

7. STUDENT LEARNING OPPORTUNITIES AND EXPERIENCES

The surveys presented teachers with a set of items relating to educational experiences and opportunities such as extension activities, excursions, alternate activities for targeted groups, and a broad range of academic courses. Teachers were asked to rate each item on two scales: the importance of this experience/opportunity for their students' learning, and the availability of this experience/opportunity at their school. The two ratings for each item were combined to produce a single 'need' rating.

7.1 PRIMARY TEACHERS' VIEWS ON STUDENT LEARNING NEEDS

1. The mean ratings in Table 7.1 indicate that primary respondents overall saw a significant need for their students to have more opportunities to visit science or mathematics-related educational sites. The teachers felt they needed more time to fulfil mathematics and science syllabus requirements, and required a wider range of activities to better cater for the diversity of students in their classes.
2. Figure 7.1 shows that Primary respondents in non-metropolitan schools, and Remote schools in particular, saw a substantially greater unmet need for their students to have access to such learning opportunities than did those in Metropolitan schools.
3. The findings suggest that primary teachers generally consider students to have sufficient opportunities to participate in externally organised competitions and activities. However, it seems that primary teachers in Remote Areas see a greater need for more such opportunities than do those in other locations.
4. The results shown in Figure 7.2 suggest that teachers in schools with relatively high proportions of Indigenous students saw a substantially greater need for a range of learning experiences for their students than did those in schools with fewer Indigenous students. These experiences include alternative and extension activities to cater for the diversity of students and ability levels in their classes, and for opportunities to visit science and mathematics-related educational sites.

Table 7.1. Overall average 'need' scores, standard deviations and valid N for primary respondents' ratings of the Student Learning Experience items (items are listed in descending order of mean 'need' score) [Scores can range from 1 to 20]

PRIMARY STUDENT LEARNING NEEDS ITEMS	Mean	s.d.	Valid N
Opportunities for students to visit science or mathematics related educational sites	9.84	3.62	1485
Adequate time allocation for teaching to fulfil the syllabus requirements for science	9.28	3.89	1475
Alternative or extension activities in science or mathematics teaching programs for gifted & talented students	8.93	3.43	1425
Alternative or extension activities in science or mathematics teaching programs for special needs students	8.89	3.53	1413
Adequate time allocation for teaching to fulfil the syllabus requirements for mathematics	8.76	3.88	1470
Alternative or extension activities in science or mathematics teaching programs for Indigenous students	8.48	3.83	1351
Alternative or extension activities in science or mathematics teaching programs for NESB students	8.39	3.87	1316
Student participation in external ICT competitions and activities	7.07	3.16	1439
Student participation in external science competitions and activities	6.67	2.89	1467
Student participation in external mathematics competitions and activities	6.60	2.86	1454

