Supporting and challenging first year students: Evaluation of an embedded peer tutoring model in three disciplines

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Abstract

Increasing evidence suggests that providing students with both support and academic challenge is important to engagement, achievement, and retention. Effectively engaging and supporting first year students however is an ongoing tension, particularly when cohorts are large and diverse. This session describes a model of peer tutoring embedded in the curriculum addressing both social transition and academic engagement. The peer-to-peer (P2P) model brings later year students into first year classes with the explicit aim of working on key assessment tasks in a context of social support. Data will be presented from a randomised controlled trial evaluating P2P in three disciplines: Psychology, Civil Engineering, and Industrial Design. Results suggest the value of P2P in increasing retention, enhancing academic achievement and improving psychological adjustment in both Psychology and Civil Engineering, but not in Industrial Design. Explanations for different outcomes will be explored.

Session outline

Presenters (10 mins): Explanation of the P2P model and summary of the outcomes of P2P in Psychology, Civil Engineering and Industrial Design.
Group discussion (5 mins): Making sense of the patterns and discrepancies across disciplines – a consideration of qualitative and quantitative data.
Paired discussion (10 mins): How could the P2P model be applied in my institution? What cautions are needed?
Presenters + Group (5 mins): Drawing together the major themes.

Background

The importance of the twin goals of academic challenge and support have been consistently reported in the literature on first year transition in higher education. Large-scale studies in Australia, such as the AUSSE, note that enriching environments that provide both high levels of challenge as well as supportive interactions with staff and other students are positively correlated with retention and student outcomes (ACER, 2009). Challenging students to learn and supporting them in their endeavours both contribute individually to student performance and satisfaction, but it has been noted that in combination these two variables are associated with the best outcomes (ACER, 2009).

Effective first year transition models (e.g., Kift, 2009) increasingly attend to both of these core components with emphasis on embedding interventions into the curriculum. The

AUSSE has identified a number of characteristics of a supportive learning environment that impact of student satisfaction and outcomes (ACER, 2009). These include interactions with friendly and supportive colleagues, timely feedback on academic performance, and institutional goals that emphasise support to help students both succeed academically and socialise. Vincent Tinto's work over more than a decade (1997, 2009) has suggested the importance of students engaging with each other as well as academic content. Tinto has demonstrated, with a range of data including classroom observations, self-report and comparison of academic grades, that students engaged in learning communities are more involved in their learning and are likely to remain so.

One way to encourage meaningful interactions between students is peer tutoring. A range of approaches to peer tutoring exist determined by the specific needs identified, such as academic support, skill development and/or social connection. In addition, programs are shaped by the particular population of interest, such as at risk, mature-age and international students (Hill & Reddy, 2007). Peer tutoring programs can occur between students in the same year level or across years and can be one-on-one or group-based. Supplemental instruction, for example, instituted widely in US colleges and Australian universities to address failure and drop-out rates in high risk or difficult courses, typically uses later year peer tutors working with small groups of students, modelling, advising and facilitating work on assignments. Peer Assisted Study Sessions (PASS; Dawson, Lockyer, & Ferry, 2007) and Peer Assisted Learning (PAL; Longfellow et al., 2008) programs, are both examples of supplemental instruction.

Programs can be add-on or embedded into the curriculum. Add-on programs provide students with optional access to more experienced peers outside class time. These types of programs are associated with a range of limitations. Such programs are often characterised by infrequent and inconsistent participation, lack of structure and often a short life span (Hill & Reddy, 2006). The voluntary nature of such programs has been seen to contribute to further student disengagement (Longfellow, May, Burke, & Marks-Maranet, 2008), failing to provide support for those most in need. In addition, Longfellow et al. (2008) have argued that students are more likely to learn skills during class as these can be applied to content covered at the time rather than in additional sessions.

Drawing on the existing literature, we developed an embedded peer-to-peer (P2P) tutoring model to assist students with the core academic demands of their respective disciplines while simultaneously providing small group interaction and support.

