Cognitive Tutor Algebra 1

Program Evaluation

Miami-Dade County Public Schools
May 2004

Evaluator: Hank Sarkis

the reliability group

TABLE OF CONTENTS

Executive Summary

Carnegie Learning's Cognitive Tutor Algebra I Program is a computer-enhanced, interactive learning course that is designed to teach students both in the classroom and in personalized computer sessions. The design of the program includes students spending three days per week in a classroom setting, and two days per week in a computer lab interacting with the course software. The Carnegie software is designed to offer individualized assistance to students, allowing them to progress at their own pace. Students using the software receive immediate feedback, providing real-time tutoring. The software is designed to understand methods that a student may use to solve a problem, and provides individualized levels of help. The software paces the curriculum based on each student's comprehension and ability. Student progress is displayed on their computer screen during the lab. Teachers can generate detailed reports of student progress. The class sessions are designed around collaborative student activities and projects. By design, teachers are encouraged to focus their direct instruction to students who need additional help. Course materials include student and teacher editions of textbooks and computer software.

This evaluation of the 2002-2003 Cognitive Tutor Algebra I Program was designed to explore relationships between Algebra I Cognitive Tutor and student's resulting FCAT and final grade performance, as well as administrators' and teachers' opinions about the program. This evaluation analyzed the final grades and Florida Comprehensive Assessment Test (FCAT) results for 4,649 ninth grade students in ten high schools who completed Algebra I during the 2002-2003 school year. Separate analyses were conducted for Exceptional Education students (770 cases) and students with Limited English Proficiency (976 cases).

Regarding FCAT scores in mathematics, Cognitive Tutor Algebra I students are *significantly* more likely to achieve higher FCAT scale and content scores than their conventional Algebra I peers. This outcome is particularly pronounced for ESE and LEP students. The FCAT "score gain" by the cognitive over the conventional group was 4.4 points for the main study group, 44 points for the ESE students and over 16 points for the LEP students. *All* of these differences are statistically significant at p=.000.

Regarding final grades, Cognitive students scored slightly better than did their conventional colleagues, but these differences are not statistically significant. The distribution of final grades across the two groups is very similar. This is of little consequence since grading standards tend to vary by teacher, course, and school.

There was a wide variability in performance of the Cognitive Tutor Program across schools. This was primarily related to the scheduling and availability of computers. The program is designed for 40% computer work, but many administrators and teachers referred to once-a-week computer sessions. A related problem was that the computers were not always working. In several schools, the percentage of time devoted to computer access was lower than levels specified by Carnegie Learning.

The following recommendations are offered:

1. Sufficient resources must be allocated to maintain and enhance the availability of computers in Miami-Dade County's high schools. Both the Miami-Dade and Broward

Public Library systems do an excellent job of ensuring the availability of computers to the general public. Miami-Dade County Public School students should be offered the same opportunity.

"There has to be a real, definitive, and serious commitment to have the technology working on a daily basis" (quote from a mathematics department chairperson). Computers must be available to students as per the Carnegie design.

2. Given the FCAT mathematics score gains demonstrated by Exceptional Education and LEP Cognitive students, top priority for enrollment in Cognitive courses should be given to students from these groups. Every high school should offer (at least) a few cognitive courses as an option to students.

3. Carnegie representatives should be asked to address concerns voiced by several teachers regarding the availability of reference materials.

INTRODUCTION

Carnegie Learning's Cognitive Tutor Algebra I Program is a computer-enhanced, interactive learning program that is designed to teach students both in the classroom and in personalized computer sessions. The design of the program includes students spending three days per week in a classroom setting, and two days per week in a computer lab interacting with the course software. The Carnegie software is designed to offer individualized assistance to students, allowing them to progress at their own pace. Students using the software receive immediate feedback, providing real-time tutoring. The software is designed to understand methods that a student may use to solve a problem, and provides individualized levels of help. The software paces the curriculum based on each student's comprehension and ability. Student progress is displayed on their computer screen during the lab. Teachers can generate detailed reports of student progress. The class sessions are designed around collaborative student activities and projects. By design, teachers are encouraged to focus their direct instruction to students who need additional help. Course materials include student and teacher editions of textbooks and computer software.

The Cognitive Tutor Algebra I Program is currently used in hundreds of schools nationwide. Since Carnegie Learning's Cognitive Tutor Program began as a research project, extensive documentation exists evaluating its effectiveness. The program has been shown to improve student achievement on standardized test items (especially on constructed-response or performance items), enhance levels of student understanding of mathematics, and increase student engagement in the learning process (Davidson, 1996; Koedinger, Anderson, Hadley and Mark, 1998).

