

Chapter 8

Interteaching: A Model to Enhance Student Engagement

Mandy Kienhuis and Andrea Chester

Abstract Interteaching is an innovative approach to teaching developed by Thomas Boyce and Philip Hinline (*The Behaviour Analyst* 25:215–226, 2002) that reconceptualises the standard university model of lectures and tutorials. This relatively new, evidence-based model uses guided, independent learning and reciprocal peer tutoring to enhance student engagement and learning. This new model shifts the focus from lectures to tutorials: lectures, rather than coming first, follow tutorials and focus on material identified by students as difficult. This chapter describes the implementation of interteaching in a second year psychology course, exploring the impact for both students and staff. We examine the effect of interteaching on students' academic performance, engagement, perceptions of learning, and evaluations of the course. The impact for staff includes changes to workload and roles as well as perceptions of innovation as an opportunity for renewal. In addition, the chapter describes the way in which the model has been adapted with the integration of Web 2.0 learning technologies to enhance flexibility and access for students via podules, short podcasts of core content. Recommendations for implementation of the model are outlined.

Keywords Interteaching • Student engagement • Lectures • Reciprocal learning • Podcasts

M. Kienhuis (✉) • A. Chester
RMIT University, 124 La Trobe Street, Melbourne, VIC 3000, Australia
e-mail: mandy.kienhuis@rmit.edu.au; andrea.chester@rmit.edu.au

8.1 Rethinking Traditional Lectures and Tutorials: A Rationale for Change

In recent times there has been a lot of discussion focused on the importance of student engagement as a predictor of academic success (e.g. Kuh, 2003; Kuh, Cruce, Shoup, Kinzie, & Gonyea, 2008) and the challenges of engaging students in their own learning (Mulryan-Kyne, 2010; Nelson, Quinn, Marrington, & Clarke, 2012; Rocca, 2010). A range of issues have been identified, including the need to facilitate independent and lifelong approaches to learning, graduate readiness and how best to assist students to apply their learning and see its relevance for their future careers, use of Web 2.0 learning technologies to engage students in “anytime, anywhere” learning, teaching large amounts of knowledge and skill efficiently, and teaching ever-increasing class sizes in inclusive ways (Biggs & Tang, 2007; Mandernach & Taylor, 2011; Mulryan-Kyne, 2010).

Many of these issues have been identified as relevant to psychology education in general (Cranney & Dunn, 2011) and more specifically by the teaching team in the psychology course that is the focus of this chapter. This second year undergraduate course in Developmental Psychology had historically been identified as a low-performing course according to formal student feedback. Compared to other courses in the programme, Developmental Psychology was seen by the students as heavily conceptual. Both formal and anecdotal evidence suggested that students perceived the course to cover too much theoretical content, to the extent that they felt overwhelmed by the workload and forced to engage in surface approaches to learning. Related to this conceptual focus, students found it difficult to see how theories and research presented could be applied to future work settings. Anecdotal evidence suggests that many of these issues are not peculiar to RMIT University. The common problem of teaching large amounts of conceptual and theoretical knowledge in undergraduate courses has been identified as particularly relevant to teaching lifespan development (Knight & Lee, 2009).

To address these issues, a number of strategies were trialled over several years, with the largest commitment of time and money allocated to the development of online learning resources using a web-based learning environment. A set of comprehensive online teaching modules were developed to supplement face-to-face interaction. These modules incorporated core readings and reflective tasks along with video footage illustrating key points of lifespan development. It was expected that these interactive resources would increase student engagement with the learning material and facilitate a deeper approach to learning. Although students responded positively to these online learning resources, feedback remained consistently lower than for other courses and students continued to struggle to apply the theory they were learning.

While researching alternative teaching approaches to address the ongoing problems with the course, the first author came across Boyce and Hineline’s (2002) interteaching model. This teaching model was described in a text outlining

practical approaches to teaching developmental psychology (Knight & Lee, 2009) and immediately appeared to be a good fit with the problems experienced by the teaching team.

8.2 A New Model to Enhance Student Engagement: Interteaching

Interteaching is based on behavioural principles and is designed to increase student engagement and academic outcomes by increasing student participation and active learning through immediate reinforcement of preparation and participation. It incorporates guided independent learning, reciprocal peer tutoring, instructor reinforcement, self-evaluation of learning, and brief lectures developed in response to student feedback. A distinctive feature of the model is that tutorials precede lectures as a way of distilling the learning topics upon which students most need direction (Boyce & Hinline, 2002). As such, interteaching inverts the traditional model for learning and teaching, putting centre stage the role of the student in preparing for class. While interteaching was developed prior to the proliferation of Web 2.0 learning technologies, the teaching model can easily be adapted using these technologies to enhance flexibility and access for students.

An important component of student engagement is *participation* (Rocca, 2010). Participation has been defined as an active engagement process comprising five components: preparation, discussion contribution, group skills, communication skills, and attendance (Dancer & Kamvounias, 2005). Participation leads to increased learning and increases in critical thinking and communication skills (see Rocca (2010) for a recent review). Engaging students via active participation has been identified in the literature as a particular challenge for tertiary educators, particularly in large classes (Rocca, 2010). Importantly, students themselves are aware of the benefits of participation for their own learning (Fassinger, 1995), and report a desire to participate more in class (Fritschner, 2000), suggesting that they would be satisfied with teaching models that include strategies to support greater participation.

