

Design features of an e-mentoring system for the health professions: Choosing to learn in partnership



Sarah Stewart
Centre for Online Health
University of Queensland

Catherine McLoughlin
School of Education
Australian Catholic University

In the past decade there has been a phenomenal growth of online mentoring websites and opportunities within a wide variety of professions, yet few peer reviewed publications to date have addressed the linkage to ICT and how it supports such systems. The purpose of this article is to address this gap in our knowledge by: proposing that the Internet and social software applications can provide a viable medium for enabling mentoring within defined roles, and communication channels for practitioners to explore online mentoring. Past research has found that scaffolding functions of mentoring (psychosocial and vocational), can be provided by ICT applications mediated by a mentor. We extend past research by assessing the relative value of technology applications to support virtual mentoring by describing a mentoring system has been designed for health professionals employed by a health care organisation. The initial observations indicate that e-mentoring relationships require additional support and education in the beginning stages of development. By providing specific research frameworks that underpin successful e-mentoring schemes internationally, we propose future research directions for e-mentoring supported through ICT, with its associated opportunities and challenges.

Key words: e-mentoring, mentor, mentee, reflection, professional development

Introduction

Definitions of mentoring abound in the literature. Bierema and Merriam (2002) define mentoring as a “process of shared learning and growth that promotes mutual benefit, interaction and support for both parties”. The relationship is driven by the needs of the mentee, with the aim that she becomes an independent, autonomous learner (Klasen & Clutterbuck, 2004). The advantages of mentoring for organisations and individuals appear to include improved recruitment and retention of staff; increased self confidence and motivation; career advancement and academic success; increased communication and collaboration; increased self fulfilment (Bierema & Merriam, 2002; Rose, 2005). The traditional understanding of mentoring consists of two main purposes: to support career development or task-orientation and to offer psychosocial support. Participants engaging as mentors in the former offer support, advice, and information related to task, career or professional development whereas the latter provide both emotional and psychological support. The career function has been identified as the instrumental and vocational function, while the psychosocial function has been termed the intrinsic function (Terrion & Leonard, 2007). Several studies have demonstrated that the psychosocial function of mentoring may be more important to younger students or professional novices than the career –related function (Allen, Poteet, & Burroughs, 1997; Rose, 2005). In a typical mentoring relationship in teacher education, a veteran or experienced teacher is paired with a naive or beginning teacher and the former acts a role model, coach and adviser. In a review of the literature by Carter and Francis (2001), mentoring is also presented as a process that ‘mitigates practitioner isolation, promotes the concept of an educative workplace and that leads to the creation of understanding of consensual norms in a school, faculty or team’ (p. 250). They conclude that contextualised or workplace learning that is mediated by mentors can be effective in the development of ‘an appropriate body of practical professional knowledge for beginning teachers’ (p.250).

In the health professions, there has been confusion and overlap between mentoring and other development strategies such as preceptorship and supervision (Mills, Francis, & Bonner, 2005). A preceptor is a person who is usually designated by an organisation to orientate the new employee to the work setting in a short term relationship, with an emphasis on skills development (Rose & Best, 2005). The meaning of

supervision also varies. For social workers and mental health workers, supervision is provided by a trained professional with the aim of improving practice by reflection away from the practice setting (Mills et al., 2005). In some instances, the supervisor may be paid by the practitioner (Gardner, 2006). Supervision may also be carried out in the clinical environment, with the aim of assessing and improving competency; this is often referred to as managerial supervision (Rose & Best, 2005). One example of this overlap of functions is in New Zealand where mentors work with new graduate midwives in the clinical environment, supporting them in their decision-making and development of skills which one may argue is more the role of the preceptor (Kensington, 2005).

What cannot be argued against is need for ongoing learning, support and professional development opportunities for health professionals. This is due to the current professional and statutory requirements that must be fulfilled in order to maintain currency. In New Zealand, health professionals must have an annual practicing certificate and in order to acquire one, they have to attend a certain number of study days and updates, and carry out competency activities (New Zealand Ministry of Health, 2006). Midwives, for example, have to gain a certain number of professional development and education points and critique their practice in a yearly audit (Midwifery Council of New Zealand, 2006). There is also the expectation that health professionals carry out evidence-based health care. In order to be able to do this, they must remain constantly up to date with the latest evidence-based practice and recommendations. They must also be seen to frequently critique their practice in the light of current evidence. If they do not, they open themselves up to questioning and challenge from health consumers (not that that is a bad thing, of course) and ultimately litigation.

Whilst mentoring is recognised as an effective strategy for support and development, factors such as lack of access and unavailability of a suitable mentor have acted as barriers to mentoring. These barriers may be overcome by e-mentoring. The aim of this paper is to give an overview of the design feature and technological support issues that are important to consider when designing an e-mentoring system. The context is health care, and is based on the beginning work that is currently being carried out in Queensland, Australia.

What is e-mentoring?

The mentoring relationship is a two-way process which potentially benefits both mentor and mentee as they learn from each other. Electronic mentoring approaches have been adopted in order to overcome barriers to traditional face-to-face mentoring including lack of access due to geographical and professional isolation, time constraints, unavailability of a suitable mentor, lack of managerial and institutional support as well as limited knowledge of mentoring (Stewart & Wootton, 2005).

