

## Including everyone: A peer learning program that works for under-represented minorities?

**Jacques van der Meer** and **Stephen Scott**

University of Otago, Dunedin, New Zealand

### Abstract

*Peer learning has long been recognised as an effective way to induct first-year students into the academic skills required to succeed at university. One recognised successful model that has been extensively researched is the Supplemental Instruction (SI) model; it has operated in the US since the mid-1970s. This model is commonly known in Australasia as the Peer Assisted Study Sessions (PASS) program. Although there is a considerable amount of research into SI and PASS, very little has been published about the impact of peer learning on different student groups, for example indigenous and other ethnic groups. This article reports on the results from one New Zealand university of the effectiveness of PASS for Māori and Pasifika students. The questions this article seeks to address are whether attendance of the PASS program results in better final marks for these two groups of students, and whether the number of sessions attended has an impact on the final marks.*

**Please cite this article as:**

van der Meer, J., & Scott, S. (2013). Including everyone: A peer learning program that works for under-represented minorities? *The International Journal of the First Year in Higher Education*, 4(1). 84-95. doi: 10.5204/intjfyhe.v4i1.147

This article has been peer reviewed and accepted for publication in *Int J FYHE*. Please see the Editorial Policies under the 'About' section of the Journal website for further information.

© Copyright of articles is retained by author/s. As an open access journal, articles are free to use, with proper attribution, in educational and other non-commercial settings. ISSN: 1838-2959

## Background

Both the Australian and New Zealand, government are particularly concerned with the achievement of under-represented minorities in tertiary education. New Zealand data show that this under-achievement has an impact on the graduation rates of particular student groups, for example Māori and Pacific students (Scott, 2004). This concern echoes similar concerns in other countries.

Concerns in the United States during the 1970s about the underachievement of minority students led to the development of a peer learning program to address this issue: Supplemental Instruction (SI). SI was originally set up to address the attrition rate of first-year African-American students enrolled in medical studies in one particular university, the University of Missouri – Kansas City. Research suggests that this program was indeed successful in reducing attrition rates (Blanc, DeBuhr, & Martin, 1983; Martin & Arendale, 1993). In 1981, the US Department of Education designated this initiative as an “Exemplary educational program” (Martin & Arendale, 1994). Three claims were validated, of which two in particular are relevant for the discussion in this paper:

Students participating in SI within the targeted high risk courses earn higher final course grades than students who do not participate in SI. This is still true when differences are analysed, despite ethnicity and prior academic achievement. (p. 3)

And

Despite ethnicity and prior academic achievement, students participating in SI within targeted high risk courses succeed at higher rates (withdraw at a

lower rate and receive a lower percentage of D or F final course grades) than those who do not participate in SI. (p. 3)

This program has since been widely introduced in many other universities in the US. Since the 1990s, the program also became established outside of the US. SI programs outside of the US were introduced under various names. In Australasia, programs that followed the SI design, became known as Peer Assisted Study Sessions (PASS) programs. From here on, PASS will be used to refer to these programs.

Interventions such as PASS can be considered as belonging to the broader group of peer learning programs. These programs are referred to by many different names, such as collaborative learning, cooperative learning, peer tutoring, peer mentoring and many other variations. They come in many shapes and forms and generally are deemed to be a worthwhile approach to enhancing student engagement and success (Ladyshevsky, 2001; Pascarella & Terenzini, 2005; Topping, 1996, 2005; Topping & Ehly, 2001).

Key design elements of PASS, as one of the many peer learning variations, are the facilitation of study sessions in first-year courses by more experienced students, the incorporation of constructivist learning principles in the planning and facilitation, and the voluntary non-remedial nature of (most) PASS programs (Hurley, Jacobs, & Gilbert, 2006; Jacobs, Hurley, & Unite, 2008). The constructivist nature of the program is in contrast to more traditional, more passive teaching approaches (Ning & Downing, 2010). Constructivist learning principles, however, provides just one theoretical foundation for PASS;

information processing and academic literacies approaches also inform PASS pedagogy (Couchman, 2008). Student facilitators receive extensive initial and ongoing education/training in learning theories, facilitation and group management skills.

