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Supporting First Year Student Supporters: an Online Mentoring Model for Supplemental Instruction Leaders

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Supplemental Instruction (SI), or Peer Assisted Study Sessions (PASS) as it is commonly known in Australia, involves experienced senior student Peer Leaders who provide regularly scheduled peer learning sessions with students enrolled in university courses. Commonly implemented on first year subjects, the sessions integrate "how to learn" with "what to learn", helping students achieve better grades and helping raise student retention rates. This paper discusses the challenges of supporting SI Leaders who are geographically dispersed across multiple campuses and considers the theoretical and empirical literature that informs the development of an online mentoring model.

Background

Supplemental Instruction (SI) is a type of academic mentoring program providing regularly-scheduled sessions attached to subjects with historically high failure rates or high perception of difficulty. Developed at the University of Missouri Kansas City (UMKC) in 1973, SI has been implemented at tertiary institutions in over thirty countries and is attended by 250,000 students annually (Arendale, 2002). In Australia, SI is commonly known as Peer Assisted Study Sessions (PASS) and is supported by the Australian National Centre for PASS operating at the University of Wollongong (UOW). As the national trainer, UOW PASS has prepared staff at over a dozen institutions in Australia, New Zealand and Malaysia to operate the program.

SI is attached to specific "high-risk" subjects and integrates "how-to-learn" with "what-to-learn" in a series of peer-facilitated sessions that are voluntarily attended by students enrolled in these subjects. It has been found that, those who do choose to attend often receive higher final course grades and are more likely to persist in their studies than those who do not attend. This is the case even after adjusting for prior academic achievement and ethnicity (Martin & Arendale 1993). Tinto (1987) describes SI as a way of linking a learning community to a subject, and explains that learning communities can play a role in enhancing student persistence in their first year of tertiary study.

SI sessions are run by Leaders who are successful students recruited by the SI supervisor based on their interpersonal skills and course competency. The Leader is not a tutor, their role is not to introduce new content or "re-teach" lecture material; they are responsible for facilitating the discussion and preparing activities for their sessions. The attending students are responsible for teaching each other the course content and working together to solve

problems. Leaders act as "model students" by attending lectures, taking notes, reading the materials assigned to the students and demonstrating effective study skills. Leaders receive a two-day training course prior to commencing their role. The training covers first-year transition issues, discipline-specific study skills, collaborative learning and group management skills.

The originators of the program, UMKC, prescribe that the SI supervisor should be present in every session a new Leader takes for their first few weeks in the role. While this focus on quality assurance may have been achievable when institutions were first implementing SI on a limited basis, the growth of the program has made this level of supervision difficult particularly for those without dedicated, full-time SI staff. To remedy this, UMKC (2005) suggests promoting some experienced Leaders to be "Assistant SI Supervisors". This provides flexible, cost-effective staff who have a good knowledge of the program and are able to assist with administrative and quality assurance duties.

While some institutions hire assistant supervisors as an extra layer of support for their Leaders, others have experimented with mentoring. This has included traditional mentoring approaches where the mentors have been faculty members who have worked with the Leaders on their preparation and formally evaluated their sessions (Wolfe 1991). Also, step-ahead approaches through which more experienced Leaders act as mentors and perform quality assurance duties have been attempted at some institutions (Murray 2006). Mentoring schemes can focus more on role modelling and socialisation than traditional supervision approaches and have been shown in non-SI contexts to impact positively on job and career satisfaction (Ensher, Thomas & Murphy 2001). Whether institutions adopt a mentoring model and/or the employment of assistant supervisors, the primary aims are the support of SI Leaders and quality assurance of the program.

The Challenges facing SI

Attempts to support Leaders have been implemented in face-to-face modes. However, this delivery model does not address the support and quality assurance issues for inexperienced Leaders when the SI program is implemented within subjects that are delivered across multiple university campuses. Such distributed education models are used at UOW as well as numerous other Australian and overseas institutions.

As Supplemental Instruction programs expand to serve more subjects and subjects that are delivered at multiple campuses, more Leaders are required. They are often inexperienced in SI and geographically dispersed, making traditional SI supervision and face-to-face mentoring difficult and costly. Inadequate support for Leaders endangers the quality of the SI sessions and can lower Leader retention rates.

The UOW PASS Program has experienced some difficulty in the rapid expansion from supporting students from one faculty at the start of 2002 to supporting students in all nine faculties in 2007. Supporting Leaders from a more diverse range of subjects, and on more than one campus, has proven increasingly challenging and has made quality control and staff retention difficult.