One strong predictor of participation is class size, with increased class size associated with reduced student participation (Rocca, 2010). This finding has led to the development of alternative teaching models that emphasise active learning over didactic presentation of lecture content to a passive student audience. Often these models also incorporate specific strategies to increase participation during class time. A range of specific methods for increasing active participation have been identified. Guided class preparation, small-group discussion, instructor immediacy behaviours (i.e. eye contact, moving around the room), positive verbal and non-verbal feedback, reinforcement for participation, and assessment points for active participation have traditionally been used to increase student participation in class, and anecdotal and research studies support their use (Rocca, 2010).

Interteaching incorporates a range of these behavioural strategies to encourage active participation.

A central component of interteaching is *guided independent learning*. Before attending each tutorial or *interteach* class, a preparation guide is provided that outlines relevant prereading and a set of questions to answer based on the prereading. Students are expected to develop study notes based on this guide prior to attending the interteach session. They are informed that when they attend class, they will be expected to form dyads or small groups to discuss the topic material without reference to their study notes (Boyce & Himeline, 2002). Guided independent learning encourages students to take responsibility for their own learning and by doing so facilitates the development of skills required for lifelong learning. Use of *guided preparation* also assists students to manage their study more effectively, leading to perceptions of a more manageable study load.

This emphasis on students learning material before coming to class with the expectation that they will discuss their knowledge with their peers is based on cooperative and reciprocal peer tutoring learning models and predicts enhanced learning through peer reinforcement and tutoring others (Griffin & Griffin, 1998). Reciprocal peer tutoring is designed to motivate students to prepare to the level needed to explain their understanding to their peers, and self-evaluation is embedded into the model to encourage students to reflect on their preparation and performance and adapt their approach as necessary. It is based on the old adage that “we really don’t know something until we have taught it to someone else” (Boyce & Himeline, 2002). It is also likely that as students learn the benefits of preparing for class, an independent, deep approach to learning is encouraged, which is more likely to foster a lifelong approach to learning, compared to a surface approach to learning “just to pass the exam”. Further, the inclusion of reciprocal peer tutoring supports the development of team work and communication skills that are important learning experiences for students preparing for professional practice in psychology.

The central role of *reinforcement* in interteaching reflects the model’s strong grounding in behavioural principles. Students receive credit towards assessment based on their participation in the interteach session (Boyce & Himeline, 2002), and instructor immediacy behaviours (i.e. eye contact, moving around the room), positive verbal and non-verbal feedback, and tangible reinforcement have also utilised to reinforce student preparation and participation (Saville, Zinn, Neef, Van Norman, & Ferreri, 2006). It is proposed that reinforcement for preparation motivates students to make steady progress with understanding learning objectives, resulting in a more positive learning experience throughout semester and a reduced need to “cram” just prior to exams. Instructor reinforcement and participation marks also provide strong motivation to participate during class time, leading to increased engagement with peers and teachers (Saville, 2011). Further, if students are expected to attend class with knowledge about conceptual and theoretical content, then class time can be used to assist students to apply what they have already learned through the use of case studies and other real-world problems. This is consistent with the goal of assisting students to see the relevance of theories and research findings to future work settings.

Following each discussion session (40–60 min), students complete an *inter-teaching record* to report on the most challenging and interesting aspects of the course content for that week. This feedback is used by the lecturer to develop content for the subsequent brief lecture (40–60 min) which occurs before the next tutorial class. This allows the lecturer to fill in gaps identified by students in their knowledge. Further, as Saville, Zinn, and Elliott (2005) have suggested, students may be more likely to engage with lecture material that is developed based on their feedback. The interteaching record has also been used as a self-evaluation tool, where students also rate the effectiveness of their peer-to-peer discussions (Saville et al., 2005, 2006).

As interteaching is a new teaching model, evaluation is in the early stages; however, the model is built on a strong theoretical and empirical base, and evaluation of interteaching to date has been promising. The model has been implemented within psychology programmes in a number of universities in the United States. Two studies employing experimental designs provide support for interteaching as an alternative model for teaching psychology. Students have reported a preference for the interteaching model over traditional lectures, and student performance on class tests was higher following interteaching compared to standard lectures (Saville et al., 2005, 2006). Similar findings have been reported in more recent studies with diverse student populations, including sociology students (Tsui, 2010), computer programming students (Emurian & Zheng, 2010), nutrition students (Goto & Schneider, 2009), and psychology students (Felderman, 2011). The model has also been implemented at Griffith University with Australian students completing mathematics and science courses. Preliminary evidence suggests that the model is viewed positively by students and is associated with improved learning outcomes compared to standard lectures (Gregory, Clarke, & Bridgestock, 2009).

8.3 Adopting Interteaching in Developmental Psychology

The teaching model implemented in Developmental Psychology at RMIT University in 2010 was based on the interteaching model reported by Boyce and Hinline (2002) and others (e.g. Saville et al., 2005, 2006); however, we have adapted it to meet our particular needs and continue to refine it using Web 2.0 learning technologies.

Developmental Psychology at RMIT University is taught across two campuses in the same semester. Prior to implementing interteaching, the two campus cohorts were coordinated separately, each taught with a traditional 2-h lecture followed by a 2-h tutorial each week. The two campus cohorts were comprised of approximately 60 and 110 students each. The course topics were delivered by two academics, each teaching in their relative areas of expertise, and topics were taught in the same order across campuses (according to the lifespan stages). This meant that lecturers travelled between campuses to deliver two identical lectures on one day. In addition to the inefficiency of teaching the same lecture twice, approximately 90 min per week

was lost to travel time. A series of tutorial classes (comprising approximately 25 students each) were delivered each week by sessional teaching staff. Prior to interteaching, these were delivered after the lecture and focused on review and application of lecture material and guidance regarding assessment preparation. The existing teaching model therefore already had an emphasis on active small-group learning. While the central aim of the trial was to improve student engagement and academic outcomes, the model's de-emphasis on didactic teaching was viewed as an opportunity to also trial a flexible lecture delivery method that would reduce teaching and travel time and result in increased efficiency. Prior to the availability of Web 2.0 learning technologies, such flexible delivery approaches would not have been possible.

