Tapping into the Potential of Peer Tutors

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Abstract

Computer literacy is no longer optional for our medical students. From day one of their studies they need to be able to communicate by email, look up information about their timetable on the intranet, and use an elibrary. In addition it is assumed they have the ability to use standard software packages to prepare assignments, projects, and group presentations. The challenge facing medical schools is to ensure that all students have the necessary IT skills to cope with the demands of their curricula. For the past five years we have been running a highly successful peer-tutoring project to provide support to students who arrive without the necessary IT skills. This paper will report on the methods (how we recruit and train the peer tutors; how we identify those who need help; how we deliver the training) and the outcomes. We now have six years of data on the IT skills of 1,5000 students. Our peer tutor group (n=108) has become a valuable resource to the medical school, providing teaching assistants to a range of course and personal trainers for our reverse mentoring scheme. Finally, we are working with staff and students in the International Health and Medical Education Centre to promote a peer-tutoring scheme in Tanzania

Keywords:

Curriculum Issues; IT Skills; Computer Literacy; Peer Tutoring

Introduction

There is universal agreement that all undergraduate students need to be computer literate. [1] This requirement applies to medical students who are need to be able to log on to the university network to download course work, to look up timetables, to access the library catalogue and databases and to send and receive emails from administrators and academics. In addition, it is assumed they can wordprocess their assignment, scan images, create posters, set up spreadsheets and create PowerPoint presentations. [2, 3] If some students are not computer literate, how should the university and the medical school respond? In the UK, medical schools have adopted two different approaches to computer literacy.

1. Voluntary Approach: Workshops are set up and students are exhorted and encouraged to attend

2. Compulsory Approach: Workshops are programmed and all students are required to attend. (Unless they are granted an exemption by taking a test or presenting a certificate.)

Both of these approaches are problematic. When training is voluntary, attendance is often poor and there is no way of knowing whether those who most need the training actually attend. The compulsory approach is also flawed in that it often takes no account of the skills of students, and thus wastes resources. In medical schools with large student intakes[1], the challenge has been to find a cost-effective way to ensure that students have the IT skills and confidence demanded by the medical curriculum. This poster describes the work we have carried out over the last five years to design, implement and evaluate an IT skills programme for new medical students. The poster will focus on the three innovative features of the programme: (i) precourse evaluation of the IT skills of all new students; (ii) targeting training to those whose skills fall below a predefined level; (iii) the use of peer tutors to facilitate the workshops.

Methods and Materials

Preliminary Survey

Prior to the merger of our two medical schools (The Royal Free School of Medicine and University College Medicine) and the launch of the new medical curriculum, the Centre for Health Informatics and Multiprofessional Education was asked by the Dean and the Phase One Curriculum Committee to develop some proposals on how to provide an IT skills training programme for medical students. There were three different schools of thought as to what was required: (1) one faction wanted us to roll out a mass training programme for all students; (2) another group argued that there was no need to offer any training as all medical students were computer literate (*no evidence required!*); and (3) the third group felt that although some students might have weak IT skills, they were all very bright and once they realised they needed IT skills they would just pick them up (the implication again being that there was no need to provide training).

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[1] 350 –370 per annum at the Royal Free and University College Medical School

Faced with these taken-for-granted views about students' IT skills, we decided to carry out our first survey of incoming medical students to test the various assumptions. All first year students in the 1997 cohorts in the two schools were given a self assessment form relating to their IT skills (at the end of their first term).

Design of the Self-Assessment Form (IT Skills)

Emails were sent to a variety of discussion lists devoted to medical education, and/or IT in medicine asking readers if they had developed an instrument for measuring IT skills and, if so, whether they would be prepared to share their form with us. We had nearly thirty responses from medical schools around the world and borrowed from these forms to develop a proforma which would be easy to complete and to analyse.

The form we designed is four pages long and most of the questions are closed ended. The first page asks the respondent to assess their skills in relation to a large number of applications, using a four point scale - None, Basic, Average and Advanced. (Figure 1 reproduces this question.) For each skill the respondent is asked to indicate how they acquired the skill (at school, at work or self-taught). The next set of questions on the form are designed to establish pattern of computer use (e.g. when the respondent first used a computer; how many hour per week s/he uses a computer; reasons for using a computer; details of any courses attended or qualifications achieved). The third section asks about confidence levels, typing skills and ability to perform a series of basic tasks using a computer (Yes/No). The fourth section asks about computer ownership and whether the student will be bringing a computer to medical school. The final section deals with attitudes towards the role of computers in medicine and the type of training the respondent would like to receive. There is also space for the respondent to record general comments. In order to set up training sessions, we ask respondents for their name, home address and email address.