One example of the difficulty of supporting an expanding SI program was experienced at UOW over the 2004 – 2005 period with Leaders on Systemic Anatomy, a subject which involved a very large amount of content for students to remember and the use of cadaver

specimens. Retention of Leaders was low compared to the usual two-year commitment; of the six recruited at the start of 2004 only two returned for the second semester of 2004, and all declined to return for 2005. A new cohort of five Leaders was recruited for 2005, who received informal mentoring from the program's management in the first semester and formal mentoring from one of the experienced 2004 Leaders in the second semester. The experienced Leader mentor observed significant improvements in the quality of their sessions as the semester progressed. Four of the Leaders of this cohort were retained into the next year with the other Leader indicating they would have stayed on but they were graduating. This experience provides anecdotal evidence that a mentoring model might further enhance the PASS program.

UOW PASS has attempted to offer SI at its satellite campuses and education centres located from up to 50 kilometres north and 85 kilometres south of the main campus in Wollongong. However, the retention of Leaders at these locations has been poor and quality assurance checks have indicated lower quality sessions with less adherence to the SI peer learning model. In one case a Leader located at one satellite campus ended her involvement with PASS after just one semester, claiming that she felt Leaders at main campus were offered support and information that was not available to her. Another similar case is that of a Leader at another campus who resigned in the middle of the semester after students stopped attending her sessions. These difficulties have led to the present situation where UOW PASS does not support students at satellite campuses at all, despite the fact that UOW students enrolled at these locations are taking many of the same subjects that have SI support on main campus.

Students at satellite campuses receive much of their education through various forms of educational technology. Attempting to offer SI to satellite campus students through these technologies from main campus would not provide them with a role-model Leader who can demonstrate successful strategies for studying under their conditions. Using these technologies may however enable the remote support of SI Leaders who are students at satellite campuses.

To address these challenges, a research study is being undertaken to: (1) to develop a model for mentoring new Supplemental Instruction Leaders that is facilitated by online technologies; and, (2) examine the strengths and weaknesses of that model when it is implemented in multiple case settings. Given the benefits that mentoring can provide (Ensher et al 2001; Single & Single 2005), the success of various mentoring schemes applied to SI (Wolfe 1991; Murray 2006) and the geographic dispersal of the SI Leaders, an online mentoring model may provide a new cost-effective and manageable support. This research seeks to address the question, what is an appropriate model for an online mentoring scheme for Supplemental Instruction Leaders?

Supplemental Instruction

There is a large body of literature focused on Supplemental Instruction including research relating it to a broad theory base (Martin & Arendale 1993), evaluations of its effectiveness (Loviscek & Cloutier, 1997; Blanc, DeBuhr & Martin 1983; Koch & Mallon 1998) and histories of its development and implementation (Arendale 2002). SI is also discussed in the First Year Experience (FYE) literature, and is described by Tinto (1999) as a strategy to increase student retention.

Martin & Arendale (1993) differentiate SI from traditional north American tutorial practices. They relate tutoring to a medical model, which relies on "diagnosis" (p. 41) of the student's academic problems based on "prior history and diagnostic testing" (p. 41), "self-referral in response to perceived symptoms" (p. 41) or "referral by another professional in response to observed symptoms" (p. 41). Many weaknesses with this model are identified, including the stigma attached to such remedial tutoring, and students' reluctance to refer themselves: "whether through denial, pride, or ignorance, students who need help the most are least likely to request it" (p. 42). An alternative model, SI, is proposed that mainstreams academic assistance and is differentiated from the medical model through voluntary participation and its availability to all students rather than only those with a "diagnosed" problem.

Supplemental Instruction builds upon the work of social constructivists such as Vygotsky (1978) who theorised that for each learner there is a set of things that they are able to do on their own and a set of things that they are able to do with the assistance of more capable others. This second set was labelled the Zone of Proximal Development (ZPD). Within the SI context these "more capable others" are the group members and the Leader. Learning in SI occurs as students collaborate on activities within their individual ZPD. With the group's assistance students are able to do things they couldn't do independently.