The non-remedial focus of PASS is in contrast to other initiatives to solving academic under-achievement of students. Remedial approaches to solving academic under-achievement of minority groups are the more usual approach. Researchers involved in the New Zealand *Te Kotahitanga* project pointed out there is a tendency to blame blaming students or their background for their under-achievement (Bishop, Berryman, Cavanagh, Teddy, & Clapham, 2007). They found that teachers typically engaged in “deficit theorising” as they called this, and they found that teachers were inclined to a “transmission teaching” approach. Amongst the interventions that seemed to yield success, were a more relational, dialogical approach to teaching and a moving away from singling out under-achieving students.

Although the *Te Kotahitanga* project is focused on secondary school learning environments, the features that made this project successful, also mark the design of PASS programs. In particular, the more interactive, dialogical approach and a greater focus on non-hierarchical relationships of PASS programs reflect the approach advocated in *Te Kotahitanga*. Results from the annual Australasian Survey of Student Engagement (AUSSE), also seem to suggest that peer interaction and peer engagement benefit students in general, but more so, Māori and Pacific students (van der Meer, 2011).

Considering that SI was originally conceived to serve the achievement of under-represented minorities, it is striking that relatively few studies have specifically addressed the focus on minority student groups. Some more recent studies highlight the success of this program for under-represented minorities in the US (e.g. Peterfreund, Rath, Xenos, & Bayliss, 2007-2008; Rath, Peterfreund, Xenos, Bayliss, & Carnal, 2007). In Australasia too, little published research was identified about the success of peer learning programs for under-represented minorities. This paper, therefore, intends to contribute to this area of study by seeking to evaluate the effectiveness of SI/PASS programs in relation to ethnic minorities. We do this by examining the data from the PASS program of one New Zealand university and by focusing in particular on two student groups: Māori and Pasifika students. Although these two groups are different in many aspects, they are similar in their relatively poor academic achievement in New Zealand's tertiary environment. Māori are the *tangata whenua* (original population) of Aotearoa/New Zealand. The Pasifika population encompasses both people who have come to New Zealand from one of the Pacific Islands, as well as those who were born in New Zealand to parents/grandparents who have their origins in one of the Pacific Islands.

Although PASS was not specifically offered to students who identified as Māori or Pasifika, anecdotally it seemed that both groups were participating in PASS sessions in a similar proportion to the numbers enrolled. In 2008, this New Zealand university conducted its first pilot into PASS in one course in one faculty. This has now expanded to eleven large first-year courses in a range of disciplines. In

common with other PASS programs, the aim of this peer learning program is to assist first-year students (especially in the first semester) to develop effective study skills directly related to the content of the particular courses in which PASS is offered. The weekly PASS sessions are facilitated by students who have demonstrated competence in the relevant courses in the previous year.

The objective of this paper is to establish whether Māori and Pasifika students who do attend PASS sessions do better than those who do not attend PASS. The second objective is to establish whether the number of sessions is reflected in higher final marks. We deliberately do not compare Māori and Pasifika academic results with students who do not identify with either of these groups. However, within-group effect sizes for students who attend and do not attend will be provided for the group of students who are neither Māori nor Pasifika. Research comparing “absolute” academic achievement (e.g. final scores) between different ethnic groups, would not do justice to the complexities related to the cultural and social-historical context of minority groups within an institution like a university.

## Method

Student records were kept for all courses that offered PASS in the first semesters of 2009 till 2011. Because of the relatively small numbers, the three years were considered as one dataset. Students who attended PASS were marked present in these data files.

At the end of the semester, students' identification numbers were matched with student administration data, which includes ethnicity information. When

students enrol in the university, they can identify with up to three ethnic groups. Students for whom one of the ethnicity fields indicated Māori or Pacific identification were selected for analysis. This dataset was then further matched with achievement data (final result only) for the relevant courses. Student records for which a zero result was returned (meaning they did not complete any assessment but remained fully enrolled) or absent result (meaning that they had withdrawn from the course) were de-selected.