Prior to the implementation of interteaching, the course was delivered over 12 weeks. In week 1, students attended a 2-h lecture, and in weeks 2 through 12, students attended a 2-h lecture and a 2-h tutorial. Tutorials were delivered immediately after lectures on the same day and focused on content review and learning activities associated with the lecture material delivered earlier that day. To adapt the course schedule to suit the interteaching model, in 2010, students attended a 2-h lecture in week 1. In this lecture students were introduced to the topic of lifespan development and provided with a rationale and overview of the interteaching model. In weeks 2 through 11, students attended a 2-h tutorial that included an interteach session focused on that week's topic (approximately 1 h), in addition to work related to the major assessment. From weeks 3 through 12, students were provided with the opportunity to attend a lecture that was developed based on student feedback. Due to issues with room availability, this lecture was offered 1 week after the previous week's interteaching session and just prior to the interteach session on the following topic. In 2010, lectures were delivered weekly, but on alternate campuses during the teaching semester; students were provided with the option of attending the face-to-face lecture or accessing the lecture as a podcast. Students were familiar with accessing podcasts in this way in other courses in the programme, and the majority of students accessed podcasts rather than attending the face-to-face lecture at the alternate campus. As outlined above, this schedule was designed to provide flexibility for students and also to increase efficiency by reducing lecture delivery time and cross-campus travel.

As preparation for the first lecture, students are provided with an *Interteaching Guide for Students* that explains the teaching model and outlines the course structure and assessment process. The content of this guide is also covered in the first lecture to ensure that students are clear on the rationale for the model and the course structure and requirements.

Before attending each interteaching tutorial class, students are provided with an *Interteaching Topic Guide* which is delivered online using a web-based learning environment. This guide provides a very brief introduction to the topic, lists topic learning objectives, and outlines required reading from the textbook (and other sources where relevant). The guide details the preparation that students need to complete before their tutorial, including completing set reading and responding to a set of *Interteaching Discussion Questions*. These Interteaching Discussion

Questions focus on the learning objectives for each topic and include questions to test comprehension and ability to synthesise and apply the material. To encourage a deep approach to learning, students are advised to be prepared to discuss the answers to these questions in class without making reference to their study notes.

During tutorials, students are allocated to small discussion groups to participate in small-group peer-to-peer discussion focused on their understanding of the answers to the *Interteaching Discussion Questions*. They also participate in learning activities designed to demonstrate their understanding of the topic. In their discussion groups, students are also required to respond to *Interteaching Application Questions* that require them to apply their understanding to real-world issues (e.g. roles plays, debates). Tutors provide verbal and non-verbal reinforcement, tangible reinforcers (e.g. chocolate) for engaging in effective discussion, and grade students weekly based on evidence of (a) prior preparation, (b) active participation, and (c) effective communication skills. Grades allocated during the interteaching session account for 20 % of the total grade for the course. Tutors receive training in the interteaching model, and the grading process, and are provided with ongoing regular support throughout the semester.

Following each interteaching session, students complete an *interteaching record*. This form is used for self-assessment tool and as a source of information for developing subsequent lecture content. As a self-assessment tool, students rate their own and their group members' preparation and knowledge and the difficulty level of the material. As a source of information for lecture development, students report on the most challenging and interesting aspects of the course content and ask specific clarification questions. Using this same form, students are also able to provide more general feedback on the course and the interteaching model. Feedback provided on the interteaching record was used by the lecturer to develop content for the subsequent brief lecture (40–60 min) which was delivered before the next tutorial class.

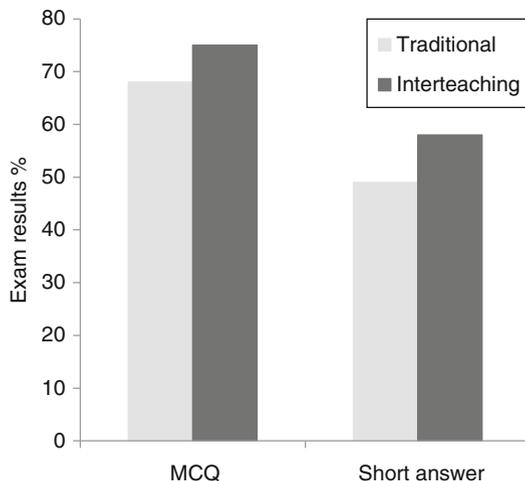
8.4 Evaluating Interteaching: Outcomes for Students and Staff

8.4.1 Outcomes for Students

A single-group pre-post (non-experimental) design was used to evaluate the impact of the interteaching model in several areas, including exam grades, student perceptions of academic progress and learning, engagement with learning, and course satisfaction. The research evaluation was approved by the RMIT Science Engineering and Health (SEH) College Human Ethics Advisory Network (CHEAN). The methodology and results are summarised in this section.

A total of 142 of 169 students enrolled in the course volunteered to participate in the evaluation. Participating students were predominantly female (122 females, 20 males), ranging in age from 17 to 47 years ($M=21.55$, $SD=4.22$). Participants

Fig. 8.1 Comparison of MCQ and short answer question exam results for traditional model and interteaching model



were predominantly Australian born (81.7 %) with English as the language spoken at home (69.9 %). The return rates for surveys at pre, post, and 6-month follow-up were 84 %, 72 %, and 27 %, respectively. Analyses were conducted on 100 matched sets of pre-post data and 33 matched sets of follow-up data.

