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Student Views on the Flexible Delivery of the IS '97 Curriculum

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Abstract

The growth in availability of the Internet permits a greater variety in the delivery of the IS curriculum than was hitherto possible. This paper examines the various delivery techniques that might be employed in a typical university IS course, and comments on these from the standpoint of student preference. In spite of the technological basis for much information systems study, and their exposure to novel teaching methods like videoconferencing and the World Wide Web, students still prefer traditional teaching techniques like lectures, problem solving/discussion classes and practicals. Opting for modern teaching technologies to deliver all or part of the IS curriculum will need careful planning if potential student resistance is to be overcome.

Introduction

IS instructors have available to them a large range of teaching techniques. Given this wide choice, the question arises of which technique to use in a given situation. In selecting a preferred teaching technique, a number of factors need to be considered: content; learner characteristics and preferences; and organizational constraints like availability, convenience, relative cost, and the personal preference of the instructor.

This paper investigates the preferences of students for a variety of teaching techniques across the IS'97 curriculum (AITP 1997), in order to identify what techniques are preferred for what topics, and also to determine whether changes to teaching techniques are likely to meet with student resistance. Clearly, student preference is one factor that needs to be considered in selecting a particular teaching technique, although not the only one, because, for example, students may show an excessive dependence upon (say) instructor assistance, and therefore fail to develop independence in their study technique (Mukherjee 1996).

Teaching Techniques

Throughout the history of teaching in Information Technology (IT), there has always been a variety of teaching techniques available to the instructor. Some, like the lecture, tutorial and practical have been ever present, others, like radio, TV and Computer-Assisted Learning have come and gone, or if not disappeared, only found favor in a niche or minor role (Godfrey 1997). The World Wide Web (WWW) promises yet another revolution in presenting course material.

This paper surveys student opinions of a range of delivery methods across the IS curriculum: the large scale **lecture**; small group discussion **tutorials**; laboratory **practical sessions** (supervised and/or independent); **textbooks**; **class notes** (including study guides - lecture notes and exercises gathered together in one document); **video conferences** between campuses; **videotape** to record lectures for subsequent playback; and finally the **World Wide Web** (WWW). No university course is likely to use each and every one of these techniques, even though all of them will be used somewhere. These techniques encompass all six teaching strategies examined by Mukherjee (1996) as used for teaching the software component of an IS course. To these six are added videoconferencing and videotaping which can be useful in the wider context of teaching the entire IS curriculum. In addition, while this paper uses the term "tutorial" to refer to guided small group classroom discussions, others use the term to refer to one-on-one discussions, and Mukerjee uses the term to refer to exercises in a software package's "help system", for which the term "practical" is used in this paper.

Survey Instrument and Results

In determining student preferences for appropriate teaching techniques for particular parts of the curriculum, the survey questionnaire listed each of the 27 level-2 topics from the IS'97 report, except that topic 3.12 (Systems Development in Specific Types of Information Systems) was omitted as being too open-ended to inquire about.

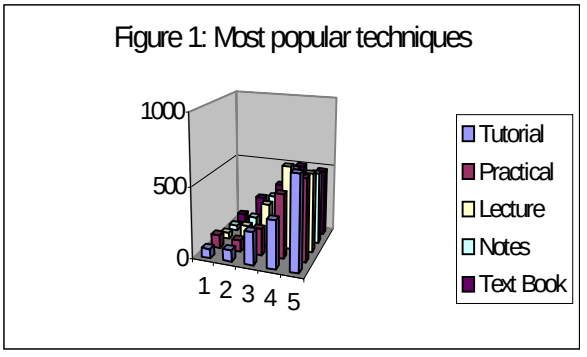
Student participants at the University of Tasmania were invited to volunteer to take part in the survey (compulsion was precluded), and 136 students took part. The students were all currently doing at least one unit in an IS'97 curriculum area (some 1st, some 2nd and some 3rd year), although their major fields included commerce, computer science and applied computing as well as information systems. The students were predominantly on-campus students drawn from all three campuses of the

University – Hobart (the main campus), Launceston (slightly smaller), and Burnie (a small satellite campus). Each student completed a questionnaire where they were asked to indicate in a two-dimensional grid the usefulness of each of the 8 nominated teaching techniques for each of 26 IS'97 curriculum areas. Both the order of the techniques and the curriculum areas were randomized in the survey forms.

The students were asked to rate each technique against each curriculum area on a scale of 1 (not useful) to 5 (essential), and leaving the rating blank where they had no valid experience or opinion.

In all some 10,364 ratings were obtained, ranging from 787 ratings of video taping through to 1625 ratings of lecturing.

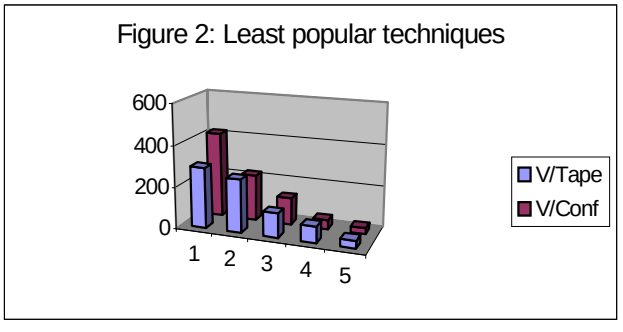
The most popular techniques, taken over all topics, and all groups of students, were the tutorial, the practical, lectures, class notes and text books, in that order (figure 1).



Students prefer small group learning to large group, and prefer the face-to-face contact to the use of class notes or textbooks. The preference of class notes over text books is perhaps because class notes are tailored specifically to the course, and given students focus on assessment rather than learning per se, class notes give a more direct pointer to assessable material than a general purpose textbook.