The course results for students who did attend PASS at least one time were compared with student who did not attend at all. The course results were then calculated according to the number of sessions attended, banded into four groups of attendance frequency.

Finally, effect sizes were calculated, using the mean and standard deviations of the two groups, those who did attend and did not attend. Effect sizes can be considered as one measure that expresses a level of significance for the behavioural sciences (Cohen, 1988). Hattie (2009) argues that educational interventions with an effect size of less than 0.4 could be considered as resulting from other factors rather than the intervention. Also, effect sizes are more meaningful than significance values ( $p$  values) as they are less sensitive to sample sizes.

## Results

The ethnicity-matched data for which results were available, yielded a dataset of 1,017 students who identified as Māori and 354 as Pasifika. It is difficult to relate this exactly to their proportionality with the university. After all, students in the dataset

could have attended PASS sessions in more than one course. The university-wide proportions for Māori and Pasifika students at this university during the 2009-2011 period were around 7.5% and 3% respectively. For the three years of the data, first-year students numbered on average 4,150 students per year. If we were to assume that the students who attended PASS represented unique

over the 2009-2011 period shows that Māori and Pasifika students at this university who attended PASS gained higher final course marks than students who did not attend.

With regards to effect sizes, these reached 0.4 or higher as suggested by Hattie to provide a significance level that is of useful value. For Maori students this was  $d=.40$

**Table 1: PASS attendance Māori students 2009-2011**

	Mean	N	Std. Dev.
Did not attend PASS	58.09	772	18.82
Did attend PASS	65.10	245	16

students (rather than attending PASS for more than one course) in their first year, 1,017 Māori students over three years represent approximately 8%, and 354 Pasifika students 2.8%. In other words, with the two provisos in mind, the dataset seemed to have a representative proportion of Māori and Pasifika students.

and Pasifika students  $d=.64$ . As a comparison, the effect size for students who identified as neither Māori nor Pasifika (non-attending PASS  $n=8488$ ; attending PASS  $n=2240$ ) this was  $d=.26$ .

It could be argued that a focus on just attendance/attendance could be considered a very crude measure to establish effectiveness. After all, it could be

**Table 1: PASS attendance Pasifika students 2009-2011**

	Mean	N	Std. Dev.
Did not attend PASS	50.95	284	19.51
Did attend PASS	62.89	70	18.01

Of the total number of students enrolled in the courses that offered PASS, 23% of Māori students attended PASS sessions, and 19% of Pasifika students. For students who identified as neither Māori nor Pasifika, this was 21%. As can be seen in Table 1 and Table 2, statistical analysis

argued that the effect of an academic intervention such as PASS might not be fully realised unless students attend regularly. Following are the course results by number of sessions attended.

**Table 3: PASS by number of sessions attended 2009-2011**

	Māori students			Pasifika students		
	Mean	N	Std. Dev.	Mean	N	Std. Dev.
Did not attend PASS	58.09	784	18.82	52.20	284	20.87
Attended 1-3 sessions	58.89	98	17.26	57.05	32	17.64
Attended 4-7 sessions	64.08	63	13.49	63.99	19	17.50
Attended > 7 sessions	73.10	84	12.54	71.63	19	16.09

The effect sizes of the difference between students who attended no sessions with those who attended more than seven sessions were  $d=.94$  for Māori students and  $d=1.04$  for Pasifika students. This compares to  $d=.48$  for students who identified as neither Māori nor Pasifika.

## Discussion

The aim of the study was to establish whether Māori and Pasifika students who attend PASS benefit from their attendance relative to those who do not attend PASS, and whether there was an effect for the number of sessions attended. For both groups of students, a positive relationship was established between their attendance at PASS and their improved final course results. The effectiveness of PASS, as expressed in course results and effect size, was stronger as students attended more sessions. These effect sizes were stronger—“large” in Cohen’s (1988) ranking—than those who identified as neither Māori nor Pasifika. This then could suggest that Māori and Pasifika students may have benefited more from attending PASS than the other student groups.