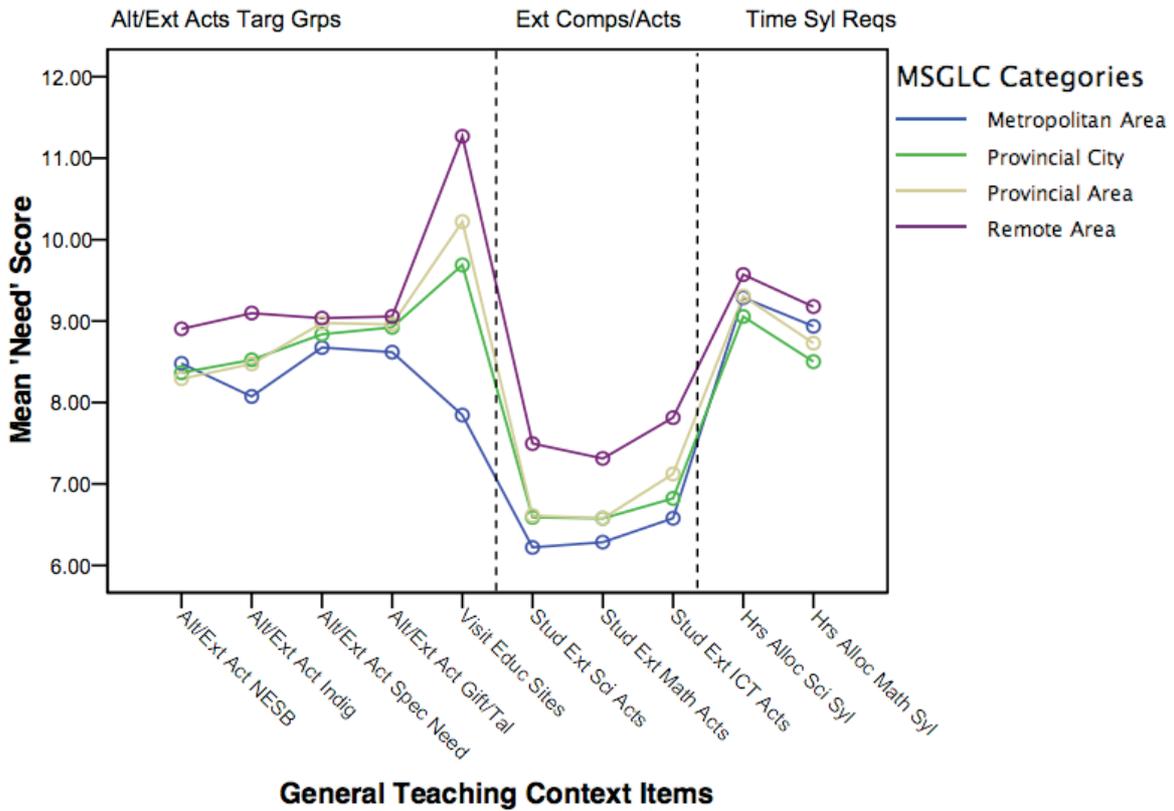


Figure 7.1. Profile plot of mean 'need' scores of primary respondents for the Student Learning Experience components, compared by MSGLC categories (Table 7.1 for item names in full)

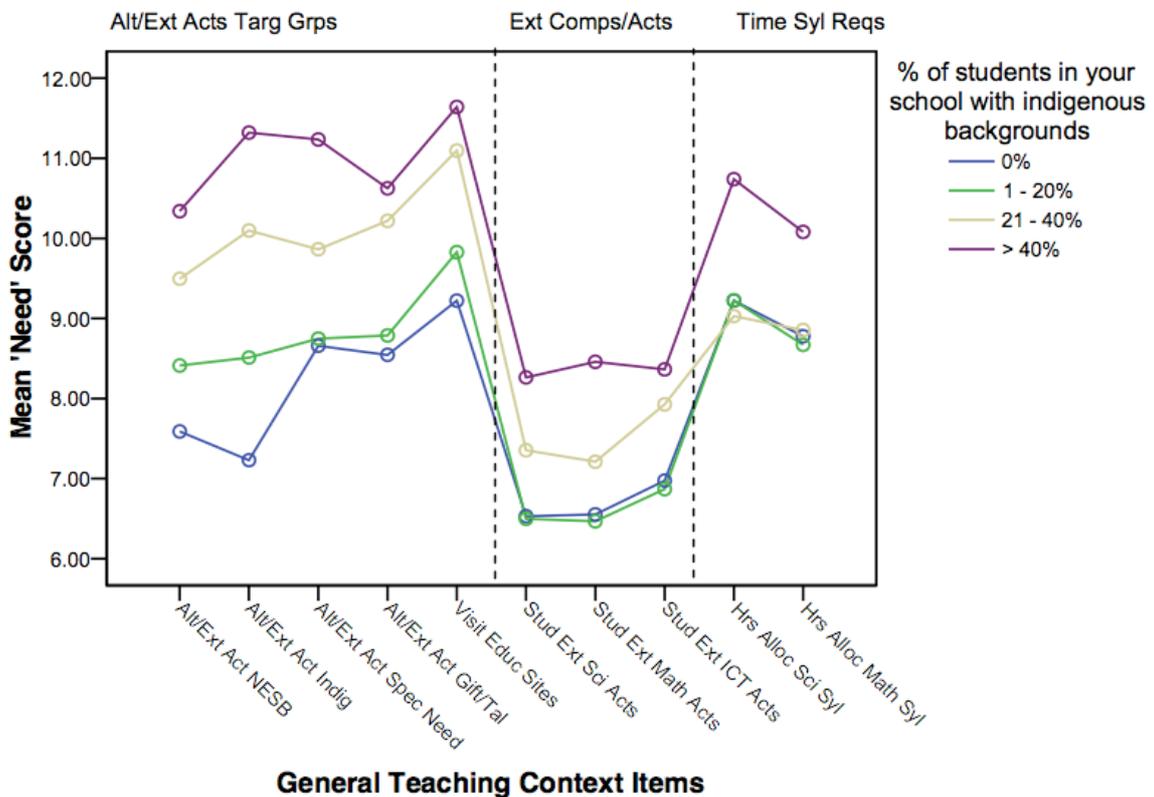


Figure 7.2. Profile plot of mean 'need' scores of primary respondents for the Student Learning Experience components, compared by percentage of students from Indigenous backgrounds (Table 7.1 for item names in full)