E-mentoring (electronic mentoring) is mentoring carried out using electronic forms of communication and is otherwise referred to as telementoring, online mentoring, virtual or cyber-mentoring (Kasprisin, Boyle Single, Single, & Muller, 2003). Asynchronous mentoring is usually carried out by email but synchronous methods may also be utilised, for instance instant messaging, online voice-to-voice networks such as "Skype", and video conferencing. More recently, a number of social software tools such as Blogs and Wikis provide communication channels to support the mentoring relationship.

Educational institutions have led the way with the development of e-mentoring programs (Bierema & Hill, 2005). In particular, programs have been flourishing in school settings in both the United Kingdom and North America (Russell & Perris, 2003). There are any numbers of schemes with configurations of mentoring relationships from one-to-one to groups, led by mentors who are teachers, community members, undergraduate students, peers or industry employees. The aims of these schemes vary from enhancing life skills in children who are disadvantaged and troubled, to supporting children to improve academic achievement as they progress through school to higher education (Colky & Young, 2006). One such scheme is the International Telementor Program which was commenced in 1995 by Hewlett Packard as a project to link employees with school pupils in the United States of America (USA) (<http://www.telementor.org>). The web-based messaging system employed has been shown to improve the critical thinking skills of students, increase self-directed learning and increase teamwork (Lewis, 2005). In East England, the E-mentoring Project aims to support school students who plan to move into healthcare careers or students who have the ability to go in such careers but who have fallen short of achieving the required high school qualifications (Hawkins, 2006). The mentors are health professionals who are employed by the local health Trusts. The scheme is funded by 'Aim Higher' which has been set up by the Department of Health as a strategy to support entrants through higher education. Initially, uptake of the scheme by school students was slow, but since then the number of emails exchanged have increased.

E-mentoring in higher education

A variety of e-mentoring schemes are in operation in the tertiary setting designed to benefit both students and faculty. MentorNet (<http://www.mentornet.net>) is an email-based mentoring network created in the USA for the support of female engineering and science students. The mentors are the academics in the same field (Barsion, 2004; Single & Muller, 2001). This program has been running for some years and is highly regarded by the program participants, particularly as female science students find it difficult to find appropriate traditional mentors. Satisfaction levels have been high with almost 95% of students and mentors saying they would recommend the program to others. In the latest evaluation, mentees (83%) reported the main benefit was support from the mentor, which included giving ideas for stress management: balancing personal and professional lives (66%) as well as work loads (54%) (Barsion, 2004). This in turn increased self confidence (62%). Mentors reported that the benefit was their contribution to the development of a new generation of students.

Peer mentoring has also been successfully carried out using computer-mediated communication (CMC) (Cascio & Gasker, 2001). In one scheme, post-graduate social work Masters' students mentored first year undergraduate students in a university in the USA for a semester. Cascio and Gasker (2001) acknowledged that the small sample was a limitation of their study, however they found that both mentors and mentees benefited from the experience; the mentors enjoyed sharing their enthusiasm for being social workers and valued the intellectual challenge of mentoring; the mentees benefited from having role models who re-enforced professional identity. Traditional mentoring has been found to be a valuable support and development tool for new teachers, as well as a means to increase research productivity, collaboration and expertise (Boyle & Boice, 1998; Jacelon, Zucker, Staccarini, & Henneman, 2003; Turnbull & Roberts, 2005). There has been some scepticism as to the value and outcome of e-mentoring. Brockbank and McGill (2006) believe the emphasis on e-mentoring as a cheap and time-saving process results in a relationship that is driven by needs of the organisation rather than the learning or developmental requirements of the mentee.

Choosing ICTs and media to enable e-mentoring

Some researchers feel mentoring can only be carried out face-to-face so that mentees can observe their mentors (Evans & Volery, 2001). However, proponents of e-mentoring argue that it is effective particularly when there are no opportunities for traditional face-to-face mentoring (Single & Single, 2005). With Internet connection available, mentoring becomes a national or even international option which is particularly beneficial for people who would otherwise be unable to access mentoring opportunities (Kasprisin et al., 2003), though it may involve additional costs and time. Single and Single (2005) agree that e-mentoring is not a time-saving or a cheaper option to traditional mentoring; as setting up web sites and program software can be a costly and time consuming process.

Overall, e-mentoring overcomes the barrier of time constraints by allowing flexibility of participation; and asynchronous communication. Emails can be read, considered and answered at a convenient time which allows contemplative reflection and constructive feedback (Kasprisin et al., 2003; Stewart, 2006). The ability of the Internet to overcome temporal and spatial barriers enables mentoring to have an egalitarian aspect that is missing in face-to-face mentoring (Bierema & Merriam, 2002; Single & Single, 2005). The constraints of social status, physical appearance and behavioural expectations are absent in electronic communication, which in turn encourages disclosure that would not happen in a face-to-face setting (Bierema & Merriam, 2002; Knouse, 2001; Stewart, 2006). It can be easier to misconstrue the message of an email in comparison to the face-to-face spoken word, which can lead to difficulties with communication. CMC lacks the extra cues that body language and non-verbal communication adds to an in-person conversation. On the other hand, emails provide a permanent record that can be returned to for further reflection (Kennett, 2006).

