

ORIGINAL RESEARCH

The experience of final year medical students undertaking a general practice run with a distance education component

S Lillis, V Gibbons, R Lawrenson

Waikato Clinical School, Hamilton, New Zealand

Submitted: 28 July 2009; Revised: 29 October 2009; Published: 11 March 2010

Lillis S, Gibbons V, Lawrenson R

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Rural and Remote Health 10: 1268. (Online), 2010

Available from: <http://www.rrh.org.au>

ABSTRACT

In recognition of the difficulties posed for New Zealand medical students by travel during rural general practice attachments, a system of distance teaching was devised for final year medical students at the Waikato Clinical School. In place of weekly small group teaching using reflection on practice at the central campus led by a tutor, students participated in reflective learning via an electronic web based message board and once weekly brief individual discussion with a tutor. *Moodle* and *Skype*, both freeware applications, were used as the methods of facilitating asynchronous and synchronous learning environments. Students experienced significantly less travel time as a result of the innovation. They also reported enthusiasm for the modes of teaching and the technology. A small increase in tutor time commitment was necessary. Distance education initiatives can be undertaken with minimal expense in the general practice setting. The educational opportunities it offers can be similar to, but not identical to small group teaching.

Key words: distance education, medical education, New Zealand.



Introduction

All final year medical students or trainee interns (TIs) in New Zealand are required to undertake a 6 week general practice attachment. New Zealand is a sparsely populated country with a large rural population. Of a total population of 4.2 million, the density is 15 people per km² in comparison with 243 per km² in the UK. The Midland region, where this research was undertaken, has 40% of its population living rurally. Small towns vary in distance from cities but most are within a 100 km radius. It is government policy to support the rural general practice workforce. At the University of Auckland, TIs usually spend 3 weeks in an urban practice and 3 weeks in rural practice. Maintaining contact and providing education and support from university teaching staff to those students undertaking rural experience in small towns has been historically problematic due to travel time and distance from the practice to the academic centre. Traditional methods of distance education such as videoconferencing for a single student are prohibitively expensive.

There is a recognised need to increase the New Zealand rural general practice workforce¹. There are also specific educational advantages of rural experiences for medical students². A literature review by New Zealand researchers into those aspects of undergraduate interventions that promote rural health³ commented:

Selective admission, curricular emphasis on primary care/family medicine, decentralised/community-based teaching, and preceptorship have been found to be the four common features that seem to have made the ten identified undergraduate rural programmes successful.

Further, positive rural experience is associated with future choice of rural practice^{4,5}. This project aimed to support community based, decentralised teaching.

With the assistance of a Ministry of Health Rural Innovations Fund grant, it was possible to explore two different but complimentary methods of maintaining contact and continuing with reflective practice with students in their general practice attachment: an asynchronous message board for small group learning and synchronous contact with the tutor. Reflection on practice is an established and well regarded method of education in clinical professions, particularly in nursing⁶. Previous research has highlighted student driven desire for guided reflection when undertaking general practice attachments⁷. It was decided to continue with the concept of reflection on practice as the core academic theme but to use a message board as an asynchronous method of achieving this. Students were required to post anonymised cases with a reflection that could then be discussed by the group. This article discusses the results of focus groups and a survey with TIs who participated in the project.

Methods

Two cohorts of 6 students from the Waikato Clinical School undertaking general practice experience were selected for the trial. Students undertook general practice placements anywhere in the Midland region of the North Island of New Zealand. The students were supplied with a webcam and integrated headset with microphone. *Moodle* and *Skype*, both freeware applications, were used as the methods of facilitating asynchronous and synchronous learning environments.

Two semi-structured focus groups were held, each with six participants and two facilitators using conventional focus group structure as relevant to general practice research⁸⁻¹⁰. The purpose of the focus groups was to understand the students perspective of their educational experience and to identify difficulties and limitations of this mode of program delivery. The conversations were double taped, transcribed and the transcripts imported into NVIVO software (QRS International). A general inductive analysis was undertaken



according to established guidelines¹¹. A survey was also undertaken to quantify student experience with the course. All students were informed of the project before their general practice attachment and consent was obtained to tape the focus groups.

Results

Learning experience

Educational value of reflection: A somewhat unexpected finding was the enjoyment aspect of the reflective component of the clinical experience. This seemed to apply to most of the participants.

It was kind of fun to read everyone's reflections and chat.

I quite enjoyed all the comments coming after and reading other peoples forums and what other people added to it after.

I think it's a good way of learning. I enjoyed it.

Several comments were made about an unexpected similarity of issues that were of concern to the participants.

...it's interesting to see as well that lots of people had similar issues that came up in the forums.