However, no simplistic conclusions can be drawn from these results. Where comparisons such as these are made, questions can be asked about self-selection and prior academic performance of students choosing to enrol in this voluntary program. For example, it could be suggested that more able (“good”) students are more likely to enrol for PASS. In the extant literature, it is clear that this assumption is taken seriously, and researchers have attempted to control for a number of variables, including various measure of prior academic performance and motivation. Where this has been done, the evidence suggests that more academically able students do not necessarily enrol in higher numbers for extra support than less academically able students (e.g., Bowles & Jones, 2003; Fayowski & MacMillan, 2008; Hensen & Shelley, 2003; Ning & Downing, 2010). In the research we reported, we did not take into account the many possible confounding factors. This is a limitation of the present study. As more data becomes available, we may want to include a large range of variables in a multiple regression analysis.

The obvious questions that can be asked are: Why does PASS work, and why does a peer-learning program such as PASS seem to work better for Māori and Pasifika students than other students?

As to why PASS works in general, according to much of the research, this is because of the particular design features of the program: the nearness in age and experience of the facilitators, the constructivist and active learning orientation and because the program is not perceived to be remedial but “main stream.” However, one of the shortcomings of the extant research literature is that the “why” question is seldom addressed. The main focus is on whether it works or not, and controlling for factors such as prior academic achievement, and self-selection factors such as motivation (e.g., Bowles & Jones, 2003; Fayowski & MacMillan, 2008; Hensen & Shelley, 2003; Ning & Downing, 2010).

However, in one research project (van der Meer & Scott, 2009), there were some indications of why PASS was considered successful and effective according to students who attended PASS. Students in this research were asked about their perceptions of PASS. In one question they were asked to describe PASS to future students and PASS candidates. The authors identified a number of categories in the responses to this question. One of the categories related to the helpfulness of the sessions. What can be inferred from the responses in this category was that they attended this voluntary program because it gave them something they perceived as helpful. For example: *Helps you understand course material in a less full-on environment. Because 2nd years are teaching you it's easier to ask questions* (p. 13). From the responses related to the

category “approaches to the session,” we could infer what they perceived to be of value in *how* the sessions were conducted—the collaborative active learning environment. Two respondents, for example, described PASS as follows: *A smaller more focused learning environment, which is more interactive and generally a better experience. And: As a great help towards success in that paper.*<sup>1</sup> *It is collaborative, supportive and helps towards confidence-building* (p. 14). Another category related to the social interaction benefits of PASS as perceived by students. The following quotes provide some good illustrations of this: *Excellent way of learning with like-minded. Easy to get along with mentors and students; It is a good way to connect with other students enrolled in the same paper. This helps as you can compare how others are finding the course; and It's really helpful. U make friends and can discuss anytime* (p. 16). Although we cannot make the leap from students' perceptions to “why” PASS was effective, this data does suggest that they attended because it worked for them, and that the “why” had to do something with the relaxed environment, the relationship to the peer leaders, the interactive nature and the connectedness to other students. Unfortunately, the data collected in this research did not include ethnicity information, so no conclusions can be drawn about the prevalence of certain answer categories for different ethnic groupings.

Little research has been done as to the reasons why it works for “under-represented minorities” (the term used in the US where most of the research literature related to PASS/SI comes from)

---

<sup>1</sup> “Paper” is used in New Zealand to describe a semester-long teaching unit i.e. “subject”, “unit” or “course” in other jurisdictions.

in general, and no research that we have been able to locate explicitly asked why PASS seemed to work particularly well for Māori and Pasifika students. However, we are able to make some tentative inferences from other research as to some possible reasons why PASS may be particularly beneficial.

