Overview: Although national monitoring has been designed primarily to present an overall national picture of student achievement, the data collected allow for some reporting on differences among subgroups. Using an overall total score for each task, results broken down by eight demographic variables (detailed in Chapter 1) can be examined.

At the school level, socio-economic status (SES), as measured by a grouping of the decile levels of schools, was the most important factor in relationship to performance on tasks. Students in high decile schools tended to score higher than students in low decile schools; students in middle decile schools tend to look somewhat more like high decile schools in terms of performance. School type, school size, community size and zone were less important in relationship to performance.

At the individual level, there were moderate to large differences in Pakeha/Pasifika comparisons, and moderate differences in Pakeha/Māori comparisons, with Pakeha students consistently receiving higher marks. It should be noted that the overall pattern of growth seen in year 4 to year 8 gains is mirrored in gains amongst Māori and Pasifika students. Home language had a small to moderate effect on performance, and gender effects were negligible.

Pasifika students, although not performing as well as Pakeha students, especially in art-responding tasks, had the highest levels of enthusiasm and self-image about the visual arts.

SCHOOL VARIABLES

Five of the demographic variables related to the schools the students attended. For these five variables, statistical significance testing was used to explore differences in task performance among the subgroups. One-way analysis of variance was used to test for statistical significance among groups.

Because the number of students included in each analysis was quite large (approximately 450), the statistical tests were quite sensitive to small differences. To reduce the likelihood of attention being drawn to unimportant differences, the critical level for statistical significance was set at \( p = .01 \) (so that differences this large or larger among the subgroups would not be expected by chance in more than 1% of cases).

School Type

Results were compared for year 8 students attending full primary, intermediate schools and year 7–13 high schools. There were no differences between these three subgroups on any of the 21 tasks. There were, however, differences on six of the questions on the Year 8 Art Survey (p53). These questions all had to do with how often children got to do certain types of art in school. Children in intermediate schools reported more work in carving, clay, weaving (working with fabrics) and computers (doing art with computers), than children in full primary or year 7-13 schools. Children in intermediate and full primary schools reported doing more photography work than children in year 7-13 schools. Finally, children in year 7-13 schools reported doing more painting than children in full primary or intermediate schools.

School Size

Results were compared from students in large, medium-sized and small schools (exact definitions were given in Chapter 1). For year 4 students, there were differences among the subgroups on five of the 21 tasks. Three of the tasks involved responding to art, and two involved making art. In each of these cases, students from large schools had the highest scores and students from small schools had the lowest scores. There were no differences on questions of the Year 4 Art Survey (p52).

For year 8 students, there were no differences on any of the 21 tasks. There were differences on three of the questions from the Year 8 Art Survey (p53). All three questions had to do with the opportunity to do art in school. Students from smaller schools reported less opportunity to do print making, carving, or work with clay than students in larger schools.
Community Size

Results were compared for students living in communities containing over 100,000 people (main centres), communities containing 10,000 to 100,000 people (provincial cities), and communities containing less than 10,000 people (rural areas).

For year 4 students, there were no differences on any of the 21 tasks. There was a difference on one question of the Year 4 Art Survey (p48), with students from rural areas reporting less opportunity to engage in printmaking.

For year 8 students, there were differences among the three subgroups on one of the 21 tasks, Eye Catcher (p48). Students from the main centres scored higher than students from the other two community groupings. There was one difference on the Year 8 Art Survey (p53), with students from provincial cities reporting less activity in printmaking at home than students in the other two community groupings.

Zone

Results achieved by students from Auckland, the rest of the North Island, and the South Island were compared.

For year 4 students, there were differences among the three subgroups on three of the 21 tasks. Students from Auckland scored highest, and students from the South Island lowest, on Kiwi Pencil Drawing (p16) and Link Tasks 5 and 8 (p50). Both link tasks involved responding to art.