The advent of social software tools combine the collaborative affordances of technologies such as shared audio and video conferencing, shared Web logs (blogs), social book marks, and RSS syndication, with related activities such as virtual conferences with leaders in the field at associated professional meetings. This software provides an avenue for dialogue and debate among mentors, mentees, community leaders, and, most importantly, novices in the beginning stages of their careers.

Rationale for the study

BlueCare is one of Australia's largest providers of community health and residential aged care. It has grown to become one of Australia's leading not-for-profit providers of community and residential care services with 9500 employees and over 250 centres throughout Queensland and northern New South Wales. The organisation is best known for its home nursing service as well as the provision of residential aged care accommodation. A range of allied health services are also provided including physiotherapy, occupational therapy and nutrition support. In common with healthcare provision globally, BlueCare face a number of employment issues. Recruitment and retention is an ongoing concern not least because of professional and personal isolation as BlueCare services a large geographical area that contains many rural and remote communities. This geographical isolation exacerbates employment problems which include access to ongoing support and professional development, time release to attend ongoing education, distance from colleagues and educational resources (Francis, 2004; Patterson, 2000). Staff are provided with ongoing educational opportunities provided by the organisation in the form of face-to-face, focused study days. Mentoring is seen as an important process for providing support for staff, but is currently a neglected area in the organisation. Anecdotally, it is known that mentoring is provided in an ad hoc, informal manner, especially to new staff. However, there are no formal mentoring programs within BlueCare.

The BlueCare mentoring system is underpinned by the theoretical concept of evolutionary mentoring (Brockbank & McGill, 2006). Learner control and authentic learning are elements of evolutionary mentoring, which has transformation of practice as its outcome. Authentic learning ensues as mentees make sense of the context they work in and deal with the issues that arise in their work place (Martens, Bastaens & Kirschner, 2007). E-mentoring was chosen for this study as opposed to face-to-face mentoring as it provides universal access to mentors for staff, particularly those who work in rural and remote areas. It is flexible and can be driven by the mentees, who identify their own learning needs (Table 1). E-mentoring has the potential to support community of practice as people group together to support each other, share experiences and knowledge (Dennen & Wang, 2002), however for the time being the BlueCare system is servicing one-to-one dyads.

Evaluation

The evaluation of the e-mentoring system will be carried out using triangulation (Beanland, Schneider, LoBiondo-Wood, & Haber, 1999). Outcomes of job satisfaction, stress and burnout for staff who are e-mentees will be compared to a control group of staff who are not receiving e-mentoring. The experiences of staff who are involved in e-mentoring will be evaluated using a mentoring satisfaction survey and individual interview, focusing on how they felt about developing an online mentoring relationship and its outcomes in terms of occupational learning and support, as well as their experience of interacting with the technology and the process of mentee/mentor matching (Caine, 1989). Content analysis of emails will also be performed to explore how people communicated with each other, what they wrote about and discussed. This is to gain an understanding of the function of e-mentoring, especially in the multi-disciplinary health context. This study is in its beginning stages and plans to add to the knowledge of e-mentoring, especially in the health area where there is a lack of research on how e-mentoring facilitates the ongoing learning of health professionals in the work environment. Ethical consent for the study was obtained from the Medical Ethics Research Committee of The University of Queensland.

The BlueCare E-mentoring system

The BlueCare E-mentoring system consists of an email system that allows the participants to send secure, encrypted emails to each other independent of BlueCare (Figure 1). The web site is protected by Secure Socket Layer and participants require a user name and password in order to access the email system. The dedicated email system allows security that is not be provided by public systems such as 'Hotmail'. It is independent of BlueCare in order to allow the participants the confidentiality that they may not receive if they use the organisation email system. Once participants has logged into the system, they are able to email their individual named mentors/mentees. Emails are stored in an archive so participants can see the emails they wrote previously.

Overcoming challenges

There are a number of challenges to consider when introducing this type of intervention to health professions, not least resistance to technology, reduced access to computers, time constraints and limited computer skills, although this does appear to be improving as more health workers complete pre-

Table 1: Descriptors of e-mentoring systems and associated learning approaches

Term	Author	Focus/Context	Learning approaches	Technology affordances
E-mentoring	Single & Muller, 2001	Science students mentored by woman engineers, USA	E-mentoring provides benefits of mentoring & overcomes constraints of time and geography	Interactive web site, email, instant messaging, discussion board
	Meggison et al, 2003	Small business managers mentored by business owners, England	E-mentoring overcomes barriers of time, distance and financial constraints that hinder face-to-face mentoring	Web-based email
	Rickard, 2004	Small business managers mentored by experienced business people, Australia	Leaner control -non-directive learning controlled by learner	Web-base email & discussion board
	Headlam-Wells et al, 2006	Women in business mentored in one-to-one dyads and with access to community web site, UK	Online community of practice-sharing knowledge & developing individual skills & ability	Email
Computer-mediated mentoring	Cascio & Gasker, 2001	2 nd year undergraduate social work students mentoring 1 st year students in one-to-online dyads, USA	Professional socialisation by mentoring-acquisition of professional identity consisting of diffusion of knowledge, skills, values and shared purpose	Email
Telementoring	Stokes, 2000	Small business owners mentored by businessexperts, Holland	Flexible delivery of training in work environment to meet 'training deficit'	Interactive web site, email
	Russell & Perris, 2003	New graduate community nurses mentored by experienced nurses in one-to-one dyads and with access to community web site, Canada	Change of focus from traditional preceptor-learner to community of learning model which results in communal learning and professional development	Interactive web site, message board, instant messaging
	O'Neill et al, 2005	Teachers mentoring students in school setting, Canada & USA	Telementoring systems must be tailored to needs of mentees/mentors so accountability for learning is shared between mentee and mentor	Interactive web site, email, message board
	Lewis, 2005	Industry professionals matched with school students, international application in 9 countries inc. USA	Proactive learning with learners making own learning plan	Web-based email
Online mentoring	Sinclair, 2003	Graduate students mentored by professor, Australia	Flexible learning controlled by learner	Discussion board, email
	Whiting & de Janasz, 2004	Undergraduate students mentored by business professional, USA	Real world' information prepares the student for life as business professionals	Email

