Enhancing Consultants' IT Skills: A Reverse Mentoring Project

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Abstract

Many medical students arrive with excellent IT skills and experience of mentoring their peers in secondary school. Senior clinicians, by contrast, did not grow up with information technology and often feel left behind by the IT revolution. This generation gap is often seen as a threat to the authority of clinical tutors. We set up a reverse mentoring scheme to help consultants develop their IT skills. With a grant from the post graduate dean, we recruited a group of medical students to act as personal trainers to twenty-three consultants and specialist registrars. Each participant was issued with a set of learning vouchers which enabled them to "purchase" four hours of training and a password to access the learning resources provided on the project website. All the doctors completed a training needs analysis form at the start of the project and were asked to fill in an evaluation form at the end. Our personal trainers also completed a feedback form. This poster describes the methods used, and reports on the results of this unique reverse mentoring scheme.

Keywords:

Curriculum Issues; People and Organisational Issues; Evaluation Issues

Introduction

Senior doctors play many different professional roles all of which require information management skills. [1] The majority of doctors over the age of thirty will have picked up their IT skills on the job, by observing others and by teaching themselves. [2] There is evidence that *not* all doctors have acquired the knowledge and skills to enable them to make effective use of communication and information technology. Two recent UK surveys of Health Informatics (HI) competencies commissioned by the NHS Information Authority (2001, 2002) show big gaps between desired levels of skills and actual skills of both junior and senior doctors. [3] By contrast, many medical students have excellent IT skills and experience of mentoring their peers in secondary school.

Informal discussions with senior doctors suggest what they want is flexible, individualised IT training. Looking at the corporate world for lessons as to how to provide busy clinicians with training which meets their needs, there are two models which seem to be worth testing. The first is that of Personal Trainers and the second is the idea of Reverse Mentoring. A Personal Trainer is a person with skills who works with you on a one-to-one basis. Reverse Mentoring is another approach to learning which has found favour in business circles. This entails more junior staff providing mentoring to senior colleagues. The idea of reverse mentoring has flourished in areas where younger staff have a better grasp of the problem than their senior colleague, viz. IT, ecommerce, ebusiness. [5, 6]

The aims of this pilot project were:

(1) to investigate whether senior doctors would be willing to accept tuition from a medical student;
(2) to determine whether four hours of personal training would lead to general improvement in IT skills and confidence levels;
(3) to consider whether participants felt enabled to apply their generic IT training to their educational role.

Methods and Materials

With funding from the Postgraduate Dean and the collaboration of one of our local community trusts, we set up a reverse mentoring scheme to help consultants develop their IT skills.

Design of the Curriculum

Our participants were offered training on the following nine modules

- Working in a Windows Environment
- File Management (Windows Explorer, understanding and using different file formats such as rtf, pdf, zipped)
- Basic Word Processing
- More Advanced Word Processing
- Making Effective Use of Email
- The World Wide Web as a Resource for Teachers and Students
- Using an electronic library (how to search and access PubMed and other databases; use of on-line catalogue; CAL packages; Athens passwords)
- PowerPoint - using a graphics and presentation package
- Excel - how a spreadsheet can be used as a teaching tool and for managing details about your teaching (e.g. marks, attendance)

The decision as to what IT skills to offer to our senior doctors was based on:

(i)   an analysis of the type of skills doctors need in their educational role;
(ii)   a review of the IT skills specified *in Learning to Manage Health Information*; [7]
(iii)   a review of the skills included in the European Computer Driving License (ECDL). [8]

Recruiting of Senior Doctors

Our goal was to provide training to thirty senior staff based in a community health trust and a mental health trust. (This number of training placed was dictated by the funding for the project). We advertised the project to eighty doctors (consultants and specialists registrars) using posters, emails and announcements at meetings. Thirty-three expressed an interest in participating. They were given the address of the web site and asked to complete (i) a training needs analysis form; (ii) a consent form giving us permission to store their contact details in a departmental database and to share this information with their personal trainer; and (iii) a form which specified what training they wanted. The data from the needs analysis forms was entered into an Excel spreadsheet and analysed using a scoring system which we have used for the last five years in our Peer Tutoring Scheme. [4] Personal details were entered into an Access database. Applicants had a choice of downloading forms from the website, receiving a hard copy by post or a copy as an email attachment. Once the applicant had completed all the forms, they were assigned a Personal Trainer, issued with a set of learning vouchers which enabled them to book four hours of training and a password to access the learning resources from the project website.

Recruiting Personal Trainers

Since 1997 the Royal Free and University College Medical School has surveyed all incoming medical students to identify those who need training and those with excellent IT skills. Those with excellent IT skills are invited to act as Peer Tutors to other medical students. For this reverse mentoring project we sent an email to all medical students who had been Peer Tutors (n=90) inviting them to participate in the project. Initially, 38 students volunteered to "adopt" a consultant (i.e. act as a Personal Trainer). They were invited to attend a preliminary briefing meeting at which they were given details about the aims of the project and what they would be expected to do. They were asked to fill in various forms and to sign a consent form to allow their contact details to be placed on the website. A second briefing meeting was held just before the project went "live" to deal with matters of etiquette and communication, and to answer questions.