Within Miami-Dade County Public Schools, nine senior high schools began using the program during the 2000-2001 timeframe. During the 2002-2003 school year, thirteen senior high-schools had implemented Algebra I cognitive tutor classes.

This evaluation of the 2002-2003 Cognitive Tutor Algebra I Program was designed to explore relationships between Algebra I Cognitive Tutor and student's resulting FCAT and final grade performance, as well as administrators' and teachers' opinions about the program. Since the study was commissioned after the school year ended, pre and post-test analysis at the student level was not possible. The evaluation was designed to answer the following questions:

1. To what extent was Carnegie Learning's Cognitive Tutor Algebra 1 Program implemented within adopting schools? How did the scope of implementation differ across schools?

2. As measured by Florida Comprehensive Assessment Test (FCAT) results and final grades, does the Cognitive Tutor Algebra 1 Program appear to increase student academic achievement?

3. What are teacher's views on the effectiveness, efficiency, and ease of implementation of the program? What are teacher's views on the apparent student attitudes towards the classes?

4. What are the views of Assistant Principals for Curriculum regarding program implementation and effectiveness?

5. How could the Cognitive Tutor Algebra 1 Program be improved?

METHOD OF EVALUATION

Sample Selection. Of the thirteen high schools participating in the program during the 2002-2003 school year, ten were determined to have both sufficient experience with the program and functioning computer labs from the beginning of the school year.

For the ten participating schools, the Management Analysis Department of MDCPS supplied relevant student-level data, including ethnicity, gender, FCAT scale scores, math content scores (strand data), final grades, teacher, and section data. Relevant free/reduced lunch, Exceptional Students (ESE), Limited English Proficiency (LEP), and English as a Second Language (ESOL) data were also captured. The study was restricted to 9th grade students. After data validation, the resulting data set consisted of 4649 cases, 2819 students who completed conventional Algebra I (the **Comparison Sample**), and 1830 students completing Cognitive Tutor (the **Program Sample**). Additional data sets were created for ESE and LEP students (770 and 976 cases, respectively).

Demographic characteristics were compared across the two study groups in Figures 1-4.