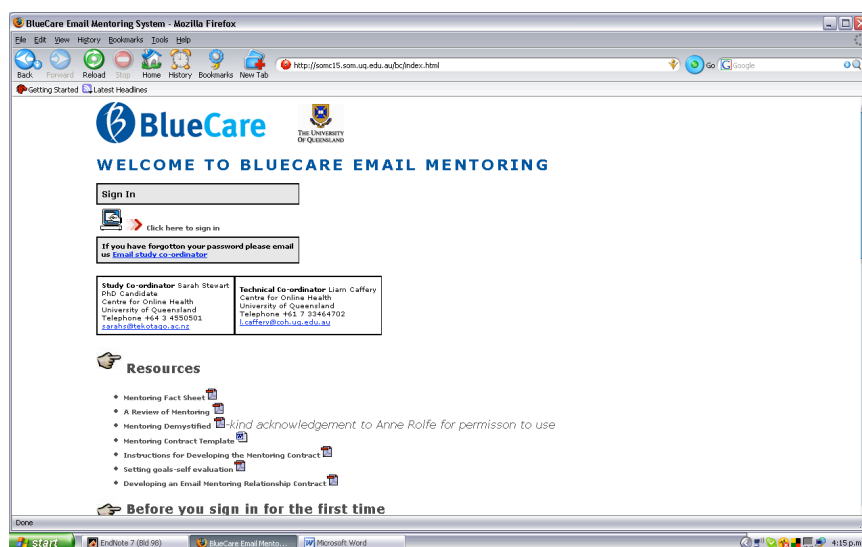


Figure 1: BlueCare E-mentoring system - Introduction page

registration tertiary education (Cole & Kelsey, 2004; Kouri, Turunen, & Palomaki, 2005). The BlueCare system is purely email; there is no facility for synchronous communication such as video conferencing or instant messaging. In terms of the systems that are available for e-learning such as wikis, blogs, message boards, as well as 'voice over Internet protocols' such as Skype, email is 'basic' technology. Although learning tools such as blogs and message boards are technologically no more complicated than email, as e-mentoring is a new concept for BlueCare staff, it was decided to use familiar technology to facilitate e-mentoring (Hegney et al., 2007). The web-based email system is accessible wherever the Internet is available, be that work, home or in public places such as Internet café. This flexibility is designed to overcome the barriers of time constraints and access that have prevented health workers from using computers and the Internet in the past. The asynchronous nature of email also allows flexibility of communication compared to synchronous communication, which is advantageous to health care workers who often work un-social hours and shifts. Institutional support has been provided by BlueCare who have committed to providing employees access to computers and email. An education pack about the principles of mentoring as well as the technological aspects of how the system worked was provided in paper form as well as attached to the web site. Participants were encouraged to complete and agree a contract that outlined their expectations for the relationship (Rolfe-Flette, 2002). The contract aimed to address issues such as how to deal with conflict and develop a framework on which the relationship could develop, including a 'no-fault' clause for ending the relationship. Participants were also encouraged to agree practical issues such as time limits for replying to emails. Whilst a written contract is considered to be useful, should not be compulsory although the questions of expectations, roles and responsibilities need to be dealt with (Klasen & Clutterbuck, 2004). The system is currently set up to last one year to fit the research timelines, and guidelines have been provided for ending the mentoring relationship (Rolfe-Flette, 2002). Ongoing support for the participants is provided via telephone and email by the research coordinator.

Matching

Recruitment to the mentoring system has followed extensive advertising throughout BlueCare and commenced in March 2007. Mentors were requested to articulate their experience both as health professionals and as mentors, and identify the skills that they could offer a mentee. Participants who wanted to be mentored were asked to identify what they wished to achieve and what they wanted from a mentor. Personal information was also collected such as interests and hobbies. This personal information was collated by the research coordinator to enable matching of the mentoring dyads.