For year 8 students, there were differences among the three subgroups on three of the 21 tasks. Students from Auckland and the South Island scored highest and students from the rest of the North Island scored lowest on Potter (p45). On the computer art task, Draw It (p34), students from the South Island scored highest, and students from the rest of the North Island (other than Auckland) scored lowest. On Link Task 3 (p40), which concerns a figure drawing, students from Auckland scored highest and students from the South Island scored lowest. There was also a difference on one question of the Year 8 Art Survey (p53). Consistent with the scores on Draw It (p34), students from the rest of the North Island reported the least opportunity to do computer art in school.

Socio-Economic Index (SES)

Schools are categorised by the Ministry of Education based on census data for the census mesh blocks where children attending the schools live. The SES index takes into account household income levels and categories of employment. The SES index uses 10 subdivisions, each containing 10% of schools (deciles 1 to 10). For our purposes, the bottom three deciles (1-3) formed the low SES group, the middle four deciles (4-7) formed the medium SES group, and the top three deciles (8-10) formed the high SES group. Results were compared for students attending schools in each of these three SES groups.

For year 4 students, there were differences among the three subgroups on 15 of the 21 tasks. There are too many differences to discuss them all here, but they cut across responding to art and making art. The basic pattern was the same in almost all instances: students in high decile schools scoring the highest and students in low decile schools scoring the lowest. Students in middle decile schools tended to be slightly closer to high decile schools than low decile schools in performance. There were also differences on five questions of the Year 4 Art Survey (p52). The pattern here is consistent with the performance levels, and somewhat disquieting. Students in low decile schools (as compared to middle and high decile schools) report that they like art in schools less, do less drawing and carving in school, are less likely to believe that their teacher thinks they are good at art, and are less likely to want to keep learning about art when they grow up.

For year 8 students, there were differences among the three subgroups on eight of the 21 tasks: Paul Dibble (p43), Potter (p45), Art You Know (p49), Pair Trees (p46) and Link Tasks 6, 7, 8 and 10 (p50). All these tasks involved responding to art. Students in high decile schools performed better than students in low decile schools on all eight tasks, with students in medium decile schools generally closer to the students in high decile schools. There were also differences on one question of the Year 8 Art Survey (p53), with students from low decile schools reporting less opportunity to do art with computers in school.

STUDENT VARIABLES

Three demographic variables related to the students themselves:

- **Gender**: boys and girls
- **Ethnicity**: Māori, Pasifika and Pakeha (this term was used for all other students)
- **Language used predominantly at home**: English and other.

The analyses reported here compare the performances of boys and girls, Pakeha and Māori students, Pakeha and Pasifika students, and students from predominantly English-speaking and non-English-speaking homes.

For each of these three comparisons, differences in the 20 individual-level (as opposed to team) task performances between the two subgroups are described using “effect sizes” and statistical significance. For each task and each year level, the analyses began with a t-test comparing the performance of the two selected subgroups and checking for statistical significance of the differences. Then the mean score obtained by students in one subgroup was subtracted from the mean score obtained by students in the other subgroup, and the difference in means was divided by the pooled standard deviation of the scores obtained by the two groups of students. This computed effect size describes the magnitude of the difference between the two subgroups in a way that indicates the strength of the difference and is not affected by the sample size. An effect size of 0.30, for instance, indicates that students in one subgroup scored, on average, three tenths of a standard deviation higher than students in the other subgroup.
For each pair of subgroups at each year level, the effect sizes of all available tasks were averaged to produce a mean effect size for the curriculum area and year level, giving an overall indication of the typical performance difference between the two subgroups. Because there was often a different pattern for the art-making and responding-to-art tasks, mean effect sizes were also computed and reported for these two types of task.

**Gender**

Results achieved by male and female students were compared using the effect-size procedures.

For year 4 students, the mean effect size across the 20 tasks was 0.06 (girls averaged 0.06 standard deviations higher than boys). This difference is negligible. The difference between boys and girls was stronger on making art (an effect size of 0.13) than to responding to art (an effect size of 0.02). The only statistically significant differences on nine questions of the Year 4 Art Survey (p52): Māori students reported more work with computer art and group art-making at school.