Figure 1. Ethnicity

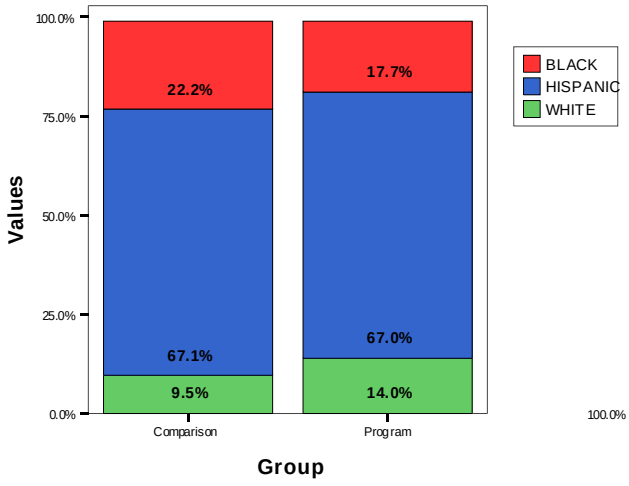


Figure 2. Gender

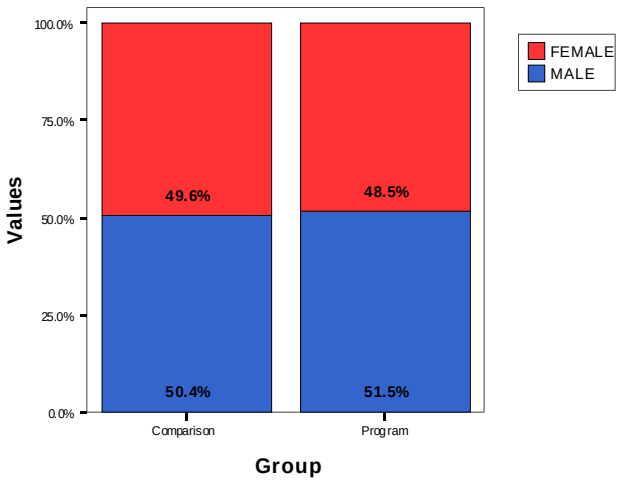


Figure 3. Free or Reduced Lunch

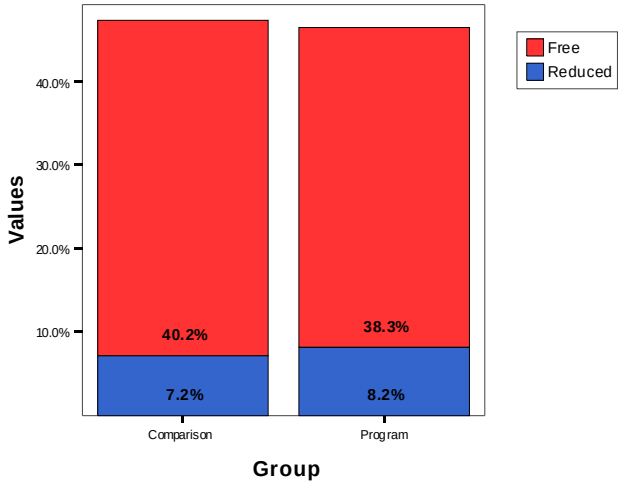
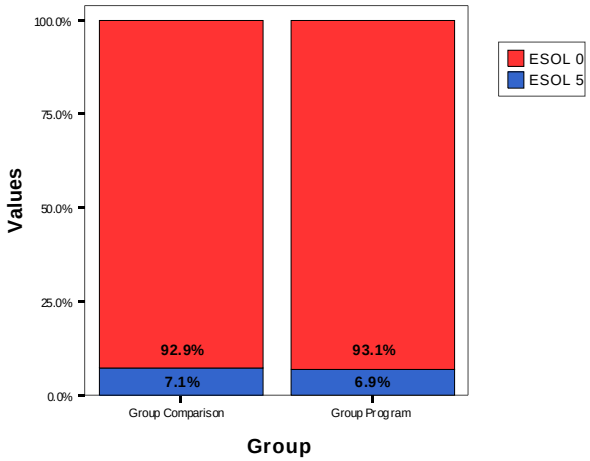


Figure 4. ESOL



From Figures 1-4, it can be seen that the program and comparison groups are very similar along race, gender, lunch-assisted, and ESOL dimensions, indicating that the groups were comparable in terms of their background characteristics.

Mathematics Department Chairperson/Assistant Principal Interviews and Survey. The Cognitive Tutor evaluation plan called for interviews and written survey feedback from Mathematics Department Chairpersons and Assistant Principals, Curriculum at the participating schools. The evaluator conducted both personal and telephone interviews during the 4th Quarter 2003 and 1st Quarter 2004. Both Chairperson and Assistant Principal written surveys were developed (see Appendix pages A6-A7). The surveys consisted of questions that were intended to measure respondents' views of the program and open-ended questions asking teachers to provide their comments or suggestions regarding the program.

These surveys were either distributed during personal interviews or faxed to respondents for completion. The surveys were also posted to an Internet web site to be completed on-line. In all, 20 respondents in each of the 10 schools participating in the program were asked to complete the survey. Sixteen completed questionnaires were obtained (80% return rate).

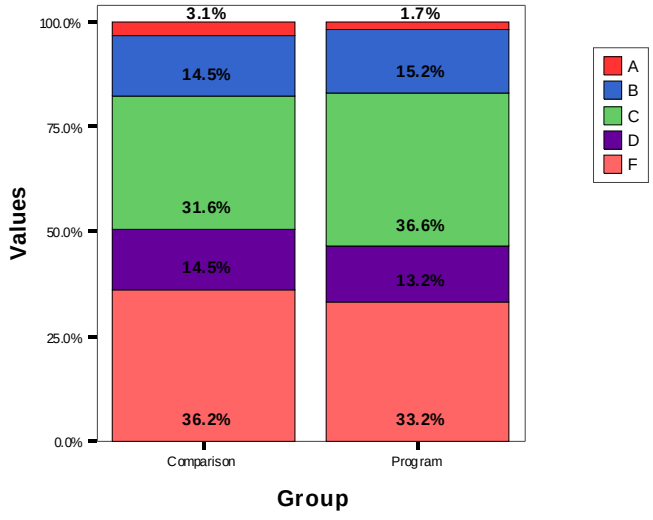
Teacher Survey. A third survey was developed for teachers of the Algebra I Cognitive Tutor program (see Appendix page A8). This survey consists of seven "yes/no" questions and two narrative questions asking teachers to provide their comments or suggestions regarding the program. The survey was faxed to 20 teachers who taught Cognitive Tutor. Ten surveys were returned (50% return rate).

RESULTS AND DISCUSSION

To evaluate student academic achievement, Algebra I final grade and FCAT scale scores were profiled for the comparison and sample groups.