There appears to be differing opinions about the importance of matching mentoring dyads. On the one hand there is the underpinning principle of matching to ensure that there were similarities within the dyad; age, gender, race, discipline or interests. There are those who would argue that forced pairing defeats the whole object of mentoring. Informal mentoring in which the mentee has full autonomy over choice of a mentor is perceived to be far more successful than a formal mentoring scheme where a mentor is allocated to the mentee by a third person (Cox, 2005). In situations where artificial pairing is carried out, similarity has been found to promote rapport and acceptance which mirrors informal mentoring relationships, and thus increase psychosocial mentoring outcomes (Wanberg, Kammeyer-Mueller, & Marchese, 2006). Same gender and race matching has been considered to be important so that the effects of power imbalance and stereotypical behaviour are limited (Fiest-Price, 1994; Koberg, Wayne Boss, & Goodman, 2005). However, cross-gender and multicultural mentoring has also been shown to be beneficial in promoting development of communication skills and enhancing the acceptance of diversity (Bova, 2000). Likewise, similarity of discipline may be preferable; after all how can a nurse understand the issues facing an occupational therapist? As yet, cross-discipline mentoring in health is an area that requires research. Nevertheless, if mentoring is seen as a generic activity concerned with reflection, critical questioning and professional development as opposed to focused solely on clinical teaching and learning, then a skilled nurse mentor may be able to work effectively with the occupational therapist. When one works in the health setting there are core similarities such as issues of working closely with the general public. Whilst the learning gained from working with a professional from a different discipline may be different than that gained from working with a colleague in the same discipline, the diversity should be beneficial. Cox (2005) has a different view about matching and believes that matching for factors other than pragmatic aspects such as geographical location and time availability is unnecessary. Her evaluation of a mentoring system that involved 52 mentoring partnerships of mentors and parents who were planning to return to work found that the key factors for a successful mentoring relationship were careful selection and training of mentors.

In the BlueCare mentoring system, participants were matched primarily according to needs and skills; a mentee who identified a need to develop management skills would be matched with a mentor who had a

management role and expertise. Initially, it was planned to match people so that there were at least some similarity to enable them to build a rapport, especially as email relationships can be harder to develop than face-to-face relationships (Ensher, Heun, & Blanchard, 2003). Ultimately, matching was driven by pragmatic issues such as geographical locality and skills being provided by the mentor as opposed to a stringent theoretical framework. The system was initially planned for nurses only, however the participants who applied to take part in the research came from a number of different professions such as occupational therapy, nursing administration and physiotherapy. There were participants as diverse as a chaplain, music therapist, chiropodist and health and safety officer. Consequently, a number of mentoring dyads were made up of different disciplines. Gender was not really an issue as the majority of participants were female. Geographical location was the other driver for matching with the aim of making sure the participants did not work in the same geographical area. This was partly to test the efficacy of distance relationships but also to ensure that participants were not mentored by their immediate manager. This strategy was developed to ensure mentees felt safe to divulge material that they may not be able to disclose to their manager.

Impressions so far

At the time of the writing this paper, recruitment had been going on for four months. Feedback has been informal this stage of the study gained by email and telephone by the research coordinator, and restricted to the process of recruitment and initial use of the email system. The simplicity of the email system appears to be a strength as participants have found it easy to use. Only one participant felt he could not cope with it and wanted to withdraw from the study. Following a number of emails with the research coordinator in which she gave him additional advice on how to use the system, he decided to continue. He did, however, decide to use fax as the means of exchanging the contract. Participants have indicated their support of the principle of e-mentoring, citing the flexibility of communication, reduction of isolation and increased networking within the organisation as a main attraction. Three participants were delayed in their use of the system because they lost their passwords. Mentors have been very keen to pass on the benefit of their expertise, and mentees have been attracted to the scheme because it gives them access to mentors outside their immediate work environment. Increased skills with the use of technology and the challenge to one's paradigm of thinking have also been cited as advantages of the system. It is too early to have formed a firm impression about the success of the matching, however feedback from two mentees (a male nurse who had been matched with a female nurse and an occupational therapist who been matched with a nurse) has been positive with both participants feeling that the different gender and discipline was not a barrier to developing a mentoring relationship.

One main problem has been recruiting participants into the research. Approximately 150 staff indicated interest in the research. Currently, there are 12 mentoring dyads enrolled into the system with a further eight people who have consented to be mentors. Of the people who initially indicated an interest in the scheme, the majority supported mentoring as a means to provide support and professional development but cited time and work load constraints as the reason for not participating. The other main problem has been motivating participants to email each other once they have been enrolled into the system with the majority of the dyads exchanging no more than four emails. Again, work load and time issues have been cited for this 'non-compliance'. Completing the contract appears to have been a barrier for several dyads, with a lack of understanding of what it should contain. Only two dyads had exchanged a contract. Knowing what to 'talk' about has been another barrier to developing the relationship this is despite information and guidelines being provided in text form. The research coordinator has found she had to 'intervene' a lot more than was initially planned. People responded well to personal telephone calls as well as emails from the coordinator, which was used to answer queries and increase motivation; the number of emails sent always increased after a phone call.

Recommendations for future design and research

The main recommendations for change in design and future research focus on recruiting people into an e-mentoring system and facilitation of the relationship. Provision of information and education about e-mentoring was provided to participants both in hard copy and attached to the web site. However, questions and comments made by the participants indicate that they did not read the material. This may be because it was presented purely in text form which does not appeal to everyone's learning style. The first recommendation is that the information about mentoring is presented in another way other than purely text, either by face-to-face or telephone sessions to raise awareness about mentoring and the potential of e-learning. The issues of travel cost and time to attend face-to-face sessions apply, which is why an electronic mode of delivering mentoring was developed in the first place. If face-to-face interactions are not practical, telephone conferences may be successful and cost effective for the organisation compared to

paying for employees to attend face-to-face sessions. Presenting the information in a way that facilitates mutual sharing of ideas will allow participants to ask questions and clarify issues, with the result of encouraging them to participate in the system (Klasen & Clutterbuck, 2004).