For year 8 students, the mean effect size across the 20 tasks was 0.06 (girls averaged 0.06 standard deviations higher than boys). For tasks involving making art, the effect size was 0.13 and for responding to art, 0.02 (both favouring girls). All of these effect sizes are quite small. There were statistically significant differences on two of the 20 tasks, with girls performing better on both Draw It (p34), and Link Task 7 (p50). There were also differences on five questions of the Year 8 Art Survey (p53): Girls were more positive about doing art at school, about doing art in their own time, and about wanting to learn more about art when they grow up. They also mentioned that they enjoy painting and making things in their own time.

**Ethnicity**

Results achieved by Māori, Pasifika and Pakeha (all other) students were compared using the effect size procedures. First, the results for Pakeha students were compared to those for Māori students. Second, the results for Pakeha students were compared to those for Pasifika students.

**Pakeha-Māori Comparisons**

For year 4 students, the mean effect size across the 20 tasks was 0.28 (Pakeha students averaged 0.28 standard deviations higher than Māori students). This is a moderate difference. The difference was larger for responding-to-art tasks (0.30) than for art-making tasks (0.24), both favouring Pakeha students. There were statistically significant differences on nine of the 20 tasks (six of which were responding-to-art tasks): Pakeha students performed better on all nine tasks. There were differences on seven questions of the Year 4 Art Survey (p52). Māori students responded that they liked doing art at school more, and had more opportunity at school to do carving, model making, photography or video, and group art-making. They were also more likely than Pakeha students to think that their teachers thought they were good at art, and that they enjoyed making things/models at home.

For year 8 students, the mean effect size across the 20 tasks was 0.17 (Pakeha students averaged 0.17 standard deviations higher than Māori students). This is a small difference. The difference was larger for responding-to-art tasks (0.21) than for art-making tasks (0.10), both favouring Pakeha students. There were statistically significant differences on four of the 20 tasks (Paul Dibble (p43) and three responding-to-art link tasks). Pakeha students performed better on all four tasks. There were also differences on two questions of the Year 8 Art Survey (p53): Māori students reported more work with computer art and group art-making at school.

**Pakeha-Pasifika Comparisons**

Readers should note that only 30 to 50 Pasifika students were included in the analysis for each task. This is lower than normally preferred for NEMP subgroup analyses, but has been judged adequate for giving a useful indication, through the overall pattern of results, of the Pasifika students’ performance.

For year 4 students, the mean effect size across the 20 tasks was 0.51 (Pakeha students averaged 0.51 standard deviations higher than Pasifika students). This is a large difference. The difference was much larger for responding-to-art tasks (0.58) than for art-making tasks (0.40), both favouring Pakeha students. There were statistically significant differences on 16 of the 20 tasks: Pakeha students performed better on all 16 tasks. There were no differences on three art-making tasks and one art-responding task. Additionally, there were differences on 10 questions of the Year 4 Art Survey (p52): Pakeha students reported being more likely to participate in eight of the 11 art-making school activities listed in the questionnaire, and two of the six art-making activities students might do in their homes.

For year 8 students, the mean effect size across the 20 tasks was 0.32 (Pakeha students averaged 0.32 standard deviations higher than Pasifika students). This is a moderate difference. The difference was substantially larger for responding to art tasks (0.41) than for art-making tasks (0.15), both favouring Pakeha students. There were statistically significant differences on eleven of the 20 tasks. Eight of these were responding-to-art tasks, and three were art-making tasks. Pakeha students performed better on all eleven tasks. There were differences on eight questions of the Year 8 Art Survey (p53): Pasifika students thought they
more often did really good things in art at school, were better at art, and did more really good things in art in their own time than Pakeha students did. Pasifika students believed they engaged in collage, carving, computer art, and photography or video more in school than Pakeha students believed they did. Pasifika students were also more likely to say that they painted at home.

**Home Language**

Results achieved by students who reported that English was the predominant language spoken at home were compared, using the effect size procedures, with the results of students who reported predominant use of another language at home, most commonly an Asian or Pasifika language.