7.2 SECONDARY SCIENCE TEACHERS' VIEWS ON STUDENT LEARNING NEEDS

1. The mean ratings in Table 7.2 indicate that science respondents saw visits by their students to science related sites as the highest priority in this area, followed by a greater range of activities catering for individual differences.
2. Figure 7.3 suggests that science teachers in non-metropolitan schools saw a significantly greater need than did Metropolitan teachers for their students to visit science-related educational sites. The level of unmet need increased with degree of isolation.
3. The findings suggest that science teachers in general, and those in Metropolitan Areas in particular, consider students to have sufficient opportunities to participate in externally organised competitions and activities.

Table 7.2. Overall average 'need' scores, standard deviations and valid N for science respondents' ratings of the Student Learning Experience items (items are listed in descending order of mean 'need' score) [Scores can range from 1 to 20]

STUDENT LEARNING NEEDS ITEMS - SCIENCE	Mean	s.d.	Valid N
Opportunities for students to visit science related educational sites	10.14	3.62	545
Alternative or extension activities in science teaching programs for gifted & talented students	9.69	3.88	523
Alternative or extension activities in science teaching programs for special needs students	9.38	3.98	511
Alternative or extension activities in science teaching programs for NESB students	8.79	4.30	496
Alternative or extension activities in science teaching programs for Indigenous students	8.78	4.32	513
Having the total indicative hours allocated to face-to-face teaching	8.48	3.65	513
Having the full range of senior science courses available in your school	8.08	3.53	535
Teachers qualified to teach the science courses offered in your school	8.03	2.78	544
Student participation in external science competitions and activities	6.77	2.73	543

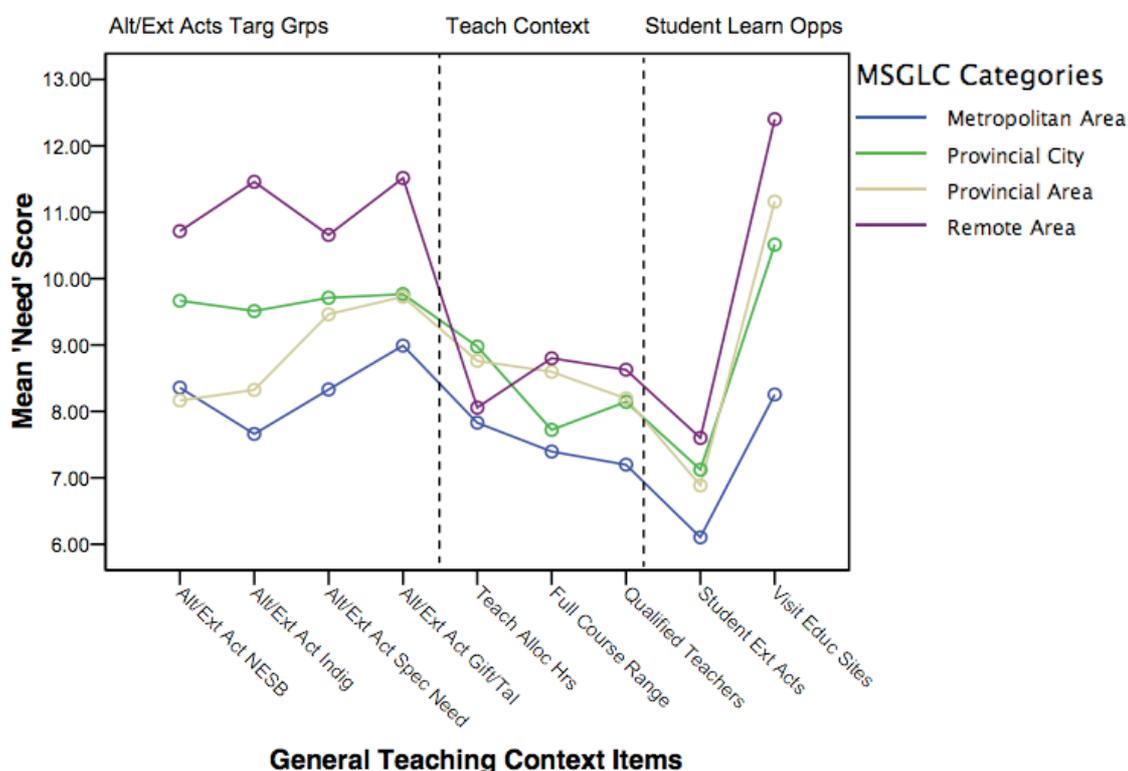


Figure 7.3. Profile plot of mean 'need' scores of science respondents for the Student Learning Experiences components, compared by MSGLC categories (Table 7.2 for item names in full)