Figure 1 - Assessment of your IT Skills. (Please complete the table below by ticking in the appropriate boxes)

Skills	Your Competence (tick ONE box for each skill) (None, Very Basic, Average, Advanced)				How skill acquired (tick ONE box - the main place skill learned) (at school, at work, self taught)			Name of *Main* Packages Used (if known)
	None	Basic	Average	Advanced	School	Work	Self	(write in names)
word-processing								
spreadsheets								
graphics (presentation package)								
email								
databases - use an existing database								
Databases - design and set up a database								
Internet - World Wide Web								
Windows								
file management - save, delete, copy, merge, find								
programming								
set up a computer system, install software								

Analysis of the Questionnaire

The data from the questionnaires was coded and entered into a statistical package (SPSS). Two generic measures of IT skills were defined. The first variable (Overall IT score) was derived from the first question where students provide an estimate of their skills in relation to eleven different applications. (A four point scale, scored from 0 to 3.) Potential scores on this variable range from 0 to 33. The second measure was derived from yes/no replies to a checklist of fifteen different items (e.g. I can set up folders). The possible scores on this measure (Specific IT Skills) range from 0 to 15.

Results from the Preliminary Survey

The findings from the 1997 survey indicated that approximately 25% of first year students had weak IT skills (defined as scores of 10 or less). Using this information, reports were prepared for the deans and for the Phase One Curriculum Committee with recommendations to introduce a pilot IT training programme the following year.

Setting up a Randomised Controlled Trial (1998)

In 1998 we repeated the 1997 survey and achieved a response rate of 99% by sending out the form with the pre-course information pack mailed to all students in August (a month before the start of the course, at which stage students are perhaps more compliant when it comes to filling in forms).

We used the same basic questionnaire we had developed for our baseline study of IT skills. It was again clear from the replies that even in 1998 some students have *not* had the chance to develop their IT skills prior to starting their medical course. Analysis of the distribution of IT scores also alerted us to the fact that some students had very advanced IT scores. We wondered whether it might be feasible to use students with excellent IT skills to run workshops for those with weak skills.

We used the data from the questionnaire (the generic IT score derived from Question One) to set up a study to determine whether a short series of peer tutor-led workshops would boost IT skills of the target group. We identified all students with weak IT (i.e. those with scores of 10 or less). Half of these students were randomly to the training intervention condition (n=40) and the matched group (n=40) were not offered any teaching. 32 of the 40 students who were offered training accepted the offer and attended two, one-hour sessions in a small IT lab each week, over a six week period. (Table 1 indicates the topics covered in the workshops.)

Table 1 - Topics Covered in the IT Workshops

1. The UCL Network
2. Email
3. Use of WWW
4. Computer-Assisted Learning
5. Electronic Library
6. Word
7. Excel
8. PowerPoint
9. Files, File Management, Floppy Discs
10. Working in Windows Environment
11. Creating a Web Page

We contacted all students with excellent IT skills (scores of 25 or above) and invited them to be Peer Tutors. Those who expressed an interest were asked to attend a meeting and were briefed about what peer tutors would be expected to do. (Those who took part were offered a financial incentive). We had decided in advance that we wanted a ratio of 1:3 in the workshops, so we recruited nine peer tutors. A mailing list was set up to enable the tutors to communicate with one another and with the project leader. During the briefing session and in our on-going email communications, we talked about the role of a peer tutor. It was stressed that the peer tutor was there to facilitate the workshops, not to provide formal, didactic teaching. Peer tutors were encouraged to share experiences and in the workshops they learned that it was permissible to say, "I don't know" and to ask for help from one of the other peer tutors. Although it was not part of the original plan, peer tutors also provided help to their students outside of the timetabled class (becoming, in effect, a "personal trainer").

Results and Discussion

With the first cohort of students, we administered a follow-up questionnaire towards the end of the first term to the group which received training and the group that did not. (100% response rates) We wanted to see if there was any evidence that students who do not receive training will show "spontaneous improvement" once they become aware they are expected to use computers.

Analysis of the follow-up questionnaires (and interviews with the students) provided clear evidence that those who received training made significant improvement compared to the control group who showed no change.

Table 2 - Comparison of Scores – After Twelve Workshops

	Mean IT Score	**Range**
Participants	15.4	7-23
Control Group	9.4	5-17

Table 2 - Impact of Project on Participants' IT Skills[1]

      No impact – 0%   Minor Impact – 19%
      Major impact – 77%

[1]Self-report (from post-project evaluation questionnaire)

Table 3 - Perceived Benefits of Peer Tutor-led IT Training[1]

      No Benefit - 4%
      Benefits   - 96%

[1]Self-report (from post- project evaluation questionnaire)

Table 4 - Benefits Reported by Participants

- Learned to use UCL Facilities - 96%
- Became familiar with range of useful application - 85%
- Gained confidence in using computers - 77%
- Met other students wanting to improve their skills -69%
- Became comfortable working in Window environment - 62%
- Met Students with expertise in IT - 27%
- Keyboard skills improved - 27%

Comments by Students

"Teaching people how to use the computers in this, a very computerised college, is vital."