The second recommendation is to supplement the email relationship with other forms of communication, especially at the beginning of the relationship. Face-to-face meeting or telephone conversations will allow those who are uncomfortable with developing a personal relationship purely by email to have a more personal interaction, enabling them to build a sense of rapport more readily (Megginson, Clutterbuck, Garvey, Stokes, & Garrett-Harris, 2006).

The third recommendation is provide ongoing support for the mentor and mentee by an e-moderator, which initially is best by telephone and introduces a personal touch that email does not have (Headlam-Wells, Gosland, & Craig, 2006; Salmon, 2004). Regular telephone calls or emails by the e-moderator will help to smooth teething problems and increase motivation, especially when participants are initially enrolled into the system. Other forms of ongoing support may be explored eg regular face-to-face workshops and/or telephone conferences (Klasen & Clutterbuck, 2004). For people who are familiar with technology, online discussion groups, blogs or bulletin boards may be effective to provide additional information and peer support (Burgstahler, 2006).

Conclusion

Ongoing communication and feedback are vital components of successful mentoring relationships. Clarifying messages between a mentor and mentee, initiating a mentoring relationship, setting and monitoring professional goals are all characteristics of successful mentoring relationships (Portner, 2002). ICT tools and social software can enable the communication process, and provide choices to both mentors and mentees in the modalities of communication they prefer (eg text, audio, video) therefore support the development of mentoring relationships based on learner needs and preferences.

Mentoring relationships between novice and more experienced health care specialists, between experts teachers and novice students can be facilitated by various types of technology tools. Asynchronous tools allow for communication at different times and places, while synchronous tools allow for simultaneous communication between participants. In choosing relevant tools to support dialogue, reflection, exchange of knowledge and resources, there is a need to keep in mind that participants engage in a mentoring relationship as part of a goal-directed activity. To achieve these goals, designers and mentors need to consider the need to move beyond generic communication tools to a more focused selection of tools to support the knowledge created, and to ensure that the dynamics of the mentoring relationship are catered for. The mentoring relationship between adult professionals is complex and evolving, and there is a need to ensure that technologies employed support openness, opportunity and flexibility so that expertise is shared in genuine partnerships. Resources should be made available online to ensure choice, flexibility and reflective processes of mentees, supported by peers, experts and mentors. Social software appears to have affordances to support long term engagement of all parties in an e-mentoring relationship as it provides support for learning communities, dialogue and self-directed activity while enabling group interaction and structured feedback processes.

References

- Allen, T., Poteet, M., & Burroughs, S. (1997). The mentor's perspective: a qualitative inquiry and future research agenda. *Journal of Vocational Behavior*, 51, 70-89.
- Barsion, S. (2004). *MentorNet: 2002-2003 Program Evaluation Highlights*. New York: SJB Research Consulting Inc.
- Beanland, C., Schneider, Z., LoBiondo-Wood, G., & Haber, J. (1999). *Nursing research: methods, critical appraisal and utilisation* (1st Australasian ed.). Sydney: Mosby.
- Bierema, L., & Hill, J. (2005). Virtual Mentoring and HRD. *Advances in Developing Human Resources*, 7(4), 556-568. <https://doi.org/10.1177/1523422305279688>
- Bierema, L., & Merriam, S. (2002). E-mentoring: Using Computer Mediated Communication to Enhance the Mentoring Process. *Innovative Higher Education*, 26(3), 211-227.
- Bova, B. (2000). Mentoring revisited: the Black woman's experience. *Mentoring and Tutoring*, 8(1), 5-16.
- Boyle, P., & Boice, B. (1998). Systematic mentoring for new faculty teachers and graduate teaching assistants. *Innovative Higher Education*, 22(3), 157-179. <https://doi.org/10.1023/A:1025183225886>
- Brockbank, A., & McGill, I. (2006). *Facilitating reflective learning through mentoring and coaching*. London: Kogan Page.