The P2P embedded peer tutoring model

Peer tutors worked in pairs with small groups of no more than 5 students. In contrast to other models of peer tutoring that are "opt-in" or "add-on" such as drop-in centres, study groups or buddy systems, our model was embedded in tutorials, requiring no additional commitment from FY students and ensuring equal access for all. In this model peer tutors attended part of the tutorial/prac/studio class from weeks 3 through to weeks 10.

Figure 1 shows three small peer tutored groups within a class and illustrates the rich network of communication afforded by such a model, effectively multiplying supports for students, peer tutors and the classroom tutor.

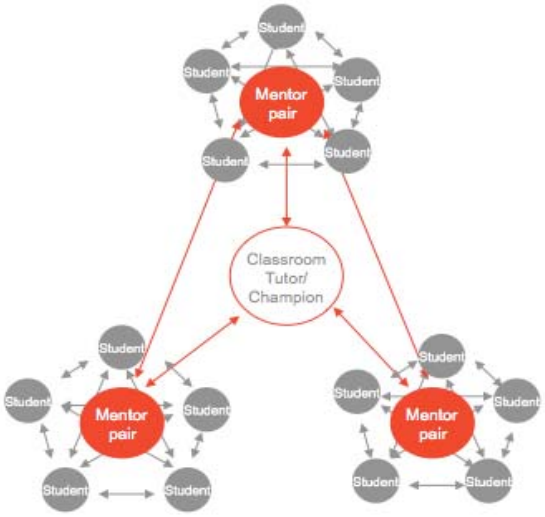

Figure 1. P2P embedded model, illustrating network of relationships

Course coordinators identified a relevant academic challenge as the focus for the peer tutoring program. These challenges were typically related to assessment tasks that students experienced as difficult. The following academic challenges were identified:

- Civil Engineering - group based project work on a design problem
- Industrial design - design project work
- Psychology - scientific writing skills including academic literacy

The peer tutors' work was designed as a series of scaffolded activities focused on the identified academic challenge, leading the FY students through exercises and discussions on relevant issues. Each discipline developed a *Peer Tutoring Manual* to provide peer tutors with standardized information for each session. The information in the manual was covered in all other tutorials by the regular classroom tutor or studio facilitator.

Peer tutors were recruited from a pool of later year student in the program. Only students identified by their academic performance as demonstrating the required academic skills were invited to apply. Peer tutors varied from second through to fourth year students, dependent on the discipline. Students were recruited both in face-to-face information sessions and by email and the registration process was managed online. An example is provided at http://www.rmit.edu.au/healthsciences/ppats

Peer tutors were trained in two sessions, both of which were facilitated by staff from the Study and Learning Centre. The training package is developed from the Student Mentoring Handbook (http://mams.rmit.edu.au/bvs3pjx08xai1.pdf) and designed by the Study and Learning Centre in collaboration with course coordinators and includes the following topics:

- roles and responsibilities of peer tutors
- building rapport
- stages of group development
- group roles
- learning styles

The first training session introduced peer tutors to the role of tutoring and the specific academic focus in their discipline. The second session, held a few weeks into the program, provided an opportunity to trouble shoot and consolidate learning. Regular debriefing was available for peer tutors in the hour following the tutorial/prac/studio class.

Evaluating the model

A randomised controlled trial approach was used in all three disciplines, comparing students in the P2P classes with a control group of colleagues in the same course who did not receive peer tutoring. In addition to a comparison of grades, the following measures were administered both at the beginning and end of semester to evaluate academic and psychological change:

- The *Academic Behavioural Confidence scale* (ABC; Sanders & Sander, 2007) is a 24-item scale that measures academic confidence on six subscales: studying, grade achievement, attendance, clarification, understanding, and verbalising.
- Confidence in capacity to work effectively in a group was measured using the *Group Work Scale*, a 10-item scale designed for this study. This scale was modelled on the ABC (Sander & Sanders, 2009) and specifically focused on issues relating to group work identified as important in the literature.
- *The Depression Anxiety & Stress Scales* (DASS-21, Lovibond & Lovibond, 1995) is a 21-item self-report scale that measures the three distinct but interrelated experiences of depression, anxiety and stress.