4. There appears to be a considerable disparity across locations in teachers' perceptions of the need for alternative or extension science activities to cater for student diversity. The evidence indicates that teachers in remote areas see a greater need for such activities than do teachers elsewhere, though in terms of experiences of benefit to NESB and Indigenous students, science teachers in Provincial Cities also see a greater need than do those in Provincial or Metropolitan Areas.
5. Figure 7.4 shows that science respondents in schools with relatively high proportions of Indigenous students saw a substantially greater need for a range of learning experiences for their students than did those in schools with fewer Indigenous students. These experiences include alternative and extension activities to cater for the diversity of students and ability levels in their classes and for opportunities to visit science and mathematics-related educational sites.
6. Figure 7.4 also suggests that the greatest need for these experiences is found in schools where Indigenous students make up between 21 and 40% of the student population. Science teachers at these schools seem to feel there is a greater need for qualified teachers, a broader range of science courses, and learning experiences for gifted and talented and special needs students, than do those in schools with higher or lower proportions of Indigenous students.

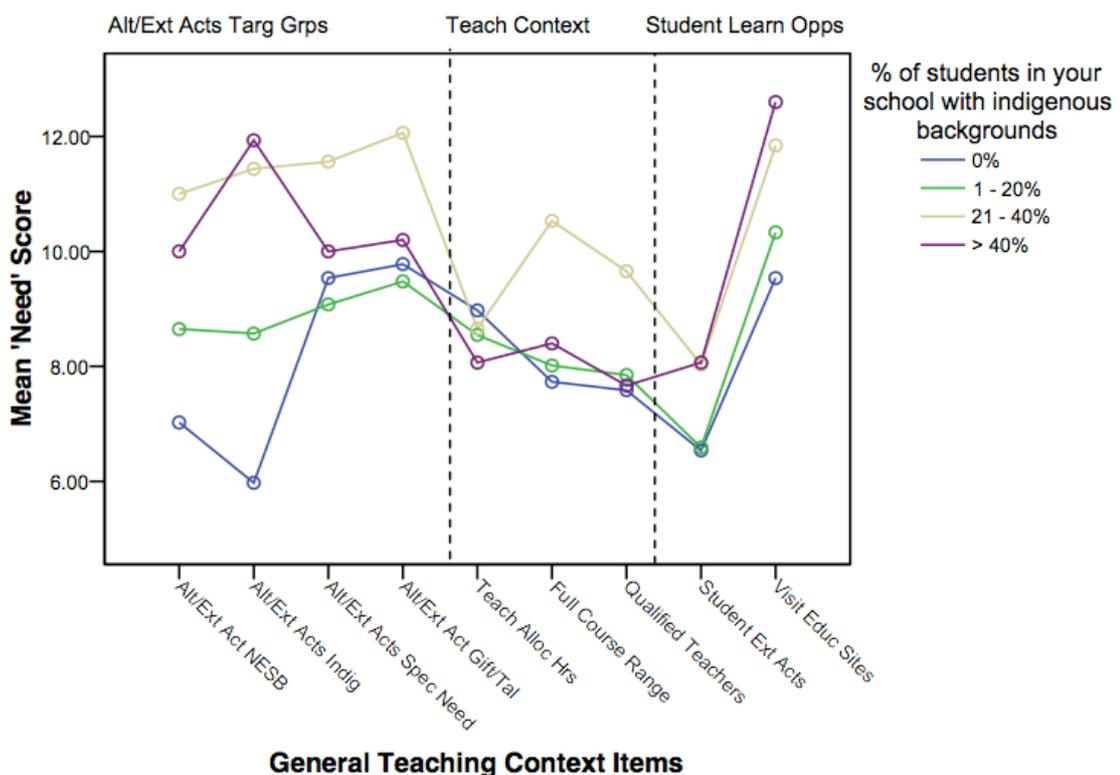


Figure 7.4. Profile plot of mean 'need' scores of science respondents for the Student Learning Experiences components, compared by percentage of students from Indigenous backgrounds (Table 7.2 for item names in full)

7.3 SECONDARY ICT TEACHERS' VIEWS ON STUDENT LEARNING NEEDS

1. The mean ratings in Table 7.3 indicate that ICT respondents saw a substantial need for their students to have the more opportunities to visit ICT-related sites. This need was very high in Remote schools, though ICT teachers in Provincial schools also perceived a relatively high need for these experiences compared to those in Metropolitan schools.