Evaluation data indicated that interteaching was successful in improving student learning experiences and outcomes. Improvements were observed in academic achievement, student perceptions of their own learning, academic engagement, satisfaction with interteaching, and overall course satisfaction.

When compared to exam results in previous years, results indicated that depth of conceptual understanding was greater with interteaching compared to the standard teaching model. The mean total exam result with interteaching (71.2 %) was significantly higher than that recorded in the previous year using the traditional model (62.6 %). Figure 8.1 shows meaningful improvements in multiple choice question (MCQ) and short answer question exam results using interteaching.

Consistent with the improvements in exam results, the majority of students (62.3 %) reported that they believed they learned more with the interteaching model (see Fig. 8.2). While exam grades and student perceptions suggest that students learned more with interteaching, students did not perceive a change in their own academic progress. At all three data collection points, on average, students indicated that they believed they were progressing at “about the same” rate as they expected. Students’ perceptions that they were learning more, yet progressing at a similar rate, suggests that they were aware that the amount of learning required to do well with the interteaching method was greater than traditional models.

Interteaching had the expected positive impact on student engagement. A five-item survey was designed by the researchers to assess participants’ engagement in their own learning. These items ask participants to report how often they have engaged in a range of learning experiences including reading, assignment work, preparing for class, working with other students outside class time, and class discussion.

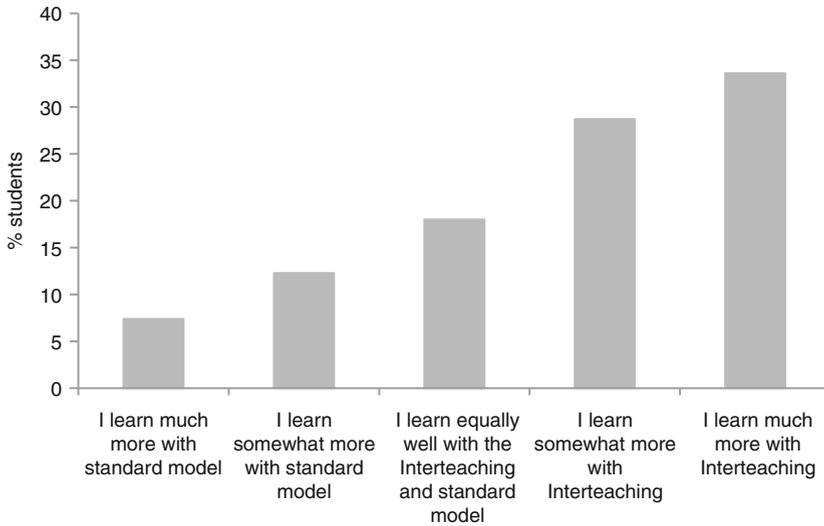


Fig. 8.2 Student responses on the post-survey item asking whether they believed they learned more with the interteaching model compared to the standard model

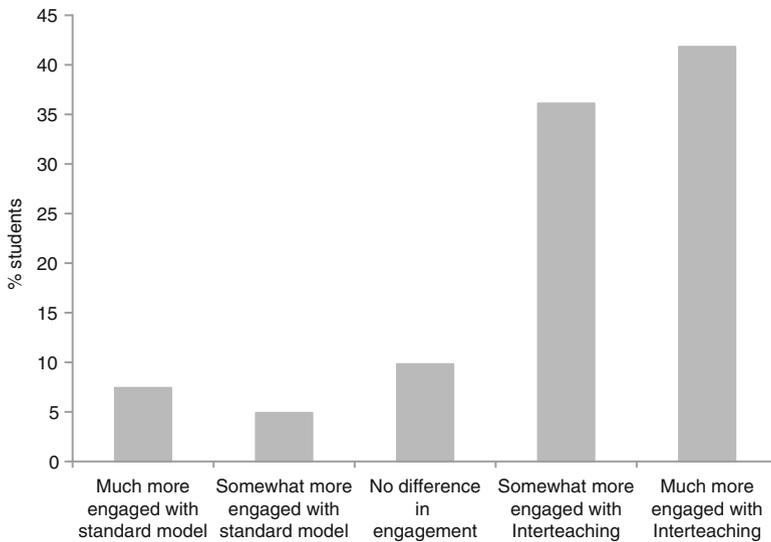
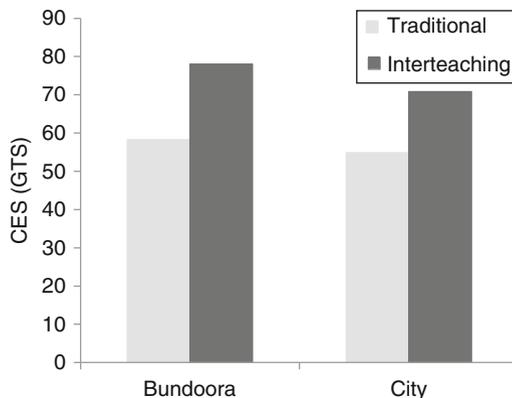


Fig. 8.3 Student responses on the post-survey item asking how engaged they were with the interteaching model compared to the standard model

A moderate-sized, statistically significant improvement in self-reported student engagement was observed by the end of semester. Consistent with this finding, the majority of students (77.9 %) reported being more engaged with the interteaching model compared to the traditional model of teaching (see Fig. 8.3).