Project Website
http://www.chime.ucl.ac.uk/resources/ECITS/

A website was set up to advertise and support the project. All the teaching materials were available on the site, together with copies of forms, contact details of the personal trainers, and background material for clinicians explaining the purpose of the project and who was eligible to apply. The learning resources and personal information were all password protected.

Assigning Trainers to Consultants and Specialist Registrars

The Project Co-ordinator was responsible for assigning a Personal Trainer to each senior doctor and for monitoring the training sessions. Once the assignment had been made, an email was sent to the trainers and to the doctors. At this stage doctors were given their passwords and invited to visit the site to find information about their personal trainer.

Delivery of Training

Personal trainers were responsible for making contact with their doctor and fixing the time and place for the training. In most cases, the trainers went to the clinic or trust where the doctor was based. In a few instances, the training took place on the university campus. All of the doctors held honorary teaching contracts with the medical school and, in theory, had access to the university network. In actual fact, what emerged during the life of the project was that many clinicians did not have access. We worked with the library lead to try to resolve these problems.

Evaluation Methods

After the completion of four training sessions, all participants were asked to complete an evaluation form. Reminders were sent after one month and then again after two months. The evaluation forms were based on forms we have been using for our Peer Tutoring Project.

The forms were delivered as email attachments. The form for the doctors asked whether their skills had improved (4 point scale); their perceptions on the benefits of having a personal IT trainer; their rating of the usefulness of each of the sessions; their assessment of the clarity of the project's aims and objectives; and their suggestions on how the project could be improved.

Trainers also filled in a feedback form at the end of their four sessions with a clinician. They were asked their views on whether the project had achieved its aims; whether they would be prepared to act as a personal trainer on future projects; whether the IT skills of their doctor had improved; how they felt about reverse mentoring; and their ideas as to how the project could be improved.

Results

The project yielded data about the initial IT skills of the doctors who applied (self-report), and the types of skills they wished to acquired. In addition, there are outcome measures relating to the extent to which the project achieved its initial objectives. Lastly, we have measures as to the acceptability of reverse mentoring as a means of improving IT skills.

Part 1 - Profile of the Participants

Table 1 - Numbers of Doctors Participating

Number who enquired - 33
Number who filled in forms - 28
Number who received training - 23

Table 2 - Profile of the Participants (n=23)

Gender
Male – 43% (10)
Female - 57% (13)

Clinical Specialty
Psychiatry - 57% (13)
HIV/GUM – 22% (5)
Other – 21% (5)

IT Skills of the Doctors Who Applied

A review of the overall IT skills of the 28 applicants indicated that they could all benefit from some IT training. (Tables 3 and 4)

For each of the skills on the list (apart from use of email), less than 50% of the doctors felt they possessed "average" competence. Only a small handful claimed they had advanced level competence in relation to any of the fourteen applications. Relatively few (36%) had previously attended any type of course. The main type of previous training was word-processing and how to do an electronic literature search.

Table 3 - % of Doctors with No Skills or Basic Skills in Relation to Various Applications

Email	47%
Word-Processing	56%
Spreadsheets	58%
WWW	67%
File Management	67%
Use eLibrary	68%
Windows	71%
Graphics	86%
Use Databases	89%
Set Up Computer	89%
Set Up Databases	96%
Use Scanner	96%
Create Web Pages	96%
Programming	100%

An analysis of self-reported ability to perform specific tasks shows a similar pattern. (Table 4)

Table 4 - Profile of Skills and Knowledge of Applicants

Task	% of Doctors
I know how to turn a computer on and off	93%
I am able to use a mouse	93%
I can print out a document	82%
I know how to save data to a floppy disc	75%
I am able to wordprocess an article or a letter or my CV	71%
I can send a file as an email attachment	61%
I can cut and paste information from one application to another	50%
I am able to format a floppy disc	36%
I can set up folders or file directories	36%
I feel able to teach myself how to use a new application	32%
I am able to install a software package	32%
I am confident in using on-line library catalogues	29%
I know how to detect / prevent viruses	25%
I am able to analyse data using a statistical package	18%
I understand and can use different file formats (e.g. rtf, pdf, gif, zip)	4%
I can set up mailboxes	0%
I can design a web page	0%

Use of Computers at Work

Although the group of doctors who applied to participate the project all had quite basic IT skills,

nearly all of them (96%) reported using a computer in their work

Table 5 - Use of Computer at Work

Yes - daily	75%
Yes - monthly	7%
Yes - weekly	14%
No - not at all	4%

Access to Computers

71% of the group had their own computer at work and reported spend an average of 7 hours per week on the computer. 80% had been using a computer at work for at least the last two years. 41% claimed to have used a computer at work for ten years or more.

Table 6 - Main Reasons for Using Computer at Work

Word-processing	45%
Search Web	18%
Email	15%
Analyse Data (Excel, SPSS)	8%
Search Libraries, Databases	5%
Create Presentations	5%
Access Patient Information	3%

The most significant finding regarding the way these doctors used computers at work is the very low proportion (3%) who use a computer to access patient information. It should be pointed out that we recruited our participants from a community health trust and a mental health trust where progress towards electronic patient records has been slower than in acute trusts.