The exact same thing happened to me the next week ... it was like wow, you know it was good to share that kind of feedback and have that commonality so that was good.

The shared experience seemed to provide participants with reassurance of validity in the learning process. It became clear in the focus groups that the usefulness of reflection was proportional to time invested.

...think you get out what you put in, like there were a couple of ones that I maybe Googled cause I wasn't sure about something and did a little bit extra but in that, you definitely get more out of it if you do that.

Although enthusiasm for learning by reflection was close to universal, it was also clear that some participants valued the experience more than others and committed more time to the process. The reflection process chosen also enabled a high degree of intellectual honesty in the discussions where there was, at times, disagreement and constructive criticism.

...people weren't afraid, I don't think, to say what they really thought.

This openness of communication between participants was considered to be valuable. The involvement of the tutor in the asynchronous discussions was deliberately kept to a minimum with intervention only to add information that would refocus discussions. There was some support for a more involved role for the tutor.

...we are probably all at the same level and you know have got some ideas but don't have the experience working that you did so I think some of your comments did sort out everyone else's into a better perspective as well.

Previous experience with reflection as a learning tool was very limited. There was agreement that some specialities would not be appropriate for reflective learning but that the general practice environment was very appropriate.

I guess there are some areas of medicine where reflecting on what you have done and sharing what you've done and getting other people's opinions on what you've done feels much more comfortable, my guess is certainly general practice maybe internal medicine, psychiatry.



What prompted students to discuss a particular case: The choice of what to reflect on was left to the students. However, some guidelines were given at the beginning of the attachment to avoid discussions on disease management and focus on other issues. The reasons for choosing cases were broad but several themes emerged. Some cases clearly had greater emotional impact than others and were therefore chosen.

They just kept resurfacing in your head.

Several reasons emerged as to why some cases had such impact. Ambiguity in defining what was happening in the consultation or what direction the consultation should follow were cited.

They were the ones, the cases that had most ambiguity around them.

...like the answer wasn't obvious or the direction wasn't obvious.

...that had the most branches coming off them that you could have gone down.

Other reasons cited were good learning cases for others in the group and situations where the student felt they had a knowledge deficit or consultations that had not gone well. A perceptive comment encapsulated the concept of ambiguity as the discrepancy between a learned theoretical model and reality of medical consultations.

... I reckon the ones that were stand-out and not clear cut most represented the difference between, 'in an ideal world we would know what to do' and 'in the real world' like the difference between those two things.

Did asynchronous communication provide as good an experience as face-to-face meetings? The educational initiative had been designed to replace as much of the experience of small group learning as was possible.

However, the end result was experienced as having slightly different characteristics by the participants. In particular, students seemed to miss discussions on medical management of conditions.

I think the forums are excellent for reflective type processes, but I don't think it's a great place to learn you know, what exactly you should be doing to manage certain conditions.

The forum's focus on reflection did provide educational aspects not available in small group teaching and this was appreciated by participants.

I think the educational experience is more than made up for with what we've already got. I think it's just the fact that it's sort of a social contact as well which is kind of, not educational but it's still important.

Further, the sense of closeness generated by small group teaching was generally felt to be replicated in the educational initiative by some group members.

I think the forum took the place of that perfectly adequately cause I felt like I was closely in touch with everyone here.

Practical considerations

What technical factors influenced the project? A variety of technical issues affected the delivery of education. Gaining access to the Moodle site on-line proved occasionally difficult. The major problem appeared to be firewalls in practice computer systems.

I went to log on to the site and it wouldn't let me post the form so it had to be done at home.

Skype, as a method of one-to-one contact between student and tutor proved very variable in call quality and reliability.



Some calls were exceptionally clear with audio quality far exceeding standard phone calls and with the added benefit of video. There were, however, other calls where both audio quality and dropped call rate were unacceptable and the contact had to be continued by cell phone.

The Moodle site proved very robust and highly flexible in terms of supporting teaching. Adding new elements to the site was relatively simple. Learning time to program the site was approximately 1 hour for a user with no prior Moodle experience but good overall IT skills. It became apparent that this project used only a small part of the overall functionality of Moodle.

How much time did the reflection component take? The overall time to complete the reflection component of the attachment was a little over 1 hour.

An hour for each one of your own and then maybe say like 10 or 15 minutes to read and comment on each other's.

Travel: The impetus for this project was to ameliorate the cost and inconvenience of travel to small group teaching. Although cost was mentioned as a factor, the time component of travel was of much more concern to students.

...I think that it was probably a saving grace not having to drive back every week.

...so if I was also adding in trips to Hamilton [location of clinical school] on a weekly basis it would have just been too much.

A rough calculation based on the attachments of the previous year's students and excluding the first and last small group teaching sessions of the attachment revealed that this initiative saved just over 7000 km of travel distance and close to 70 hours of travel time for the 12 students.