- Burgstahler, S. (2006, August 13, 2007). *Creating an e-mentoring community. Addressing trends and developments in secondary education and transition*. Retrieved 17 August, 2007, from <http://www.ncset.org>
- Caine, R. (1989). *A comparative survey of mentoring and job satisfaction: perceptions of clinical nurse specialists*. Pepperdine University, Malibu, California.
- Carter, M., & Francis, R. (2001). Mentoring and Beginning Teachers' Workplace Learning. *Asia-Pacific Journal of Teacher Education*, 29(3), 249-262. <https://doi.org/10.1080/13598660120091856>
- Cascio, T., & Gasker, J. (2001). Everyone has a shining side: computer-mediated mentoring in social work education. *Journal of Social Work Education*, 37(2), 283-293.
- Cole, I., & Kelsey, A. (2004). Computer and information literacy in post-qualifying education. *Nurse Education in Practice*, 4(3), 190-199. [https://doi.org/10.1016/S1471-5953\(03\)00065-9](https://doi.org/10.1016/S1471-5953(03)00065-9)
- Colky, D., & Young, W. (2006). Mentoring in virtual organisation: keys to building successful schools and businesses. *Mentoring and Tutoring*, 14(4), 433-447.
- Cox, E. (2005). For better, for worse: the matching process in formal mentoring schemes. *Mentoring and Tutoring*, 13(3), 403-414. <https://doi.org/10.1080/13611260500177484>
- Dennen, V. & Wang, M. (2002). The Keyboard-Based Job Coach: Informal Learning via the Internet. *Advances in Developing Human Resources*, 4 (4), 440-450.
- Ensher, E., Heun, C., & Blanchard, A. (2003). Online mentoring and computer-mediated communication: new directions in research. *Journal of Vocational Behaviour*, 63, 264-288.
- Evans, D., & Volery, T. (2001). Online business development services for entrepreneurs: an exploratory study. *Entrepreneurship and Regional Development*, 13(4), 333-350.
- Fiest-Price, S. (1994). Cross-gender mentoring relationships: critical issues. *Journal of Rehabilitation*, April/May/June, 13-16.
- Francis, K. (2004). Association for Australian rural nurses: current events and future challenges. *Australian Journal of Rural Health*, 12, 235-236. <https://doi.org/10.1111/j.1440-1854.2004.00617.x>
- Gardner, M. (2006). *Professional supervision: the experience of three New Zealand midwives in clinical practice*. Unpublished Master of Arts (Midwifery). Otago Polytechnic, Dunedin, New Zealand.
- Hawkins, C. (2006). Case study 4: East of England (Harlow) e-mentoring pilot project. In D. Megginson, D. Clutterbuck, B. Garvey, P. Stokes & M. Garvin (Eds.), *Mentoring in action* (2nd ed., pp. 62-67). London: Kogan Page.
- Headlam-Wells, J., Gosland, J., & Craig, J. (2006). Beyond the organisation: the design and management of e-mentoring systems. *International Journal of Information Management*, 26, 372-385.
- Hegney, D., Builstra, E., Eley, R., Fallon, T., Gilmore, V., & Soar, J. (2007). *Nurses and information technology*: Australian Nursing Federation.
- Jacelon, C., Zucker, D., Staccarini, J., & Henneman, E. (2003). Peer mentoring for tenure-track faculty. *Journal for Professional Nursing*, 19(6), 335-338. [https://doi.org/10.1016/S8755-7223\(03\)00131-5](https://doi.org/10.1016/S8755-7223(03)00131-5)
- Kasprisin, C. A., Boyle Single, P., Single, R., & Muller, C. (2003). Building a better bridge: testing e-training to improve e-mentoring programmes in higher education. *Mentoring and Tutoring*, 11(1), 67-78. <https://doi.org/10.1080/1361126032000054817>
- Kennett, K. (2006). Kate Kennett is e-mentored by David Clutterbuck. In D. Megginson, D. Clutterbuck, B. Garvey, P. Stokes & R. Garrett-Harris (Eds.), *Mentoring in action* (2nd ed., pp. 216-219). London: Kogan Page.
- Kensington, M. (2005). *Mentoring in New Zealand midwifery: the liminal journey the midwife the midwife makes in the transition to an independent autonomous practitioner*. Unpublished Master of Public Health, University of Otago, Dunedin, New Zealand.
- Klasen, N., & Clutterbuck, D. (2004). *Implementing mentoring schemes: a practical guide to successful programs*. Oxford: Elsevier Butterworth Heinemann.
- Knouse, S. (2001). Virtual mentors: mentoring on the Internet. *Journal of Employment Counseling*, 38(December), 162-169. <https://doi.org/10.1002/j.2161-1920.2001.tb00498.x>
- Koberg, C., Wayne Boss, R., & Goodman, E. (2005). Factors and outcomes associated with mentoring among health-care professionals. *Journal of Vocational Behavior*, 53, 58-72.
- Kouri, P., Turunen, H., & Palomaki, T. (2005). 'Maternity clinic on the Net service' and its introduction into practice: experiences of maternity-care professionals. *Midwifery*, 21(2), 177-189.
- Lewis, C. (2005). *International Telemotor Program Full Program Evaluation April 2002 – June 2005*. Fort Collins, Colorado, USA: Research and Development Center for the Advancement of Student Learning, Colorado State University.
- Martens, R.; Bastiaens, T. & Kirschner, P. (2007). New Learning Design in Distance Education: The impact on student perception and motivation. *Distance Education*, 28(1), 81-93.
- Megginson, D., Stokes, P., & Garrett-Harris, R. (2003). *MentorsByNet: an e-mentoring programme for small to medium enterprise(SME) entrepreneurs/managers*. Barlow: Mentoring and Coaching Research Group.