Fig. 8.4 Comparison of good teaching scores (GTS) for standard teaching model and interteaching presented separately for each campus



Student comments on the end-of-semester course experience survey (CES) suggest that students were aware of their increased engagement and the importance of continued commitment throughout semester for developing academic confidence and independent learning. Student-reported advantages of the interteaching model over the standard model included the following: “Engage more with tutors and other psychology students; builds up my confidence because of the engagement with others”; “Encouraged me to engage in my own learning”; “Influenced me to study topics more thoroughly throughout the semester, rather than just before exams”.

To assess the impact of the interteaching model on student satisfaction, comparisons were made between 2009 (tradition model) and 2010 (interteaching) scores on the good teaching scale (GTS) of the RMIT University CES. Students complete the CES at the end of each course, and the GTS is considered a valid measure of student satisfaction with teaching quality. Averaging across campuses, there was an 18-point increase on the GTS. Figure 8.4 shows a comparison of CES good teaching scores for the traditional model and interteaching, presented separately for each campus.

While GTS scores are a general measure of satisfaction with teaching quality, GTS is influenced by a range of factors other than the teaching model (e.g. level of feedback provided on assignments, teacher ability to explain things). For this reason, students were asked directly about their preference for the interteaching model over the traditional model of teaching. The majority of students (63.9 %) reported a preference for the interteaching model (see Fig. 8.5), suggesting that increases in overall satisfaction can, at least in part, be explained by interteaching.

8.4.2 Outcomes for Staff

Implementation of the interteaching model has implications not only for students. The development of any innovation, particularly one that shifts the ownership of learning as radically as the interteaching model, is bound to impact on the staff who

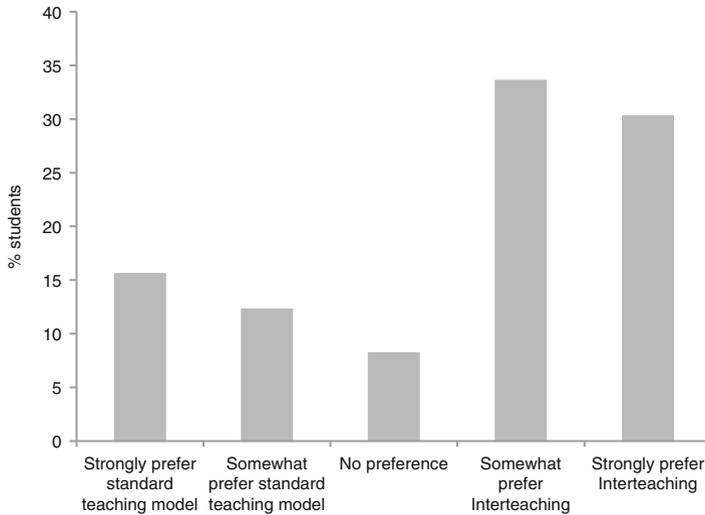


Fig. 8.5 Student preference for the interteaching model

teach it. Following the first year of implementation, we interviewed staff to examine their experiences of the model. Their responses are summarised in this section.

Of the eight staff in the teaching team, five participated in the interviews, including individual interviews with each of the lecturers and a 70-min focus group attended by three of the six sessional tutors. The lecturers were both experienced in the teaching of the course. The tutors working in the team were all psychology post-graduate students, with experience tutoring in psychology, but not necessarily in this course.

Beyond the work entailed in the implementation of a new teaching approach, results suggested that the interteaching model was associated with a shift in perceived roles and workload. Both the lecturers noted the time pressures of the model, with a tight turnaround between collation of the interteaching record information and preparation of the lecture material. However, this was seen as a trade-off for a more student-centred approach. Both lecturers expressed increased confidence that their teaching was aimed at the right level. The interteaching record made it “clearer what aspects I needed to flesh out or focus on in the lecture ... I felt like I was pitching it at the right level for the students”. This focusing of information on the needs of the students translated into perceptions of enhanced student engagement. “I had a sense”, one lecturer commented, “that the changes were really positive for their learning of the material.... I did have a sense that they were really engaged”.

The tutors also noted the interplay of both advantages and challenges in the model. Tutors noted that the increased responsibility of students for their own learning resulted in enhanced engagement. “It was a joy to see the students really engage; you really saw them connect with the material”. Just as the student’s role was perceived differently in the interteaching model, so too the tutors perceived a shift in

their role compared to the traditional lecture/tutorial model. Because tutorials precede lectures in interteaching, tutors felt a pressure “to be much more on top [of the material] than with the regular teaching model”. This focus was not anticipated, given that the model emphasises both the preparation of students and the role of lectures in addressing questions. Nevertheless, tutors expressed complex and ambivalent attitudes towards the model, including their own expectation that they “teach content” and a resistance to doing this.

Tutors also commented on the effort required to grade students on participation each week. Tutors used the term “hypervigilant” to describe the approach they adopted in class. As one tutor explained,

Because participation was such a huge part of their assessment it required that I knew every single individual; that I was monitoring how they were going as individuals and in groups it required a lot of concentration ... it was really hard work.

The work required by the interteaching model was perceived to be greater than the traditional model. As one tutor concluded, “from a practical, selfish perspective it was so much work involved. It’s much easier to prepare and facilitate the standard tutorial model”. The benefit, however, of a diligent focus on student engagement was enhanced knowledge of one’s students and an increased ability to support students throughout the semester.

You knew how every single student was going every week so you could really pick up if they were starting to fall behind or [if] they were struggling you pull them up instead of it getting to end of semester and they’re overwhelmed or they’re not engaging.

