

**I CAN Learn[®] vs Traditionally-taught Students
Fort Worth, Texas 2002**

Students in Fort Worth, Texas public schools take the TAAS exam in each grade level and also complete an End-of-Course (EOC) before they can pass Algebra I. Students completed their math requirement (either middle school math or Algebra I) in an I CAN Learn[®] (ICL) or traditionally-taught classroom. The following results were found at the end of the 2001-2002 school year.

Middle School Math

TAAS results for eighth grade students enrolled in regular middle school math (not Algebra I) classes were compared for ICL and traditional classes using analysis of variance (ANOVA). Means were not statistically different between ICL and non-ICL students. However, the mean differences were significant for students receiving or not receiving free/ reduced-price lunch. The interaction between ICL and free lunch status was also significant. See Table 1 for the ANOVA summary table.

Table 1
ANOVA Summary Table for Middle School Math Students' TAAS scores

Tests of Between-Subjects Effects

| Dependent Variable: TAAS MIDDLE | | | | | | |
|---------------------------------|-------------------------|------|--------------|------------|------|--|
| Source | Type III Sum of Squares | df | Mean Square | F | Sig. | |
| Corrected Model | 5525.314 | 3 | 1841.771 | 13.470 | .000 | |
| Intercept | 19188083.134 | 1 | 19188083.134 | 140338.734 | .000 | |
| ICL | 61.597 | 1 | 61.597 | .451 | .502 | |
| NEWLUNCH | 4648.638 | 1 | 4648.638 | 33.999 | .000 | |
| ICL * | 905.339 | 1 | 905.339 | 6.622 | .010 | |
| NEWLUNCH | | | | | | |
| Error | 522296.843 | 3820 | 136.727 | | | |
| Total | 22585768.000 | 3824 | | | | |
| Corrected Total | 527822.158 | 3823 | | | | |

a R Squared = .010 (Adjusted R Squared = .010)

The mean comparisons (Table 2) show that ICL students performed statistically equivalent to non-ICL students. Students receiving free or reduced-price lunch scored statistically lower than students of higher socioeconomic (SES) status. However, the interaction between SES and ICL was also statistically significant. The socioeconomic gap closes for ICL students but not for traditionally-taught students.

Table 2
Mean Comparisons by SES and Classroom Type

ICL * LUNCH

Dependent Variable: TAAS MIDDLE

| | | Mean | Std. Error | 95% Confidence Interval | |
|------|------------------|--------|------------|-------------------------|-------------|
| | LUNCH | | | Lower Bound | Upper Bound |
| Trad | not free/reduced | 78.164 | .457 | 77.267 | 79.060 |
| | free/reduced | 74.740 | .357 | 74.040 | 75.439 |
| ICL | not free/reduced | 76.842 | .488 | 75.886 | 77.798 |
| | free/reduced | 75.514 | .300 | 74.926 | 76.102 |

High School Math

A comparison of high school TAAS exit exam scores revealed that ICL students significantly outperformed traditionally-taught students for both free/reduced lunch and non-free/reduced lunch groups. The ANOVA summary table is presented as Table 3 and the mean comparisons are shown in Table 4.

Table 3
ANOVA Summary Table for High School Math Students' TAAS scores

Tests of Between-Subjects Effects

Dependent Variable: TAAS EXIT

| Source | Type III Sum of Squares | df | Mean Square | F | Sig. |
|-----------------|-------------------------|-----|-------------|-----------|------|
| Corrected Model | 3366.532 | 3 | 1122.177 | 8.070 | .000 |
| Intercept | 3106276.596 | 1 | 3106276.596 | 22339.353 | .000 |
| ICL | 721.072 | 1 | 721.072 | 5.186 | .023 |
| LUNCH | 1230.423 | 1 | 1230.423 | 8.849 | .003 |
| ICL * | 17.794 | 1 | 17.794 | .128 | .721 |
| LUNCH | | | | | |
| Error | 128342.720 | 923 | 139.050 | | |
| Total | 4947795.000 | 927 | | | |
| Corrected Total | 131709.251 | 926 | | | |

a R Squared = .026 (Adjusted R Squared = .022)

Table 4
Mean Comparisons by SES and Classroom Type

ICL * LUNCH

Dependent Variable: TAAS EXIT

| ICL | LUNCH | Mean | Std. Error | 95% Confidence Interval | |
|------|------------------|--------|------------|-------------------------|-------------|
| | | | | Lower Bound | Upper Bound |
| Trad | not free/reduced | 73.142 | .634 | 71.897 | 74.386 |
| | free/reduced | 69.903 | .612 | 68.701 | 71.104 |
| ICL | not free/reduced | 75.007 | .993 | 73.058 | 76.956 |
| | free/reduced | 72.464 | 1.420 | 69.678 | 75.250 |

Algebra I End-of-Course Exam

Students may take Algebra I in middle school or high school. A comparison of traditionally-taught and ICL students shows that ICL students outperformed traditionally-taught students regardless of free lunch status (see Tables 5 and 6).

Table 5
ANOVA Summary Table for Algebra I Students' End-of-Course Exam Scores

Tests of Between-Subjects Effects

Dependent Variable: END OF COURSE

| Source | Type III Sum of Squares | df | Mean Square | F | Sig. |
|-----------------|-------------------------|------|----------------|------------|------|
| Corrected Model | 860799.021 | 3 | 286933.007 | 18.792 | .000 |
| Intercept | 9663159879.756 | 1 | 9663159879.756 | 632872.003 | .000 |
| ICL | 79988.793 | 1 | 79988.793 | 5.239 | .022 |
| LUNCH | 740314.011 | 1 | 740314.011 | 48.486 | .000 |
| ICL * LUNCH | 1140.946 | 1 | 1140.946 | .075 | .785 |
| Error | 70312560.927 | 4605 | 15268.743 | | |
| Total | 9807034000.000 | 4609 | | | |
| Corrected Total | 71173359.948 | 4608 | | | |

a R Squared = .012 (Adjusted R Squared = .011)

Table 6
Mean Comparisons by SES and Classroom Type

ICL * LUNCH

Dependent Variable: END OF COURSE

| | | Mean | Std. Error | 95% Confidence Interval | |
|-------|--------------|----------|------------|-------------------------|-------------|
| Class | LUNCH | | | Lower Bound | Upper Bound |
| Trad | not | 1463.237 | 3.716 | 1455.953 | 1470.521 |
| | free/reduced | | | | |
| | free/reduced | 1436.781 | 3.373 | 1430.168 | 1443.394 |
| ICL | not | 1470.605 | 3.714 | 1463.324 | 1477.886 |
| | free/reduced | | | | |
| | free/reduced | 1446.148 | 3.806 | 1438.686 | 1453.610 |