Both video conferencing from remote campuses, and video taping of lectures were unpopular (figure 2), with video taping being preferred to video conferencing. Students seem to prefer the asynchronous nature of a videotape, which can be played back at any time and place, to the marginal ability to ask live questions during a video conference.

The student perception of the WWW as a teaching technique is varied (figure 3). Roughly equal numbers rate it as very useful as those who rate it no use at all. Perceptions might change as WWW techniques improve and greater interactivity and customization is introduced, but at this stage the jury is still out as far as students are concerned.



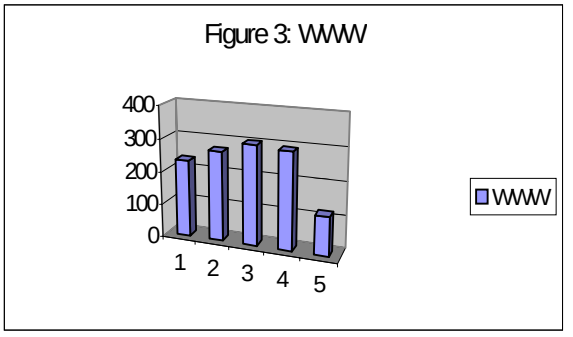


Table 1 below shows the average ratings by students of the usefulness of each technique, for the three areas at level 1, and across the whole IS'97 curriculum. [Space precludes giving average ratings for each of the 26 curriculum areas at level 2, but these are available elsewhere (Godfrey 1999).]

Table 1: Average student "usefulness ratings" of teaching techniques for delivering the IS'97 curriculum

	IS'97 (overall)	Info. Tech.	Org. & Mgmt. Concepts	Theory & Devt. Of Systems
Text	**3.70**	**3.68**	**3.69**	**3.72**
Tute	**4.06**	**3.97**	**4.17**	**4.03**
V/Conf	**1.87**	**1.97**	**1.93**	**1.80**
Lect	**3.92**	**3.92**	**3.88**	**3.95**
V/tape	**2.22**	**2.12**	**2.42**	**2.16**
Prac	**3.96**	**4.21**	**3.85**	**3.95**
Notes	**3.90**	**3.91**	**3.85**	**3.94**
WWW	**2.83**	**2.94**	**2.71**	**2.85**

It was clear from the analysis of the survey data that while there is some variation in student preference between topics, student opinion is much more dominated by one or two particular teaching techniques. Thus there is a strong preference for practical classes, which is not surprising in topics like Programming Languages and Database. What is surprising is the extent to which the preference for practical classes extends even to areas like General Organizational Theory where they are less likely to be useful. This would appear to be a feature of the student profile, with a marked technological bias. This might be expected for "pure" computing students, but this preference was much the same for both IS and business students. This might support the argument that students have a preference for particular styles of learning, and then choose topics to suit, rather than the other way round.

While textbooks were valued equally across the curriculum, small group tutorials were more popular for the general area of Organization and Management Concepts, as also was the use of video tape. Perhaps this finding indicates that students recognized the passive nature of much learning in this area.

Discussion

Some of the results are surprising (particularly for a technology discipline) in that there is a marked preference for traditional teaching techniques over more recent technology-based techniques. Overall, students prefer practical classes first, then tutorials, followed by textbooks and lectures. Class notes/study guides are preferred over WWW pages, and less surprisingly, videotapes and video conferencing are the least popular teaching techniques.

As far as formal classes go, students understandably prefer smaller classes like practicals and tutorials to larger lectures. There is evidence that students look for and value authoritative, comprehensive sources of material. Thus textbooks are seen as of similar value as lectures, while a set of class notes or a printed study guide is preferred to WWW material. Students tend to see the WWW as an interesting place to visit, but they are not seeing it at this stage as a primary curriculum delivery method. Given a choice between a WWW-course and a distance education course, students prefer the web course (Goldberg 1997a). However, Goldberg also observes, in an experiment where some students were taught traditionally via lectures, some on the WWW, and some using both, that while all students were satisfied with their offering, the students exposed to both were the more satisfied and also had a higher level of performance. All three groups felt that their method had been effective. The most useful component of the WWW course was said by the students to be the interactive components and quizzes. It is likely that the low opinion of the web in the survey in this paper was influenced by exposure to fairly mundane WWW material.

It is not surprising that as an information technology, students in IS areas value hands-on practical classes above all else. What is surprising however, is their desire for such classes even in more descriptive curriculum areas.

At a time when there is pressure in universities to abandon old ways and embrace new technologies like the World Wide Web in moves towards so-called virtual universities, there is evidence that students might tend to resist this change. WWW material and video links to remote sites were not seen by students as very useful teaching techniques when compared to lectures and tutorials. However, the use of the Web is still in its infancy, and it might be expected that as WWW material improves, for example by incorporating greater interactivity, that it will become more acceptable to students. Clearly however, attempts to replace traditional teaching methods *now* might expect student resistance. This supports Goldberg (1997b) where students were reluctant to see lectures eliminated (or, for many, even reduced in number) simply because web material existed.

Conclusions

The paper has discussed the range of teaching techniques available for delivering various parts of the IS'97 curriculum. While in theory some techniques might improve student learning, and some techniques might place less pressure on university resources, students still, for the present anyway, seem to prefer the traditional methods of content delivery: the lecture, tutorial, practical and the textbook. Even if research shows the WWW to be a more effective teaching technique, students still need to be sold on the method. We might expect administrators to favor web-based teaching, but its acceptance by students is by no means certain.

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