The perceptions that emerged from the interviews and focus group described both pleasure and frustration as the boundaries that had previously been clear around and between lecturer and tutor were muddled. Just as the role of the student is renegotiated in interteaching, so too are the roles of staff.

8.5 Issues and Implications: Ongoing Development of the Interteaching Model

Results from our evaluation of interteaching indicated that the model was successful in improving student learning experiences and outcomes. The majority of students reported a preference for interteaching and that they were more engaged and learnt more when using interteaching, and teacher perceptions and exam grades mirrored student perceptions. While the success of the model has led to its continued development in Developmental Psychology and recommendations for use in other courses, a number of areas were identified for improvement. These include the content of interteach sessions, tutor support, the assessment process, developing the communication skills of shy students, and the delivery of lecture content.

8.5.1 The Content of Interteach Sessions

When developing the tutorial programme, a standard structure for interteaching sessions was established. This structure began with students engaging in small-group discussion to discuss responses to interteaching discussion questions, followed by sharing of responses and clarification of misconceptions as a class. This was then followed by completion of interteaching application questions and activities in small groups. Student and tutor feedback indicated that following the same structure each week became repetitive as the semester progressed and that student and tutor interest could be increased by altering the structure and developing some alternate learning tasks. As a result, a set of enhanced tutorial activities have been developed in collaboration with the RMIT University Study and Learning Centre to increase student engagement with learning materials. More engaging ways of reviewing the interteaching discussion questions included taking on “thinking hat” roles in small-group discussion (de Bono, 2010) and inviting student groups to devise a simple learning activity or memory strategy to teach their classmates about a particular topic. Continual improvements have also been made to increase student engagement and responsibility for their own learning. These include the use of an understanding check quiz at the end of each interteaching session and a progress summary sheet to help students monitor their progress.

8.5.2 Tutor Support

While tutors understood the value of interteaching for student engagement and learning, and found teaching prepared students to be more rewarding, they reported workload pressure and concerns that they were required to step into the lecturer’s role. To address this issue in subsequent offerings of the course, the course coordinator provided tutors with regular meetings, a more comprehensive tutors’ guide that provided detailed answers to the interteaching discussion questions, and improved communication to students and tutors regarding lecturer and tutor roles. More recent feedback from tutors suggests that these improvements have resulted in reduced tutor stress and increased tutor satisfaction with interteaching.

8.5.3 Assessment

Tutors also commented on the effort required to grade students on preparation, participation, and communication skills each week. Tutors’ concerns were reflected in student feedback that they were not confident that tutors knew them well enough to grade them accurately. To address these concerns, a number of suggestions were offered by tutors, including the option of assessing each student on alternate weeks

rather than every week. Assessing students in every other class without students knowing which week they will be assessed has also been suggested by others (Armstrong & Boud, 1983), and this seemed like the most acceptable solution. The assessment process was also improved by providing both tutors and students with a more detailed assessment rubric and allowing more tutorial time to explain the assessment requirements to students. We also placed a greater emphasis on the importance of tutors learning student names from the very first class and have trialled a range of strategies to assist tutors to do this (e.g. name tags). Feedback suggests that these changes to the assessment process have resulted in decreased tutor stress and increased student confidence in the assessment process.

8.5.4 Developing the Communication Skills of Shy Students

When planning the assessment for this interteaching course, a central aim was for all students to develop their confidence in communicating in small groups and to the whole class. We were mindful that the assessment process would be particularly challenging for shy students, and student and tutor concerns were monitored during the initial implementation. During the initial implementation, there were only a few cases where tutors raised concerns about quiet students, and tutors were advised to consult with students about the importance of developing communication skills and discussing ways for students to develop their confidence. As communication skills were explicitly stated on the assessment rubric, students also received feedback about their development in this area at mid-semester, allowing an opportunity to incorporate this feedback in the second half of the assessment period.

More recently, a number of methods to address this issue have been emphasised in tutor training and when explaining the assessment criteria to students. In tutor training, tutors are advised to monitor individual student participation from the beginning of semester and to consult with the coordinator about individual students who may need additional support. This advice is repeated throughout the semester and is also discussed with tutors when mid-semester feedback is reviewed. Tutors are supported to foster a supportive environment where shy students will feel confident to share their ideas, and this is assisted by the assessment requirements. The communication skills outlined in the assessment rubric include “encourages others to share responses and ideas using verbal and non-verbal prompts” and “challenges others’ responses and ideas in an appropriate, assertive manner.” Further, because interteaching focuses on student discussion in small groups, students could do reasonably well in this assessment without contributing to larger group discussion. Within this supportive learning environment, we hope that shy students will at least develop confidence and skills while communicating in small groups.

The student comment below reveals the concerns shy students have and alludes to the importance of focusing on assessment of communication skills:

I just found that for someone like myself who does not feel very confident to answer questions in front of a class a little hard as I was prepared but sometimes felt I may come across as unprepared as I was nervous to speak aloud. Although I felt I definitely became more comfortable as the semester went on to offer my thoughts.

If discussion contribution had not been assessed, this student and others like her may not have “stepped out of their comfort zone” and developed the confidence to share her views. While we continue to monitor this issue and consider novel ways to address individual student needs, we see the development of communication skills as important, and this assessment as a means to do drive this development.