Table 7.3. Overall average ‘need’ scores, standard deviations and valid N for ICT respondents’ ratings of the Student Learning Experience items (items are listed in descending order of mean ‘need’ score) [Scores can range from 1 to 20]

STUDENT LEARNING NEEDS ITEMS - ICT	Mean	s.d.	Valid N
Opportunities for students to visit ICT related educational sites	9.81	3.53	219
Teachers qualified to teach the ICT courses offered in your school	9.47	3.52	223
Alternative/extension activities in ICT teaching programs for gifted & talented students	9.21	3.91	213
Having the full range of senior ICT courses available in your school	9.04	3.58	218
Alternative/extension activities in ICT teaching programs for special needs students	8.99	3.72	209
Alternative/extension activities in ICT teaching programs for NESB students	8.92	3.85	206
Alternative/extension activities in ICT teaching programs for Indigenous students	8.67	4.07	206
Having the total indicative hours allocated to face-to-face teaching	8.19	3.24	203
Student participation in external ICT competitions and activities	7.29	2.72	222

- Table 7.3 also indicates that ICT teachers saw a substantially higher need than science and mathematics teachers for qualified teachers in their subject area. The level of this need varied little with MSGLC category of school, as shown in Figure 7.5. This is consistent with the earlier findings that ICT teachers are less formally qualified in their areas than are other subject teachers, and feel a greater need for ongoing professional development and collaboration.
- ICT teachers also appear to require more alternative or extension activities for gifted and talented students. Respondents felt there was a moderate to low need for their students to participate in more external competitions and activities.
- While the geographic differences in general were suggestive rather than significant, the findings clearly show that Metropolitan ICT respondents perceived a markedly lower need for a range of student experiences than did teachers in other locations.