Ethics approval for the project was granted by the RMIT Human Research Ethics Committee.

Results

	Psychology		Civil Engineering		Industrial Design	
	P2P *N* = 21	Control *N* = 46	P2P *N* = 34	Control *N* = 52	P2P *N* = 16	Control *N* = 59
	20.7	24.3	19.22	19.92	21.31	20.14
% female	81.8%	80.5%	9.7%	11.5%	37.5%	27.5%
% international	0%	5.0%	8.0%	23.1%	0%	0%
Mean grade – Lab Report	11.13	9.33	7.57	6.95	-	-
Mean grade – Exam	69.33	64.84	31.07	30.85	-	-
Mean grade - Total	70.52	61.59	77.66	73.34	56.50	59.94
Retention	100%	90%	100%	96%	84%	92%

Table 1. Demographic information and grades for P2P and control groups in each discipline

As shown in Table 1 retention rates were higher in P2P classes in both Psychology and Civil Engineering, but not Industrial Design. Results also suggested significantly higher total grades for P2P students compared to controls in Psychology (t =2.07, df = 65, p =.04) and a trend towards this in Civil Engineering, but not in Industrial Design. Enhanced coping (reductions in depression, anxiety and stress) was also prominent for the P2P students in Psychology and Civil Engineering compared to controls. The same theme was

not evident for the Industrial Design students. In addition, the Civil Engineering P2P program, which focused on the development of groupwork skills was successful in demonstrating improved self-efficacy in this area, $t(12) = 2.61$, $p < .05$, $d = 0.72$ not seen in the control group. Improvements in general academic self-confidence for P2P students were reported in all disciplines, most notably in the area of attendance**.**

Qualitative comments from P2P participants, to be explored in this session, provide possible explanations for the differing outcomes of the program across disciplines and together with reflections about year level of peer tutors and semester of implementation, offer lessons for future applications of the model.

References

Australian Council for Educational Research (2009). *Engaging students for success: Australiasian student engagement report.* Australia: ACER.

Dawson, P., Lockyer, L., & Ferry, B. (2007). *Supporting first year student supporters: an online mentoring model for supplemental instruction leaders*. Paper presented at the Pacific Rim Conference First Year in Higher Education.

Hill, R. and Reddy, P. (2007). Undergraduate peer mentoring, an investigation into processes, activities and outcomes. *Psychology Learning and Teaching* 6 (2), 98-103.

Kift, S.M., & Moody, K.E. (2009). *Harnessing assessment and feedback in the first year to support learning success, engagement and retention.* ATN Assessment Conference 2009 Proceedings, 19 – 20 November, RMIT University, Melbourne.

Longfellow, E., May, S., Burke, L., & Marks-Maran, D. (2008) 'They had a way of helping that actually helped': a case study of a peer-assisted learning scheme. *Teaching in Higher Education, 13* (1), 93-105

Lovibond, S. H., & Lovibond, P. F. (1995). *Manual for the Depression, Anxiety, and Stress Scales* (2nd ed.). Sydney: Psychological Foundations.

Sanders, P., & Sander, L. (2007). Academic behavioural confidence: A comparison of medical and psychology students. *Electronic Journal of Research in Educational Psychology, 5* (3), 633-650.

Measuring academic behavioural confidence: the ABC scale revisited. *Studies in Higher Education, 34* (1), 19 - 35.

Tinto, V. (2009). Taking *Student Retention Seriously: Rethinking the First Year of University*. Paper presented at the FYE Curriculum Design Symposium.

Tinto, V. (1997). Colleges as communities: Exploring the education character of student persistence. *Journal of Higher Education, 68* (6), 599-623.