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Miami-Dade County Public Schools



This report summarizes data on the use of Cognitive Tutor Algebra I in the Miami-Dade County Public Schools. During the 2002-03 school year, the district commissioned an independent research study by the Reliability Group examining the effectiveness of Cognitive Tutor versus conventional curricula. The study compared FCAT performance for 6,395 students in 10 high schools, including 770 Exceptional Student Education (ESE) students and 976 limited English proficiency (LEP) students.

The Cognitive Tutor students scored significantly better than conventional curriculum students on the FCAT. The difference was particularly pronounced for ESE students, including those with learning and behavioral difficulties, and for LEP students. Based on these results, The Reliability Group recommended that the Cognitive Tutor Algebra I curriculum be made available to students at all Miami-Dade high schools.

Quick Facts

Urban Public School District, located in Miami, Florida

10 high schools, grade 9

354,000 total students enrolled

6,395 total students studied

2002-2003 school year

Study Design

Comparison Group

Measures

FCAT Exam

Course Grade

Surveys from teachers

Study Conducted by

The Reliability Group

Ethnic Breakdown of School

Hispanic: 58%

African-American: 29%

White: 10%

Asian: 1%

Native American: <1%

Participants

Study participants were 6,395 students in Miami-Dade County attending one of ten public high schools, including 770 Exceptional Student Education (ESE) students and 976 Limited English Proficient (LEP) students. Of the mainstream students, 2,819 ninth-graders took a conventional Algebra I course, while 1,830 students took the Cognitive Tutor Algebra I course. These ten schools were selected because of their experience with Cognitive Tutor and because of their ability to provide computer labs to students.

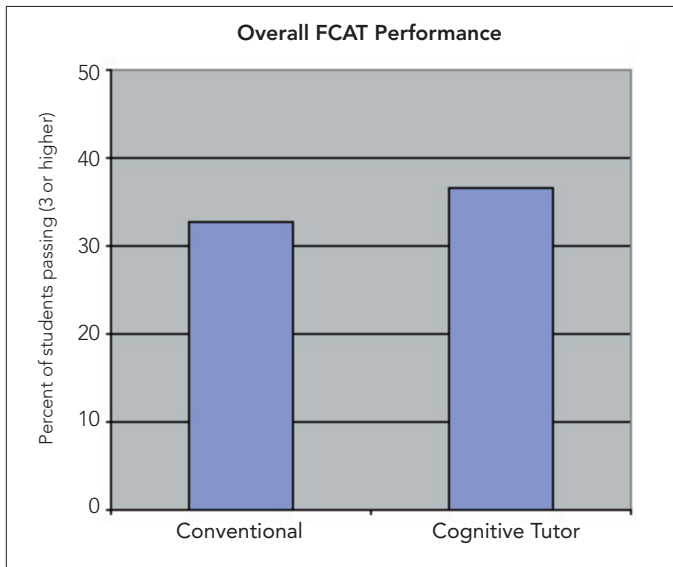
Method

The evaluation examined the influence of curriculum on students' FCAT scores, taking into consideration students' ethnicity and gender. The students were not randomly assigned to a curriculum, but the demographics of the two comparison groups were analyzed and found to be well matched.