Skype meetings

The Skype meetings were designed to maintain contact between the student and the tutor at the academic base. This was in addition to on-site supervision by the teaching general practitioner at the practice. The Skype conversations were kept deliberately broad and were an opportunity for the student to discuss matters of their choosing.

I thought the Skype meetings were very convenient and I liked that they dealt with stuff like career stuff. I thought it helpful that you talked about broader career options and things as well with me. I thought that was quite cool and exciting.

I liked the idea and a bit of one-on-one with the supervisors is always good as well as having the forum and the group stuff, so I think both was good.

Survey results

A short survey of the students was also undertaken. The survey questions were created independently of the qualitative arm of the research. Of the 12 participating students, 11 completed the survey (Table 1)

Discussion

The objective of the research was to decrease travel for students while maintaining a stimulating educational environment. Clearly, the students perceived the reduction in travel as being of considerable benefit and calculations on time saved as well as travel expense indicated substantial gains. The added cost of the educational program was minimal due to the selection of freeware applications (Moodle and Skype) and the use of existing hardware (practice computers, student laptops and existing broadband networks).



Table 1: The reflective component of the educational experience

Survey question	Strongly agree/agree	Neutral	Disagree/strongly disagree
I found the reflection part of the course interesting.	100	0	0
The reflection component was educationally valuable.	82	18	0
The technology			
Using the Moodle site was easy.	91	9	0
I found the Skype technology easy to use.	91	0	9
The teaching methods			
The 6 week course provided effective learning for me.	82	18	0
The teaching methods of Moodle (reflection) Skype (contact with Steven and other students) added to the learning that I experienced in the practice.	91	9	0
Collegiality			
Communication among students was sufficient to overcome lack of face-to-face meetings.	64	18	18

The educational implications of the innovation are more complex. Small group teaching (the method replaced by this initiative) is generally popular with students because of its ability to meet student needs and the benefits of informal discussions¹². There is robust evidence that indicates distance education can be at least as good and may be better than traditional methods of education¹³. However, the field of distance education is also littered with failed projects. Failure to understand the social implications of distance education¹⁴, poor acceptability of this mode of learning¹⁵, resistance to the changing role of the teacher¹⁶, faculty resistance¹⁷ and technical issues can confound the most enthusiastic of programs.

In this research, it may be accurate to consider that the reflection component with its delivery mechanism did not replicate the educational characteristics of small group teaching (collaborative learning, high collegiality, learner focused and high informal learning). There was, however, a high reported level of collegiality among the groups as well as the successful introduction of a different mode of learning – reflection on practice in a small group setting. The individual meetings by Skype with the tutor on a weekly basis assisted in providing student focused interaction. The students commented on the loss of informal communication

and, although not recognising it as a learning situation, clearly valued the contact.

Students had little prior experience with reflection as an educational tool and it would appear that the previous reflection processes lacked educational rigour. This would appear to be the norm rather than an exception⁷. The students in this research found the process to be fun, interesting and of high educational value. The corollary is that the reflective process displaced more formal education on diagnosis and treatment, and there was some indication that this was missed. It may have been that more involvement with the general practice preceptors would have ensured that the formal education on management should be handled locally.

The overall teaching time for the tutor was increased. Not only were there individual Skype sessions but the virtual message board had to be monitored and occasional comments made when the conversations needed steering. There was also some ongoing site maintenance for Moodle. The added time commitment was approximately 2-3 hours per week. This extra time commitment must be carefully considered in terms of benefit against resource use as well as balance between faculty member's time and student time.



Technical problems were experienced during this project. A few practices could not run Skype due to firewall issues and students had to contact the tutor from home. Skype was variable in the quality of calls; some were of high quality and allowed both audio and video linkup, while others had marginal audio quality and could not simultaneously run video. On one attachment, Skype had to be abandoned and cell phone contact used instead. One participant had difficulty with the technology and did not find the process enjoyable.

Conclusion

Distance education can be provided at minimal cost with substantial savings in terms of student travel expenditure and travel time. An asynchronous message board provides an opportunity to engage students in reflective discussions that are innovative, well received and of good educational value. Some of the informal education that occurs in small group teaching is lost. Providing relatively brief tutor to student interaction alongside the practice teaching is useful and valued by students. There is a small but notable increase in tutor time. The development of faster and more reliable broadband connections would substantially improve the feasibility of similar projects in the future. The level of positive feedback from participants in this project has resulted in adoption of both principles and structure for current and future general practice attachments at the Waikato Clinical School.

Acknowledgement

The authors gratefully acknowledge support for this research from the New Zealand Ministry of Health Rural Innovations Fund.

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