For year 4 students, the mean effect size across the 20 tasks was 0.24 (students for whom English was the predominant language at home averaged 0.24 standard deviations higher than the other students). This is a moderate difference. The difference was a little larger for responding-to-art tasks (0.25) than for art-making tasks (0.20). There were statistically significant differences on seven of the 20 tasks: Pendant (p44), Eye Catcher (p48), Draw It (p34), Link Tasks 1 and 2 (p40) and Link Tasks 9 and 10 (p50). Students for whom English was the predominant language spoken at home performed better on all seven tasks. Three of the tasks were art-making and four were art-responding.

There were also differences on five questions of the Year 4 Art Survey (p52). Students whose predominant language at home was not English thought they had more opportunity at school to do drawing, carving, working with clay and group art-making. They were less likely to say that they looked at art and talked about it in school.

For year 8 students, the mean effect size across the 20 tasks was 0.15 (students for whom English was the predominant language at home averaged 0.15 standard deviations higher than the other students). This is a small difference. The difference was somewhat larger for responding-to-art tasks (0.19) than for art-making tasks (0.09). There were statistically significant differences on three of the 20 tasks (all responding to art tasks): Link Tasks 6, 7 and 8 (p50). Students for whom English was the predominant language spoken at home performed better on all three tasks. There was also a difference on three questions of the Year 8 Art Survey (p53): Students whose predominant language at home was not English thought that they did more good things in art in school and engaged in print making and carving more in school.

**Summary, with Comparisons to Previous Visual Arts Assessments**

School type, school size, community size and geographic zone are not important factors predicting performance on visual arts tasks. This was also the case for the 2003, 1999, and 1995 visual arts assessments.

Socio-economic status showed statistically significant differences on 71% of the year 4 tasks. This was a dramatic increase over previous years (33% in 2003, 31% in 1999, and 9% in 1995). For year 8, there were significant differences on 38% of the tasks, down somewhat from the previous two assessments (50% in 2003, 62% in 1999, but 18% in 1995). Over the 12 year span of assessments in the visual arts, the disparities by SES level have increased for the year 4 students, while fluctuating for the year 8 students.

For comparisons of boys with girls, Pakeha with Māori, Pakeha with Pasifika students, and students for whom the predominant language at home was English with those for whom it was not, effect sizes were used. Effect size is the difference in mean (average) performance of the two groups, divided by the pooled standard deviation of the scores on the particular task. For this summary, these effect sizes were averaged across all tasks.

Year 4 girls average slightly higher than boys, with a mean effect size of 0.06 (girls averaged 0.06 standard deviations higher than boys). This is a small difference, and slightly higher than the 2003 administration result of 0.01 (favouring girls). For 1995, Effect sizes were not calculated for the 1995 administrations. At year 8, the effect size in 2007 is also 0.06 (favouring girls). This is a small difference, and slightly higher than the 2003 administration result of 0.01 (favouring girls). For 1995, Effect sizes were not calculated for the 1995 administrations. At year 8, the effect size in 2007 is also 0.06 (favouring girls). Girls consistently show a stronger ability to make art, while the art responding tasks show very little in the way of gender differences.

Pakeha students averaged somewhat higher than Māori students, with an effect size of 0.28 at year 4 and 0.17 at year 8. These differences are slightly smaller than the ones seen in 2003. The differences were 0.31 at year 4 and 0.27 at year 8. In 1999, the differences were 0.15 at year 4 and 0.23 at year 8 (both favouring Pakeha students).

Differences between Pakeha students and Pasifika students were considerably higher, with a mean effect size difference of 0.51 at year 4 and 0.32 at year 8. These are large and moderate differences respectively. In the 2003 administration, these differences were 0.37 and 0.42 respectively. In 1999, they were 0.41 and 0.47 at year 4 and year 8. A moderate increase is seen at year 4, while there is a moderate decrease at year 8. Effect sizes for 1995 are not available.

Compared to students for whom the predominant language at home was English, students from homes where other languages predominated performed somewhat less well at both year levels, the difference being 0.24 at year 4 and 0.15 at year 8. These are both slightly lower than in 2003, where the mean difference was 0.26 for both years. Effect sizes for previous administrations are not available.