The results from the *Te Kotahitanga* project, suggest that Māori students respond better to learning environments that are more relational and dialogical rather than more distant and transmission-focussed. Results from the AUSSE for New Zealand universities (van der Meer, 2011) shed some light on the prevalence of academic activities of an interactive nature for different ethnic groups. However there were few differences amongst ethnic groups. Interestingly, there were considerable differences between universities as to the level of reported interactive engagement of Māori and Pasifika students. The AUSSE survey also included opportunities for free text comments. Some of the free text comments to the question *What are the best aspects of how your university engages student in learning?* yielded some interesting insights, for example: *Allowing Māori students a place of their own where they mix their ideas and share their learning with each other and others.* Similar sentiments can be read in the recommendations from the *Hei Tauira: Teaching and Learning for Success for Māori in Tertiary Settings* report (Greenwood & Te Aika, 2009). In this report, the authors identified as factors for Māori students' success in tertiary education

a *tuakana-teina* [peer mentoring relationship] approach to their learning, of being willing to pool and share expertise, and to actively support one another. ... The students said they

enjoyed working in a *whānau* [family-like, extended family] environment that allowed them to learn from one another and to find their own level at their own pace. (p. 92)

In a small-scale project related to Pasifika students (Mara & Marsters, 2009), it was also suggested that a more relational mentoring-like approach benefits Pasifika students. The authors too point out that culturally appropriate resources are important. In sum, it may be that learning environments that reflect particular cultural values and customs may be part of the answer to the puzzle as to why PASS works.

In concluding, the research presented in this paper suggests that a peer-learning program such as PASS works for Māori and Pasifika. What we do not know, although we have some possible ideas, is why it seems to work particularly well for these student groups. As the achievement of these groups has been identified as of particular importance, the tertiary sector would benefit from more research into the characteristics and dynamics of PASS that seem to work for these two groups. Not only could this provide valuable insights for the PASS program itself, it could also inform other initiatives and interventions that could make a difference to the academic success of Māori and Pasifika students. One possible research approach could be to repeat the research into students' perceptions as mentioned above (van der Meer & Scott, 2009) with inclusion of ethnicity data. Furthermore, specific questions reflecting teaching/learning elements that may be considered more culturally appropriate than more "traditional" approaches, could be included. Analysing the results for the different ethnic groups could reveal particular preferences that happen to be

part of the typical PASS approach. Lastly, focus groups that follow on from the surveys could further deepen our understanding of the particular dynamics and characteristics that make PASS successful for Māori and Pasifika students.