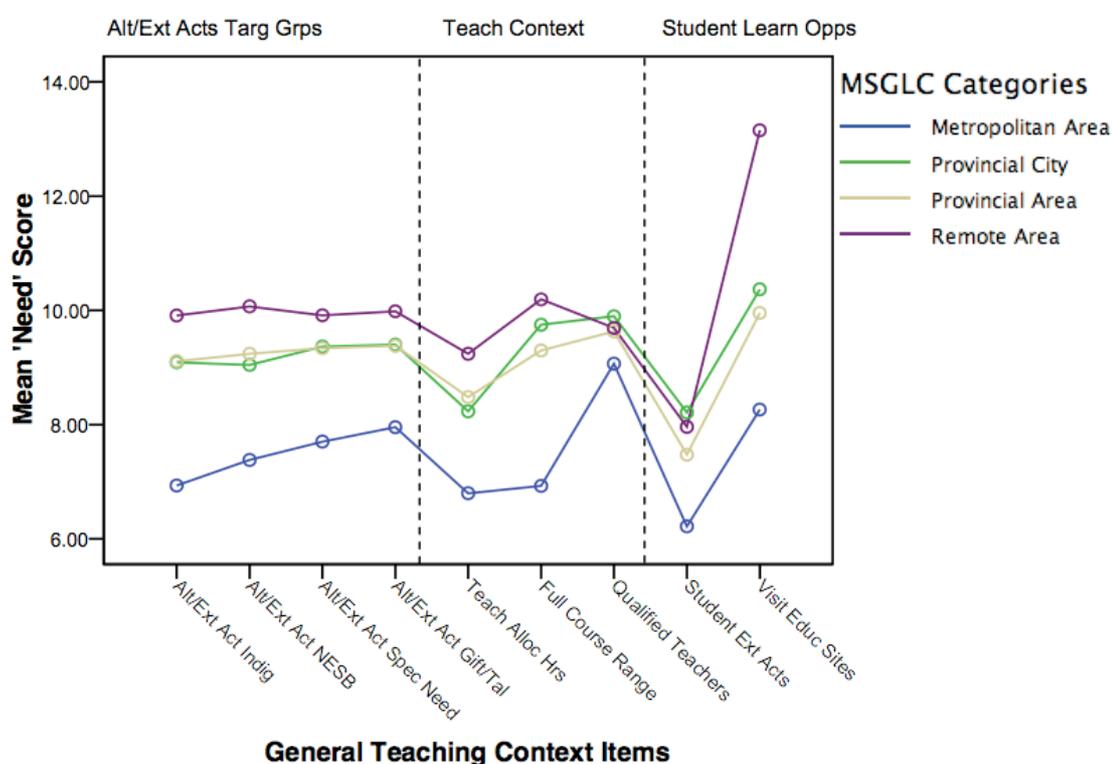


Figure 7.5. Profile plot of mean ‘need’ scores of ICT respondents for the Student Learning Experience components, compared by MSGLC categories (Table 7.3 for item names in full)

7.4 SECONDARY MATHEMATICS TEACHERS' VIEWS ON LEARNING NEEDS

1. The mean ratings in Table 7.4 indicate that mathematics teachers saw a need for their students to have more opportunities to visit mathematics-related educational sites, though the overall need rating was not as high as for science respondents. Respondents also saw a need for alternative/extension activities for gifted and talented and special needs students. They felt there was a moderate-to-low need for their students to participate in more external mathematics competitions and activities
2. Figure 7.6 shows that the greatest level of 'need' in the Teaching Context component was expressed by respondents from schools having a percentage of Indigenous students between 21% and 40% and the lowest level of 'need' in each case was expressed by respondents from schools with no Indigenous students.

Table 7.4. Overall average 'need' scores, standard deviations and valid N for mathematics respondents' ratings of the Student Learning Experience items (items are listed in descending order of mean 'need' score) [Scores can range from 1 to 20]

STUDENT LEARNING NEED ITEMS	Mean	s.d.	Valid N
Opportunities for students to visit mathematics related educational sites	9.36	3.70	505
Alternative/extension activities in mathematics teaching programs for gifted & talented students	9.22	3.58	500
Alternative/extension activities in mathematics teaching programs for special needs students	8.86	3.64	496
Alternative/extension activities in mathematics teaching programs for Indigenous students	8.47	4.16	474
Alternative/extension activities in mathematics teaching programs for NESB students	8.43	4.05	455
Teachers qualified to teach the mathematics courses offered in your school	8.15	3.06	505
Having the total indicative hours allocated to face-to-face teaching	8.12	3.48	492
Having the full range of senior mathematics courses available in your school	7.14	3.24	506
Student participation in external mathematics competitions and activities	5.92	2.49	510