8.5.5 Enhanced Lecture Delivery Using Web 2.0 Technology

Student behaviour and feedback from the initial evaluation indicated that students may prefer flexible delivery of lecture content instead of weekly face-to-face lectures. Student attendance at face-to-face lectures in the interteaching model was low, and student feedback suggested that the reason for this was that students had already moved on to the next topic by the time the lectures were delivered. It seemed sensible for lecture content to be delivered prior to students beginning their preparation for the next topic; however, from a practical viewpoint, this was challenging. Given the constraints of timetabling and lecturer workloads, as well as considerations around flexibility of access for students, podcast delivery of lectures was considered. Research demonstrates that podcasts are perceived favourably by students (Chester, Buntine, Hammond, & Atkinson, 2011), particularly in regard to flexibility of access both in time and location (Jarvis & Dickie, 2010), learning satisfaction (Ip et al., 2008), and opportunities for revision (Shantikumar, 2009). More recently we developed and evaluated a series of brief audiovisual podcast learning modules (*podules*) to replace face-to-face lectures. These podules were developed based on student feedback provided on the interteaching record and were made available to students 2 days after the interteach tutorial. This allowed for students to review the lecture content before preparing for the next interteach topic. The incorporation of *podules* into the interteaching model marks a substantial adaptation and highlights the role of learning technologies in shaping teaching practices.

These adaptations have been incorporated into the interteaching model, and the revised interteaching approach has been evaluated. A total of 99 students enrolled in the Developmental Psychology course volunteered to participate in an end-of-semester evaluation. Overall, results revealed that the gains in academic progress, student engagement, and student satisfaction observed during the initial implementation were maintained. These results suggest the adaptations have been successful, in particular, that the substitution of podules for face-to-face lectures in the course does not detract from the learning benefits of the interteaching model. The cost and time effectiveness of podules in comparison to traditional lectures further recommends the continued implementation of podules in the interteaching model.

8.6 Future Developments and Directions

Ongoing feedback continues to shape the implementation of interteaching in Developmental Psychology. Based on the success of the model in Developmental Psychology, interteaching is currently being implemented within a range of disciplines across our university. Based on research at other universities (Emurian & Zheng, 2010; Goto & Schneider, 2009; Tsui, 2010), it is expected that interteaching can be adapted successfully for use in other disciplines at RMIT. It is anticipated that this project will result in a sustainable training, evaluation, and dissemination model that can be implemented by other universities.

A number of important and interesting questions remain regarding the essential elements of interteaching and how interteaching works to increase student engagement and academic results.

While it is clear the interteaching model has been effective in a range of areas, further work is needed to determine the components of the model that are essential for increasing student engagement and academic performance. For example, are frequent quizzes necessary or are grades for participation enough to motivate students to do their best work? Boyce and Hinline (2002) discuss the importance of reinforcement and incorporate a range of different reinforcers, including quizzes that count towards student grades. Our adaption of the model includes non-assessed quizzes as student self-assessment to increase student engagement and responsibility for their own learning. While we have not assessed their effectiveness, they seem to act as a natural reinforcer. We also provide tangible reinforcers for participation which are not emphasised by Boyce and Hinline. It would be valuable to compare the effectiveness of different reinforcement methods in the future.

It is important to understand better how interteaching works to improve learning outcomes. Do increased expectations for student preparation and participation lead students to engage in a surface approach to learning—to learn “just enough” to perform well in class discussion? Or does the model increase engagement and interest so that students are motivated to engage in the deeper learning required for career success (e.g. analysis, synthesis, application)? Our exam results suggest that students are retaining more information compared to the standard approach; however, whether they are retaining this information beyond the exam is not known. Ideally, we would hope that interteaching leads to increased academic self-efficacy as students develop skills in a supportive learning environment, which facilitates increased engagement, a deeper approach to learning, and ultimately academic success. A more detailed analysis of the relationships between student engagement, student learning approach, academic self-efficacy, and academic performance with interteaching is needed before conclusions can be drawn. A better understanding of the relationship between these variables should guide future implementation of interteaching. For example, if we know that increases in academic self-efficacy are important for success with the interteaching model, greater emphasis could be placed on fostering student confidence.

Overall, most students are more engaged with interteaching and report a preference for interteaching over traditional teaching models. Our ultimate aim is to promote deeper learning and facilitate independent and lifelong approaches to learning. Preliminary results suggest that students are learning more with interteaching; however, it is unclear whether this learning is sustained over time or whether the skills acquired during interteaching are applied to learning in other courses. Our results suggest that investing in alternative teaching models can result in improved learning outcomes. There is also accumulating evidence that students are satisfied with podcasts, at least in the context of an enriched tutorial programme. However, more detailed evaluation of student use of podcasts is needed, as questions remain about whether all students have equal access to technology and whether students are using podcasts regularly and effectively. Future research that answers these questions will assist in providing a more engaging and effective learning experience for students. While interteaching is more engaging and rewarding for tutors and lecturers, there is the risk inherent in any innovation that interteaching, like similar alternative teaching models, leads to increased workloads for staff. This is particularly the case where teachers are required to develop new technological skills. For this reason, it is important that initiatives to adopt teaching innovations pay attention to resourcing and supporting staff.

This chapter began with the search for a better way to teach Developmental Psychology, one that would engage students and help them apply knowledge. We have found a new model focused on active engagement; a model that gives responsibility for learning to the student. Through the process of ongoing adaptation and evaluation described in this chapter, we have examined the effectiveness of this model and will continue to develop it both within Developmental Psychology and in other courses. The process of implementing and refining this new model has been a powerful one for the teaching team and our students, facilitating a renewed engagement with the course content and the process of teaching.

Acknowledgements The research described in this chapter has been supported by a series of Learning and Teaching Investment Fund grants provided by RMIT University.