Mentoring SI Leaders

The SI Supervisor Manual describes the Assistant SI Supervisor role as a subset of the SI Supervisor role. It is not described as a mentoring role. Instead, it is a way of handling the increased administrative and supervision workload that results from an expanding SI program. Murray (1999) regards the SI Leader role as very challenging, and views the use of assistant supervisors, whom he later refers to as mentors (2006), as a way of providing help and feedback regularly. Murray's descriptions of the role of mentor or assistant supervisor are similar to the SI Supervisor Manual's descriptions, and the role is not placed within a theoretical mentoring framework. Murray also provides no indication of providing mentors with any additional training beyond their SI Leader training.

Wolfe's (1991) use of faculty members from a different discipline to the target subject as mentors was designed to benefit both the faculty members and the SI Leaders. Faculty mentors participated as a student in all class activities of their target subject, and provided feedback to their SI Leader mentee and to the subject's lecturer. Faculty members gained from the feedback they gave to each other, as well as from the experience of being a student again. Their mentoring of the SI Leaders consisted of cooperatively planning the sessions, providing feedback and formal evaluation of a session half way through the semester. Faculty mentors were trained in study skills and group learning, but Wolfe makes no mention of training them in mentoring, nor is the role of faculty mentor linked with a theoretical model of mentoring.

Mentoring

To address the research question in this study a theoretical framework for mentoring is required to explain what happens in mentoring and why it happens. A framework is crucial to understanding mentoring but the literature is sparse in this area; Ehrich et al (2001) found that a "theory", "framework" or "model" of mentoring was only mentioned in 24% of 310 mentoring articles considered. To guide the design of an online mentoring model for SI Leaders, five theoretical frameworks used in mentoring studies were investigated. Table 1 has

descriptions of each theory along with their application to mentoring as well as their strengths.

	Contingency Theory (Fielder)	Social Exchange Theory (Homans; Emerson)	Developmental Theory (Vygotsky)	Possible Selves (Markus)	Social Learning Theory (Bandura)
Description of theory	Leadership is dependent on contingency factors; there does not exist a "best way" to manage or lead	Voluntary social relationships are entered into based upon a rational cost-benefit analysis	Social interaction is fundamental to the development of cognition	People maintain conceptions of who they are now and who they may be in the future	The highest level of observational learning occurs when the observer is similar to the model and the model has admired status
Application to mentoring	A prescriptive model of mentoring is unsuitable; each mentoring relationship has a unique context	Mentoring relationships should provide sufficient benefits to mentor and mentee to offset costs	Mentoring provides social interaction, stimulating cognitive development in the mentee	Aspects of the mentor form possible selves for the mentee	Mentors should be similar to mentees and have admired status. Effective role modelling of desired behaviours is necessary
Strengths	Flexibility and an appreciation of the diversity of mentoring relationships	Describes why mentors and mentees may choose to participate in the relationship, as well as why they may choose not to. Also describes why mentees may choose to adopt modelled behaviours	Describes the process of cognitive development for the mentee	Describes role modelling and the creation of a possible future self with desired traits	Informs matching of mentors to mentees. Describes how role modelling works and its effect in the adoption of observed behaviours

Table 1: Five Theoretical Frameworks for Mentoring

Theory that informs the Mentoring of SI Leaders

This research draws upon Bandura's (1977) Social Learning Theory to explain the benefits mentees receive and Social Exchange Theory (Homans 1958) to explain why mentors and mentees participate in the relationship. Each of these frameworks are used in explaining mentoring in research from both an educational and business context (Ehrich et al 2001).

Bandura's (1977) Social Learning Theory helps to explain mentoring through concentrating on the learning of modelled behaviours. Using Bandura's terminology, the mentor is the *model* and the mentee is the *observer*. Bandura claims that the highest level of observational learning happens when the observer organises and rehearses the behaviour symbolically then enacts it overtly. Organising the behaviour into other forms such as images, words or labels results in better retention of the behaviour instead of just passively observing. In Bandura's framework the observer is more likely to adopt the modelled behaviour if they are similar to the model, if the model holds admired status and the behaviour results in outcomes valued by the observer. This theory has importance to the matching of mentors to mentees, and how the mentoring should be conducted.

It is widely accepted in the literature that the mentor-mentee match is of vital importance to the success of a mentoring scheme (Ehrich et al 2001, Hale 2000), and Bandura's theory can inform the matching process. Similarity to the mentee and holding admired status are desirable attributes for a mentor, as they will result in mentees being more likely to adopt behaviours modelled by the mentor. Similarity could include the mentor also being an SI Leader, the academic disciplines they have supported as an SI Leader, their academic major or demographic details like age or gender. Admired status may come from their seniority as an SI Leader, or through endorsements from SI staff or faculty.