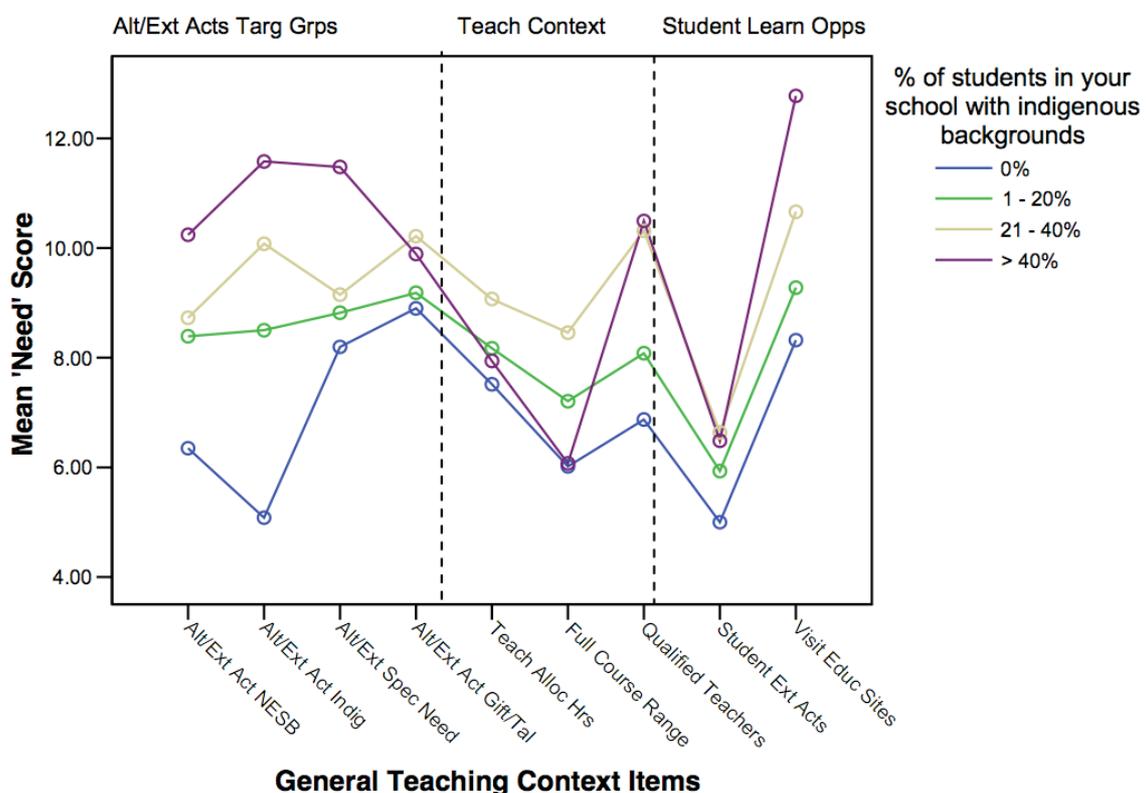


Figure 7.6. Profile plot of mean 'need' scores of mathematics respondents for the Student Learning Experience components, compared by percentage of students from Indigenous backgrounds (Table 7.7 for item names in full)

3. Figure 7.6 also indicates that mathematics teachers in schools with high proportions of Indigenous students perceived a higher need for activities catering for students with special needs, and for opportunities to visit educational sites. Mathematics teachers in schools where more than 20% of students are Indigenous tended to feel there was a need for more qualified teachers.

7.5 STUDENT LEARNING IN COMPOSITE CLASSES

1. Overall, more than 27% of secondary respondents indicated that at least some senior science, ICT or mathematics courses were taught in composite classes in their schools. Figure 7.7 shows that 40% of ICT respondents were required to combine their senior classes, compared with 23% of science respondents and 25% of mathematics respondents.
2. The practice of combining classes was significantly more common in rural schools. Figure 7.8 indicates that only 11% of Metropolitan Area respondents and 17% of Provincial City respondents reported composite senior science, ICT or mathematics classes in their schools. By contrast, 36% of those in Provincial Areas and 58% of those in Remote Areas reported this arrangement.

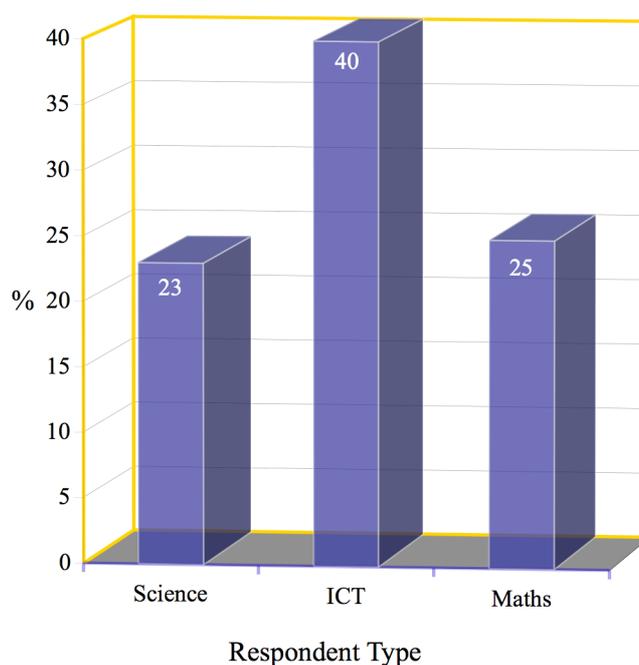


Figure 7.7. Percentages of secondary respondents in different subject areas indicating that composite senior courses in these subjects were taught in their schools

