BD), M.Se (UK), Dip. MEdc (Australia)
Department of Anatomy,
School of Medical Sciences,
Universiti Sains Malaysia, Health Campus,
16150 Kubang Kerian, Kelantan, Malaysia
E-mail: nazrul@kb.usm.my

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