References

- Armstrong, M., & Boud, D. (1983). Assessing participation in discussion: An exploration of the issues. *Studies in Higher Education*, 8, 33–44.
- Biggs, J., & Tang, C. (2007). *Teaching for quality learning at university* (3rd ed.). New York: McGraw Hill.
- Boyce, T. E., & Hinline, P. N. (2002). Interteaching: A strategy for enhancing the user-friendliness of behavioural arrangements in the college classroom. *The Behaviour Analyst*, 25, 215–226.
- Chester, A., Buntine, A., Hammond, K., & Atkinson, L. (2011). Podcasting in education: Student attitudes, behaviour and self-efficacy. *Educational Technology and Society*, 14, 236–247.
- Cranney, J., & Dunn, D. (2011). *The psychological literate citizen: Foundations and global perspectives*. New York: Oxford University Press.

- Dancer, D., & Kamvounias, P. (2005). Student involvement in assessment: A project designed to assess class participation fairly and reliably. *Assessment & Evaluation in Higher Education*, 30, 445–454.
- de Bono, E. (2010). *Six thinking hats*. London: Penguin.
- Emurian, H. H., & Zheng, P. (2010). Programmed instruction and interteaching applications to teaching Java: A systematic replication. *Computers in Human Behavior*, 26, 1166–1175.
- Fassinger, P. A. (1995). Professors' and students' perceptions of why students participate in class. *Teaching Sociology*, 24, 25–33.
- Felderman, T. (2011). *An analysis of interteaching and frequent examinations in the community college classroom* (PhD thesis). Available from ProQuest Dissertations and Theses database. (UMI No. 3467399).
- Fritschner, L. M. (2000). Inside the undergraduate college classroom: Faculty and students differ on the meaning of student participation. *Journal of Higher Education*, 71, 342–362.
- Goto, K., & Schneider, J. (2009). Interteaching: An innovative approach to facilitate university student learning in the field of nutrition. *Journal of Nutrition Education and Behavior*, 41, 303–304.
- Gregory, S., Clarke, F., & Bridgestock, M. (2009, October). *Motivated and engaged students via co-operative problem-based learning*. Paper presented at the National UniServe Science Conference, Sydney, Australia. Abstract retrieved May 17, 2012, from <http://science.uniserve.edu.au/workshop/2009%20abstracts.html>
- Griffin, M. M., & Griffin, B. W. (1998). An investigation of the effects of reciprocal peer tutoring on achievement, self-efficacy and test anxiety. *Contemporary Educational Psychology*, 23, 298–311.
- Ip, R., Lau, Y. K., Chan, T., Wong, E., Wong, S., & So, J. (2008, July). *Enhancing student learning with podcasting, a newly emergent social technology*. Paper presented at the Pacific Asia Conference on Information Systems, China.
- Jarvis, C., & Dickie, J. (2010). Podcasts in support of experiential field learning. *Journal of Geography in Higher Education*, 34, 173–186.
- Knight, E. B., & Lee, E. L. (2009). *A guide to teaching developmental psychology*. Oxford: Wiley.
- Kuh, G. D. (2003). What we're learning about student engagement from NSSE: Benchmarks for effective educational practices. *Change*, 35(2), 24–32.
- Kuh, G. D., Cruce, T. M., Shoup, R., Kinzie, J., & Gonyea, R. M. (2008). Unmasking the effects of student engagement on first-year college grades and persistence. *Journal of Higher Education*, 79, 540–563.
- Mandernach, B. J., & Taylor, S. S. (2011). Web 2.0 applications to foster student engagement. In R. L. Miller, E. Amsel, B. M. Kowalewski, B. C. Beins, K. D. Keith, & B. F. Peden (Eds.), *Promoting student engagement* (Vol. 1, pp. 220–229). Retrieved May 17, 2012, from the Society for the Teaching of Psychology Web site: <http://teachpsych.org/ebooks/pse2011/index.php>
- Mulryan-Kyne, C. (2010). Teaching large classes at college and university level: Challenges and opportunities. *Teaching in Higher Education*, 15, 175–185.
- Nelson, K. J., Quinn, C., Marrington, A., & Clarke, J. A. (2012). Good practice for enhancing the engagement and success of commencing students. *Higher Education*, 63, 83–96.
- Rocca, K. A. (2010). Student participation in the college classroom: An extended multidisciplinary literature review. *Communication Education*, 59, 185–213.
- Saville, B. (2011). Interteaching: A behavior-analytic approach to promoting student engagement. In R. L. Miller, E. Amsel, B. M. Kowalewski, B. C. Beins, K. D. Keith, & B. F. Peden (Eds.), *Promoting student engagement* (Vol. 1, pp. 128–133). Retrieved May 17, 2012, from the Society for the Teaching of Psychology Web site: <http://teachpsych.org/ebooks/pse2011/index.php>
- Saville, B. K., Zinn, T. E., & Elliott, M. P. (2005). Interteaching versus traditional methods of instruction: A preliminary analysis. *Teaching of Psychology*, 32, 161–163.

- Saville, B. K., Zinn, T. E., Neef, N. A., Van Norman, R., & Ferreri, S. J. (2006). A comparison of interteaching and lecture in the college classroom. *Journal of Applied Behavior Analysis, 39*, 49–61.
- Shantikumar, S. (2009). From lecture theatre to portable media: Students' perceptions of an enhanced podcast for revision. *Medical Teacher, 31*, 535–538.
- Tsui, M. (2010). Interteaching: Students as teachers in lower-division sociology courses. *Teaching Sociology, 38*, 28–34.