## References

- Bishop, R., Berryman, M., Cavanagh, T., Teddy, L., & Clapham, S. (2007). *Te Kotahitanga Phase 3: Establishing a culturally responsive pedagogy of relations in Mainstream Secondary School Classrooms*. Wellington, New Zealand: Ministry of Education.
- Blanc, R., DeBuhr, L., & Martin, D. (1983). Breaking the attrition cycle: The effects of Supplemental Instruction on undergraduate performance and attrition. *The Journal of Higher Education*, 54,(1), 80-90.
- Bowles, T., & Jones, J. (2003). An analysis of the effectiveness of Supplemental Instruction: The problem of selection bias and limited dependent variables. *Journal of College Student Retention: Research, Theory & Practice*, 5(2), 235-243. doi: 10.2190/486T-MHVC-CG0C-RM3B
- Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Hillsdale, NJ: Lawrence Earlbaum Associates.
- Couchman, J. (2008). Who am I now? Accommodating new higher education diversity in Supplemental Instruction. *Australasian Journal of Peer Learning*, 1(1), 80-89.
- Fayowski, V., & MacMillan, P. (2008). An evaluation of the Supplemental Instruction Program in a first year calculus course. *International Journal of Mathematical Education in Science and Technology*, 39(7), 12. doi: 10.1080/00207390802054433
- Greenwood, J., & Te Aika, L-H. (2009). *Hei Taurira: Teaching and learning for success for Maori in tertiary settings*. Retrieved from <http://akoaootearoa.ac.nz/download/ng/file/group-3846/n3866-hei-taurira---full-report.pdf>
- Hattie, J. (2009). *Visible learning: A synthesis of 800+ meta-analyses on achievement*. Oxford, UK: Routledge.
- Hensen, K., & Shelley, M. (2003). The impact of Supplemental Instruction: Results from a large, public, midwestern university. *Journal of College Student Development*, 44(2), 250-259. doi: 10.1353/csd.2003.0015
- Hurley, M., Jacobs, G., & Gilbert, M. (2006). The basic SI model. *New Directions for Teaching and Learning*, 106, 11. doi: 10.1002/tl.229
- Jacobs, G., Hurley, M., & Unite, C. (2008). How learning theory creates a foundation for SI leader training. *Journal of Peer Learning*, 1(1), 6-12.
- Ladyshevsky, R. (2001). *Reciprocal peer coaching: A strategy for training and development in professional disciplines*. Jamison, Australia: Higher Education Research and Development Society of Australasia.
- Mara, D., & Marsters, M. (2009). *Pasifika students: Supporting academic success through the provision of mentoring*. A report produced for the Eastern Institute of Technology, Hawke's Bay, New Zealand. Retrieved from <https://akoaootearoa.ac.nz/download/ng/file/group-4/n3954-pasifika-students-supporting-academic-success-through-the-provision-of-mentoring.pdf>
- Martin, D., & Arendale, D. (1993). Foundation and theoretical framework for Supplemental Instruction. In D. Martin, & D. Arendale (Eds.), *Supplemental Instruction: Improving first-year student success in high risk courses* (2<sup>nd</sup> edn., pp. 41-50). Monograph Series No. 7. Columbia, SC: National Resource Center for The First Year Experience. (ERIC Document Reproduction Service No. ED354839). Retrieved from [http://www.eric.ed.gov/ERICDocs/data/ericdocs2sql/content\\_storage\\_01/0000019b/80/13/87/b7.pdf](http://www.eric.ed.gov/ERICDocs/data/ericdocs2sql/content_storage_01/0000019b/80/13/87/b7.pdf)
- Martin, D., & Arendale, D. (1994). *Review of research concerning the effectiveness of SI from the University of Missouri-Kansas City and other institutions from across the United States*. Retrieved from <http://www.eric.ed.gov/ERICWebPortal/detail?accno=ED457797>
- Ning, H., & Downing, K. (2010). The impact of Supplemental Instruction on learning competence and academic performance. *Studies in Higher Education*, 35(8), 921-939. doi: 10.1080/03075070903390786
- Pascarella, E., & Terenzini, P. (2005). *How college affects students: A third decade of research* (Vol. 2). San Francisco, CA: Jossey-Bass
- Peterfreund, A., Rath, K., Xenos, S., & Bayliss, F. (2007-2008). The impact of supplemental

Including everyone: A peer learning program that works for under-represented minorities?

instruction on students in STEM courses: Results from San Francisco State University. *Journal of College Student Retention: Research, Theory & Practice*, 9(4), 487-503.

Rath, K., Peterfreund, A., Xenos, S., Bayliss, F., & Carnal, N. (2007). Supplemental Instruction in Introductory Biology I: Enhancing the performance and retention of underrepresented minority students. *CBE - Life Sciences Education*, 6(3), 203-216. doi: 10.1187/cbe.06-10-0198

Scott, D. (2004). *Retention, completion and progression in tertiary education 2003*. Wellington, New Zealand: Ministry of Education.

Topping, K. (1996). The effectiveness of peer tutoring in further and higher education: A typology and review of the literature. *Higher Education*, 32(3), 321-345. doi: 10.1007/BF00138870

Topping, K. (2005). Trends in peer learning. *Educational Psychology*, 25(6), 631-645. doi: 10.1080/13600800500045687

Topping, K., & Ehly, S. (2001). Peer Assisted Learning: A framework for consultation. *Journal of Educational and Psychological Consultation*, 12(2), 113-132. doi: 10.1207/S1532768XJEP1202\_03.

van der Meer, J., & Scott, C. (2009). Students' experiences and perceptions of peer assisted study sessions: towards ongoing improvement. *Australasian Journal of Peer Learning*, 2(1), 3-22.

van der Meer, J. (2011). Māori and Pasifika students' academic engagement: What can institutions learn from the AUSSE data. In A. Radloff (Ed.), *Student engagement in New Zealand Universities* (pp. 1-10). Melbourne, Australia: Australian Council of Educational Research.