Bandura's framework also provides guidance for what mentors and mentees do. Its focus on observational learning of modelled behaviours relates directly to the role modelling support commonly attributed to mentoring (Kram 1985). As the target group of mentees is SI Leaders who are not co-located with more senior SI Leaders to act as informal role models, a framework that focuses on role modelling is particularly appropriate.

Social Exchange Theory draws upon behavioural psychology and economics to propose that people enter into voluntary relationships based on a rational cost-benefit analysis (Homans 1958, Emerson 1976). The theory relies upon the following propositions:

1. *The Success Proposition. "For all actions taken by persons, the more often a particular action of a person is rewarded, the more likely the person is to perform that action" (under similar stimulus conditions)*
2. *The Stimulus Proposition. "If in the past the occurrence of a particular stimulus, or set of stimuli, has been the occasion on which a person's action has been rewarded, then the more similar the present stimuli are to the past ones, the more likely the person is to perform the action, or some similar action, now"*
3. *The Deprivation-Satiation Proposition. "The more often in the recent past a person has received a particular reward, the less valuable any further unit of that reward becomes for him"*
4. *The Value Proposition. "The more valuable to a person is the result of his action, the more likely he is to perform the action"*
5. *The Rationality Proposition. "In choosing between alternative actions, a person will choose that one for which, as perceived by him at the time, the value, V, of the result, multiplied by the probability, p, of getting the result is the greater"*

Adapted from Emerson (1976)

These propositions can be used to explain much of what happens within mentoring, such as why mentors and mentees choose to participate in the relationship, and also why they may choose not to. Proposition 1 serves to explain how positive feedback from mentors can lead to mentees adopting behaviours, and it can also serve to explain why mentors may choose to stay in the relationship. Proposition 3 can be used to understand mentor burn-out, a problem that occurs when a mentor overcommits themself to the mentoring program: the more the mentor receives the same reward, which may be appreciation from mentees or the coordinator of the mentoring program, the less valuable that reward is.

While proposition 5 has been criticised for assuming rationality among people (Emerson 1976), it can serve to help understand why people may choose to stay involved with a mentoring scheme. A mentoring model using Social Exchange Theory as part of its theoretical framework should attempt to ensure that it provides the outcomes that its participants value, and that they perceive a high probability of receiving such outcomes.

Bandura's theory and Social Exchange Theory are complimentary when combined into a framework to describe mentoring. While Bandura's is focussed on role modelling and learning of behaviours, Social Exchange Theory focuses on the rational decisions made by mentor and mentee in beginning, maintaining and terminating the relationship. Figure 1 shows how these theories combine to produce one framework for mentoring.