- Meggison, D., Clutterbuck, D., Garvey, B., Stokes, P., & Garrett-Harris, R. (2006). *Mentoring in action* (2nd ed.). London: Kogan Page.
- Midwifery Council of New Zealand. (2006). *Recertification Programme: competence-based practising certificates for midwives*. Retrieved 20 August, 2007, from http://www.midwiferycouncil.org.nz/content/library/Revised_Recertification_Programme__updated_Sept_2006.pdf
- Mills, J., Francis, K., & Bonner, A. (2005, 11 August 2005). *Mentoring, clinical supervision and precepting: clarifying the conceptual definitions for Australian rural nurses. A review of the literature*. Retrieved 17 August, 2007, from <http://rrh.deakin.edu.au/home/defaultnew.asp>
- New Zealand Ministry of Health. (2006). *Health Practitioners Competence Assurance Act 2003*. Retrieved 20 August, 2007, from <http://www.moh.govt.nz/hpca>
- O'Neill, D., Weiler, M., & Sha, L. (2005). Software support for online mentoring programs: a research-inspired design. *Mentoring and Tutoring*, 13(1), 109-131.
- Patterson, J. (2000). Rural midwifery: challenges of the last decade, and where to from here? *New Zealand College of Midwives Midwifery News*, 20, 1-6.
- Portner, H. (2002). *Being mentored: A guide for protégés*. Thousand Oaks, CA: Corwin Press, Inc.
- Rickard, K. (2004). E-mentoring and pedagogy: a useful nexus for evaluating online mentoring programs for small business? *Mentoring and Tutoring*, 12(3), 383-401.
- Rolfe-Flette, A. (2002). *Mentoring in Australia*. Frenchs Forest: Prentice Hall.
- Rose, M. (2005). Mentoring in the health professions. In M. Rose & D. Best (Eds.), *Transforming practice through clinical education, professional supervision and mentoring* (pp. 309-327). Edinburgh: Elsevier. <https://doi.org/10.1016/B978-0-443-07454-7.50036-8>
- Rose, M., & Best, D. (2005). Introduction to terminology and definitions. In M. Rose & D. Best (Eds.), *Transforming practice through clinical education, professional supervision, and mentoring* (pp. 2-7). Edinburgh: Elsevier.
- Russell, A., & Perris, K. (2003). Telementoring in community nursing: a shift from dyadic to communal models of learning and professional development. *Mentoring and Tutoring*, 11(2), 227-237.
- Salmon, G. (2004). *E-moderating: the key to teaching and learning online* (2nd ed.). London: RoutledgeFalmer. <https://doi.org/10.4324/9780203465424>
- Sinclair, C. (2003). Mentoring online about mentoring: possibilities and practice. *Mentoring and Tutoring*, 11(1), 79-94. <https://doi.org/10.1080/1361126032000054826>
- Single, P., & Muller, C. (2001). When e-mail and mentoring unite: the implementation of a nationwide electronic mentoring program-MentorNet, the national electronic industrial mentoring network for women in engineering and science. In L. Stromei (Ed.), *Creating mentoring and coaching programs: twelve case studies from the real world of training*. Alexandria, Virginia, USA: American Society for Training and Development.
- Single, P., & Single, R. (2005). E-mentoring for social equity: review of research to inform program development. *Mentoring and Tutoring*, 13(2), 301-320. <https://doi.org/10.1080/13611260500107481>
- Stewart, S. (2006). A pilot study of email in an e-mentoring relationship. *Journal of Telemedicine and Telecare*, 12(3), 83-85. <https://doi.org/10.1258/135763306779380011>
- Stewart, S., & Wootton, R. (2005). *Mentoring and New Zealand midwives: a survey of mentoring practice amongst registered midwives who are members of the New Zealand College of Midwives* (Unpublished). Christchurch: New Zealand College of Midwives.
- Stokes, R. (2000). Entrepreneurial learning and mentoring. *International Journal of Entrepreneurial Behaviour & Research*, 6(3), 160-175. <https://doi.org/10.1108/13552550010346587>
- Terrior, J., & Leonard, D. (2007). A taxonomy of the characteristics of student peer mentors in higher education: findings from a literature review. *Mentoring and Tutoring*, 15(2), 149-164.
- Turnbull, B., & Roberts, K. (2005). Nurse-academics' mentorship: rhetoric or reality? *Collegian*, 12(2), 33-38. [https://doi.org/10.1016/S1322-7696\(08\)60491-6](https://doi.org/10.1016/S1322-7696(08)60491-6)
- Wanberg, C., Kammeyer-Mueller, J., & Marchese, M. (2006). Mentor and protege predictors and outcomes of mentoring in a formal mentoring program. *Journal of Vocational Behavior*, 69, 410-423.
- Whiting, V., & de Janasz, S. (2004). Mentoring in the 21st Century: Using the Internet to Build Skills and Networks. *Journal of Management Education*, 28(3), 275-293. <https://doi.org/10.1177/1052562903252639>

Sarah Stewart, Centre for Online Health, University of Queensland, Level 3, Foundation Building, Royal Children's Hospital, Herston 4029, Australia. Email: sarahs@tekotago.ac.nz
Catherine McLoughlin, School of Education, Australian Catholic University, PO Box 256, Dickson, ACT 2602, Australia. Email: catherine.mcloughlin@acu.edu.au.

Please cite as: Stewart, S. & McLoughlin, C. (2007). Design features of an e-mentoring system for the health professions: Choosing to learn in partnership. In *ICT: Providing choices for learners and learning. Proceedings ascilite Singapore 2007*. <https://doi.org/10.65106/apubs.2007.2592>

Copyright © 2007 Sarah Stewart and Catherine McLoughlin.

The authors assign to ascilite and educational non-profit institutions a non-exclusive licence to use this document for personal use and in courses of instruction provided that the article is used in full and this copyright statement is reproduced. The authors also grant a non-exclusive licence to ascilite to publish this document on the ascilite web site and in other formats for *Proceedings ascilite Singapore 2007*. Any other use is prohibited without the express permission of the authors.