Results

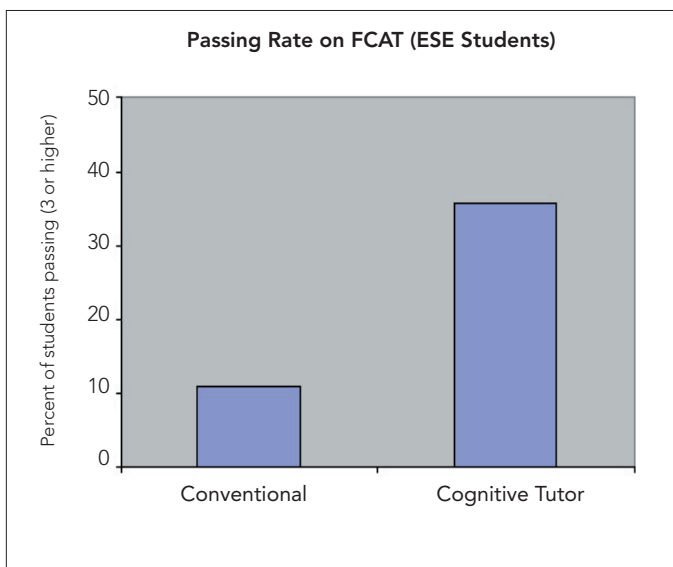
Each spring, the Florida Comprehensive Assessment Test (FCAT) in math is administered to all students from third to tenth grade. Student performance is reported in two ways: by scaled score, which ranges from 100-500, and by achievement level, which ranges from one (low) to five (high). In 2003, the passing score for ninth graders was 296 on the FCAT Mathematics, which corresponds to achievement level three.

Figure 1



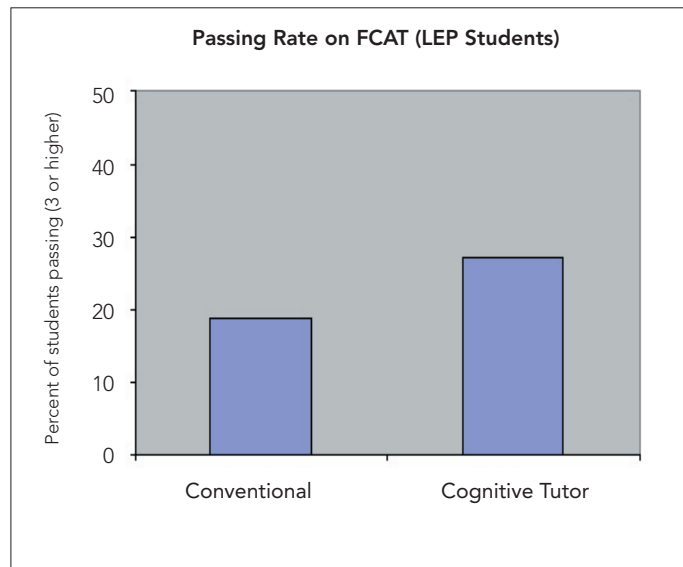
The mean scaled score for Florida ninth-graders in 2003 was 293. The mean scaled score for Miami-Dade was 273, with only 37% at or above level three. For the 4,649 mainstream Miami-Dade students examined in this study, Cognitive Tutor students scored significantly higher on the FCAT (scale score = 279.1) than did students completing conventional Algebra I (scale score=274.7; $p < .001$). Of the Cognitive Tutor students, 36.5% passed the FCAT, as opposed to only 32.8% of conventional students (see Figure 1). Results were even more striking for Cognitive Tutor ESE students, whose FCAT scores were 44 points higher (273.45) than those of ESE students using a conventional curriculum (229.5; $p < .001$). Indeed, 35.7% of CT ESE students passed the FCAT, as opposed to only 10.9% of ESE students using a conventional curriculum (see Figure 2).

Figure 2



LEP students also posted strong results. FCAT scores were 16 points higher for Cognitive Tutor LEP students (259.94 vs. 243.62; $p < .001$), and 27% of Cognitive Tutor LEP students passed the FCAT, as opposed to only 18.9% of LEP students using a conventional curriculum (see Figure 3). African American students ($p < .05$) and male students ($p < .001$) using Cognitive Tutor demonstrated higher performance than their conventional-curriculum counterparts. Hispanic and female students using the Cognitive Tutor also earned higher scores, but the differences were not statistically significant.

Figure 3



Conclusion

Given the impressive results of the study, the Reliability Group recommended that "Cognitive Tutor should be mandatory for all Exceptional Education and LEP students," and that the Cognitive Tutor Algebra I curriculum be made available to students at all Miami-Dade high schools.

The full report is available at <http://relgroup.net/cognitive.html>. For more information about research on the Cognitive Tutor products, please go to <http://www.carnegielearning.com/results/reports> or email results@carnegielearning.com.