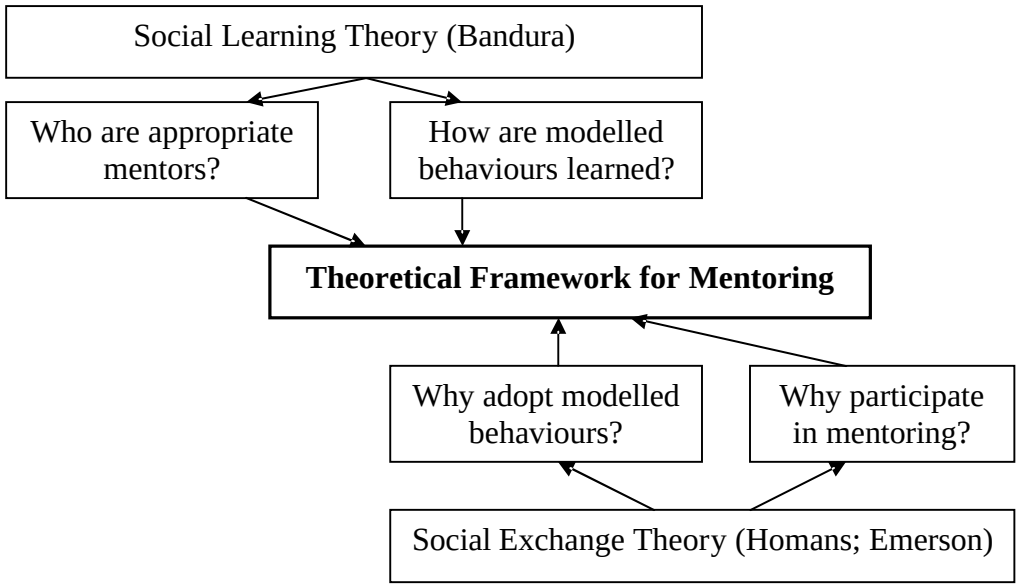

Figure 1: Theoretical Framework for Mentoring SI Leaders

Implications of Mentoring Theory on the use of Technology

Bandura's theory when used in a mentoring context describes the ideal mentor as someone similar to the mentee who has admired status. Computer mediated communication allows access to more mentors than those available locally which can result in more appropriate matches (Packard 2003). The problem that led to this study resulted from SI Leaders at satellite campuses being separated from potential mentors at main campus, but an online mentoring approach may allow access to them. Bandura's theory informs the matching of mentor and mentee and computer mediated communication can allow a greater number of possible mentor-mentee matches.

Although role modelling forms a central part of the theoretical perspective used to describe mentoring, in an online mentoring context it is particularly challenging (Ensher et al 2003). Role modelling requires the mentee to observe their mentor at work, or viewing samples of their work. As SI sessions are the main product of the mentor, some way of providing mentees with a way of observing them is required. Digital video excerpts of the mentor demonstrating key skills would enable observational learning by the mentee, who could then respond to their mentor's video with one of their own in which they may rehearse the behaviour.

Social Exchange Theory guides the choice of technology for mentoring through its proposal that people participate in voluntary relationships on the basis of a rational cost-benefit analysis. Technologies that can minimize cost while maximizing benefits for participants are therefore favourable under this theoretical perspective. Asynchronous technologies allow participants to use them when they want to rather than at a prescribed time and may provide a further way of minimizing time costs. Examples of asynchronous technology include Email, discussion boards, blogs and video blogs. This type of technology also allows its users the benefit of time to carefully construct messages rather than being forced to respond as quickly as they would with synchronous technology such as through instant messaging or over the telephone. Asynchronous computer mediated communication can provide its users with reduced time costs as well as the increased benefit of time to carefully construct their messages.

A Social Exchange Theory perspective on the adoption of behaviours proposes that rewarding behaviours leads to their adoption, but that the value of any particular type of reward decreases the more it is given. Online mentoring technologies can provide opportunity to give similar rewards to participants that face to face mentoring does, such as positive feedback from mentor to mentee or appreciation of the mentor's efforts by the mentee. Computer mediated communication can also provide unique opportunities in rewarding participants. Mentors may particularly approve of a mentee's demonstration of a behaviour and with their permission could provide a video example of this to all other participants in the mentoring scheme. Such recognition would reflect positively on both mentor and mentee. Possibly through integration with attendance reporting systems, the mentee may be able to track the functional value of the behaviours they have adopted by comparing their attendances in the weeks after they have trialled a certain behaviour.

Technology for Mentoring

Technology to facilitate an online mentoring relationship that allows participation in video role modelling at times convenient to each participant may be well served by a video blogging environment. A service similar to the popular YouTube, which allows users to upload and watch videos as well as comment on other users' videos in text or video format, may be appropriate. Such a service would need to be private, and mentors and mentees would need to have control over who can access their content. Another possible option would be the use of the one of the university's Learning Management Systems, such as WebCT Vista, which also allows the uploading of user created video, as well as discussion forums.

While using an existing software package would require no further investment in technology development, it may prove difficult to find one that fits the needs and context of this application. Conducting the analysis, design, programming and testing of software to suit this purpose would likely prove prohibitively time consuming and expensive. A third option

exists, which is the modification of an existing software package. Free software, also known as open source software (Stallman 1990), is distributed under a license that encourages this practice, providing that the modified software is also free software. The primary investigator of this project has experience contributing to open source computer mediated communication projects.

Summary

The difficulty of supporting diverse and geographically dispersed Supplemental Instruction Leaders has been discussed. This paper has focussed on one strategy for addressing this problem: online mentoring. Theoretical perspectives from the literature have been discussed, and a model of mentoring SI Leaders has been proposed which draws upon Social Learning Theory to explain what mentors and mentees learn and how they learn it, as well as Social Exchange Theory to explain why they may choose to enter into the relationship, as well as why they may choose not to. Suitable technologies for a mentoring relationship based upon these theoretical perspectives were also discussed, and some of these will be applied in a later study.

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