"This project was the sole thing which led to an improvement in my IT skills."

"It was a brilliant, most helpful option. Thank you."

"Thank you. It was a great start for a computer illiterate person. Very well organised project."

"Peer tutoring was an excellent, non-threatening way to learn, and in general there was a very good atmosphere on the course. The organiser gave people the space to learn from each other and trusted students to do so. Also, the motivation for people to do so was there since these are essential skills. Personally, I would have felt very lost without the course."

The Perspective of the Peer Tutors

"Today's session (Excel) was really fun and enjoyable! I am sure those students who have attended have greatly benefited from this IT scheme. As you may be aware I have attended all the IT sessions. And now I feel I have gained most valuable skills from doing so - as I am sure my fellow students who attended the session did too. I would be very grateful if I can take part in both the Adopt a consultant Scheme and the sessions you've organised for the London Foot Hospital (particularly the Excel session). I look forward to hearing from you soon."

"Thanks for giving me an opportunity to participate as a peer tutor. I have attended the first two sessions so far, and I must say that I have really enjoyed them. The students that I helped were also pleased with the scheme. I look forward to attending the Friday session."

"Just a little mail to let you know my thoughts. The whole peer tutor thing is a great idea and well worth it. The people I have been helping in the sessions were most grateful and I get a few emails now and again for more help. One of my good friends I met in the first session. The notes you provide are more than adequate and most of the "tutees" seem to get on without many problems."

Lessons from the Randomised Study

We were extremely encouraged by the results of our randomised trial. Students were very positive about the programme; they felt the critical success factor was the experience of learning from other students. There was a very good atmosphere in all the workshops. The peer tutors formed a close network (and many of them are still in contact). By the end of six weeks, those who had attended workshops reported being more confident and having more skills than the control group. It seemed that targeted IT workshops, run by peer tutors, could be a cost-effective way of delivering IT training.

On the basis of this 1998 experiment we designed a series of peer-tutor led workshops which have been run annually from 1999 to 2002. Each year we collect data on the IT skills of incoming students and target resources to those who fall below a predefined score. Each year the response rate is about 98-99%. The scores from the same proforma are used to identify potential peer tutors (the top 10% of the intake in terms of IT score). All peer tutors are given training and provided with the necessary materials to run the workshops. This year we have put much of our material online. In 2000 we modified our approach slightly in response to comments we received from the students. Instead of offering a complete set of workshops to a small number of students, we analysed each student's scores in relation to each application and offered training to those with weak scores on a particular application. So, some students could be invited to all six workshops, some could be invited to 3 and some could be invited to just one.

Although this method of targeting students has advantages, there are also large overheads in terms of the time it takes to collect and analyse the data, assign students to groups and send them emails and letters. Because the medical curriculum is so crowded, we are forced to timetable workshops at irregular intervals, and students are apt to forget their sessions unless they are reminded. Ideally, we would like to run all our workshops within the first two

weeks of term, but at present we have been forced to spread them out over a six-week period.

Table 4 – Summary: Numbers Involved in IT Programme

Year	No. of Participants	No. of Peer Tutors
1998	32	9
1999	33	11
2000[1]	110	20
2001	110	34
2002	125	34
Totals	410	108

[1]In 2000 we the programme was redesigned – the basis of counting participants thus changed.

Looking Ahead

Each year the IT skills of our students increases. The numbers of students requiring training on more than two or three applications has fallen dramatically since the programme began. At the same time student expectations about what they feel they should be able to do has risen. Initially, students just wanted to be able to word-process, send emails and search the World Wide Web. Now they are keen to master Excel, to use PowerPoint, to create Web pages and to understand Personal Digital Assistants (PDAs). In 2003, we plan to redesign the current programme -- instead of timetabling a series of workshops, we shall be introducing several "IT circuses" during the first two weeks of the course.

Conclusion

Although the computer literacy level of students has been rising every year, there are still students who need help and support at the start of the course. Peer tutoring has proved a very popular way of meeting this need.

One unanticipated benefit of this programme has been the creation of a community of students with advanced IT skills n=108) who have remained in touch with us and with one another. They have worked with us as teaching assistants and researchers on a number of projects (including our

project to provide personal trainers to senior clinicians). Two students now plan to do an MSc in Health Informatics and several are working with us to develop a programme to help patients find and appraise information on the Internet. This year we have introduced a special study module to enable our peer tutors to obtain a formal qualification (the European Computer Driving License, ECDL). Finally, we are working with colleagues and students in the International Health and Medical Education Centre who are keen to set up pilot schemes (using our methodology) in Tanzania.

Acknowledgements

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