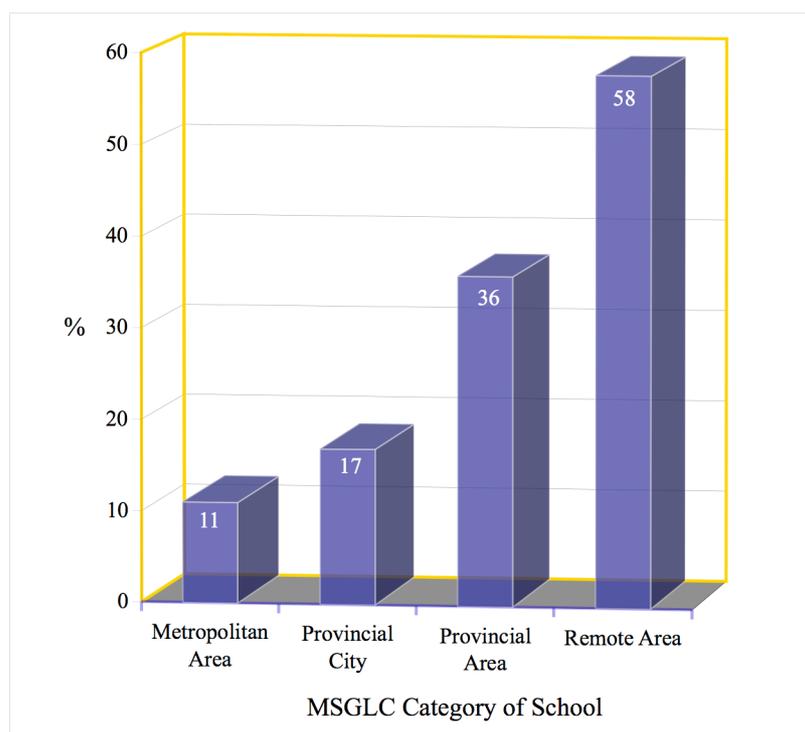


Figure 7.8. Percentages of secondary teachers in different MSGLC categories indicating that science, ICT or mathematics courses were taught in composite classes

7.6 DISCUSSION

Overall, the findings clearly indicate that primary and secondary teachers see a substantial need for their students to visit educational sites related to science, ICT and mathematics. Nevertheless, there appears to be considerable geographical variation in the level of need, with primary, science and mathematics teachers in Metropolitan Areas feeling that their students' needs for such excursions are reasonably well served. The level of need increases with distance from a metropolitan centre, with teachers in Remote Areas expressing the highest level of need. It is reasonable to expect that the range of educational experiences available to students in different areas would differ. For example, while students in Metropolitan Areas might have more access to museums, businesses and factories, those in Provincial or Remote Areas may have easier access to agricultural and mining sites or national parks. However, the trend in the findings suggests that students in Metropolitan Areas have access to richer educational experience in science, ICT and mathematics than do those in less populated areas. Distance to sites, cost, and the lack of public transport are factors that inhibit student access to a variety of relevant sites, and sites outside their normal experience.

The finding that primary teachers across Australia appear to have insufficient time to complete the requirements of science syllabuses is concerning, but consistent with literature showing that science often has a lower priority in primary schools than assumed by syllabuses. Goodrum et al. (2001) suggested that this was partly due to some teachers' reluctance to teach science, due to their lack of confidence in the subject. Another possibility is that the focus on numeracy and literacy as priority areas leaves less time for other subjects. Either way, the finding implies that many classes are not completing the science syllabus requirements for one stage/grade before progressing to the next.

Teachers' responses provide convincing evidence that primary and secondary schools with relatively high proportions of Indigenous students are in need of a greater variety of learning

opportunities to cater for the diversity of students. While this obviously includes suitable learning opportunities for Indigenous students, teachers indicated that learning experiences suitable for special needs and gifted and talented students are also a priority. However, it does not appear to be a matter of simply distributing extra resources in proportion to the numbers of Indigenous students, as the findings showed that in many cases it was schools with between 21 and 40% Indigenous populations that have the greatest need. One explanation could be that such schools have a greater diversity than those in which Indigenous students make up the majority. Another might be that schools with relatively fewer Indigenous students attract less targeted funding, and therefore have fewer resources. Further investigation is warranted.

Results from the ICT teachers survey indicated that there is a substantial need for qualified teachers in this subject area. The level of this need varied little with MSGLC category of school. This finding is consistent with findings that ICT teachers are less formally qualified in their areas than are other subject teachers, and feel a greater need for ongoing professional development and collaboration.

Finally, the study shows that about 27% of science, ICT and mathematics teachers are required to teach courses in composite classes in order for those courses to run. Many composite classes are made up of Year 11 and 12 students, or of Year 12 students taking different courses. This appears to be a more common situation for ICT courses.

The findings clearly show that students in Provincial and Remote Areas, and senior students in particular, are required far more often to take science, ICT and mathematics courses in composite classes than their peers in Metropolitan and Provincial Cities. This finding highlights another educational inequity detrimental to students in rural schools.