Analysis of IT Modules Selected

Table 7 - Analysis of the Modules Chosen by Doctors[1]

Modules	No. Selecting
Basic Word	7% (7)
Windows NT Desktop	8% (8)
Advanced Word	8% (8)
Email	11% (12)
Use of WWW	11% (12)
eLibrary	11% (12)
Excel	13% (14)
Windows Explorer	15% (16)
PowerPoint	16% (17)

[1]Note: this table includes choices made by those who signed up but did not in the end participate.

There was a good fit between the choice of modules and the actual IT training needs as revealed from the training needs analysis form. We were especially pleased that so many participants opted for training in

the use of Windows Explorer and the use of an elibrary.

Perceptions on the Relevance of IT Skills to Teaching Role

Table 8 - Perceived Relevance of IT Skills to Teaching Role

SKILL	Useful or Essential	Irrelevant or Marginal
Word-Processing	75%	25%
Graphics - Presentation	71%	29%
WWW - Search Skills	71%	29%
Windows	67%	33%
Use eLibrary	68%	34%
Email	64%	36%
File Management	64%	36%
Use Databases	56%	45%
Use Scanner	43%	57%
Design / Set Up Databases	40%	60%
Set up Computer	30%	70%
WWW - Create Web Pages	25%	75%
Programming	18%	83%

Fifty percent or more of the doctors in this project thought that eight of the IT skills on the list were useful or essential in relation to their teaching role. The only surprises were the low valuations placed on ability to set up Web pages (75% thought this skill was irrelevant or marginal) and the high proportion (57%) who did not see ability to use a spreadsheet as central to their teaching role.

Profile of Personal Trainers

Table 9 - Recruitment and Retention

Number invited to participate: 90
Number who expressed an interest: 38
Number of trainers initially recruited: 31
Number of trainers who actually provided training: 16

Table 10 – Gender of Trainers
> Male = 81% (13)
> Female = 19% (3)

Table 11 - Year of study
> First Year = 38% (6)
> Second Year = 38% (6)
> Third Year = 19% (3)
> Fourth Year = 1% (1)

Part 2 – Outcome Measures (Evaluation of Project by Doctors and Trainers)

The response rate for our Personal Trainers was 63%. The response rate for our Clinicians was low (22%).

Reported Improvements in IT Skills

38% of clinicians reported a considerable improvement in their IT skills and 12% and a major improvement following their four sessions with a personal trainer.

Participants were asked to rate each of the sessions they attended using a 3 point scale (not useful, useful, very useful). Figure 1 below shows the combined ratings for all those who completed an evaluation form.

Fig 1 - Clinicians' Ratings of IT Sessions

Useful
11%

Very Useful
89%
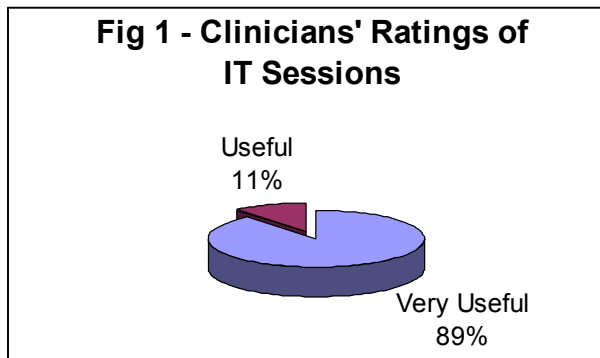
Reported Benefits of Having a Personal Trainers

All those who completed an evaluation form identified four major benefits to having a personal trainer:

- Gained insight into how medical students use IT
- Became more confident using computers and learning new applications
- Training took place at a time which suited me
- Training took place at venue which suited me

General Perceptions of the Project (Clinicians)

"The training was exactly what I needed but not enough"

"I found the sessions very useful and informative. I hope that the project continues."

"The difficulty is always to reserve uninterrupted time"

Evaluation of the Project by the Personal Trainers

The trainers were unanimous in their positive views about the aims of the project and their relationships with their consultants.

"I have really enjoyed working as a personal IT Trainer on the ECITS course. I felt it helped to improve both my communications and teaching skills. Although reverse mentoring is a new concept for many people, I felt that the SpR who I taught was not fazed by a younger person teaching him and it did not affect the teaching of the sessions."

Table 12 – Summary of General Evaluations by the Personal Trainers

100% of respondents felt that …..

- The Project had achieved its aims
- The Project goals were clear
- The teaching documents were useful
- The Website was adequate
- They were adequately briefed
- The participants' IT skills improved
- They would be willing to be involved in future project
- The programme should continue
- Reverse mentoring is an effective method of training
- They had a good relationship with their doctor

Conclusions

This small piece of work has demonstrated the potential benefits of reverse mentoring and encouraged us to seek funding for a much larger scale project. We are planning a more ambitious project which will involve IT training for seventy-five to ninety primary care staff (doctors, nurses and practice managers). Our local Workforce Development Confederation has prioritised this project for 2003.

Acknowledgments

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