Final Grade Outcomes. Final Algebra I grades were compared for students in the two groups. On a five-point scale (A=5), Cognitive students scored slightly better (2.39) than did their conventional colleagues (2.34). These differences are not statistically significant. The distribution of final grades across the two groups is very similar (Figure 5).

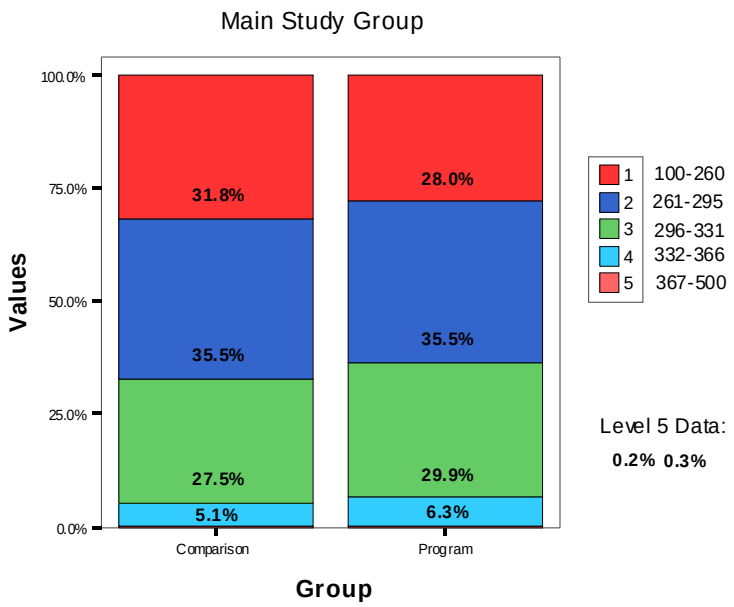
Figure 5. Final Grade Comparsions



Outcomes regarding ESE students were similar. ESE Cognitive students scored slightly better for final grade scale scores (2.43) than did conventional Algebra I students (2.32). As before, these differences are not statistically significant. The same outcomes were true for LEP students. LEP Cognitive Tutor students had final grade scale scores slightly higher (2.54) than did LEP conventional Algebra I students (2.46). In this evaluation, it appears that the Cognitive Tutor Program had no effect on final grade outcomes.

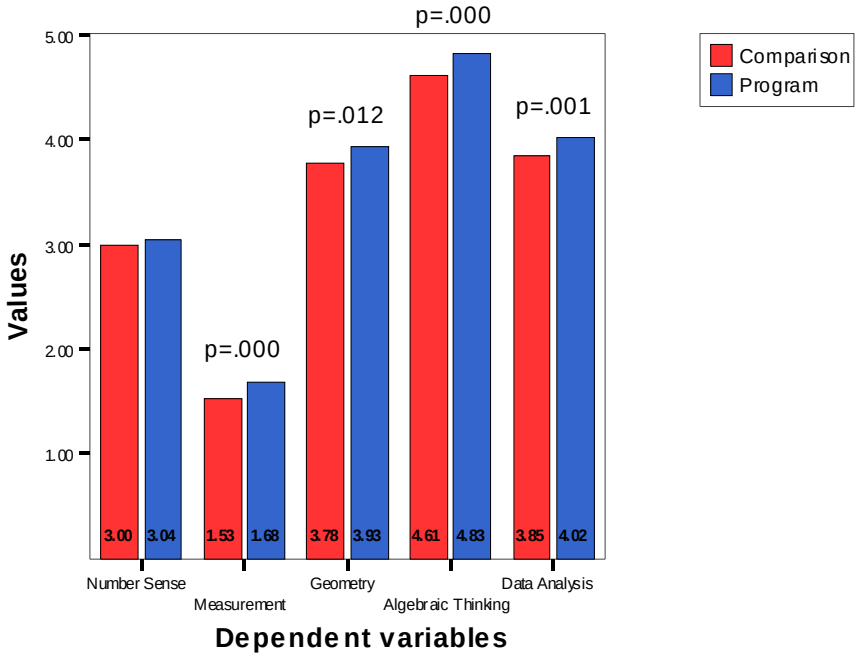
FCAT Scale Scores. FCAT scale scores were compared for the two groups. Students completing Cognitive Tutor scored **significantly higher** (279.1) than did students completing conventional Algebra I (274.7). These results are significant at p=.000 (independent sample t-test). Figure 5a illustrates the distribution of FCAT scores by Performance Level. Higher percentages of cognitive students attained Level 3 (FCAT 296-331) and Level 4 (FCAT 332-366) status than did their conventional counterparts.

Figure 5a. FCAT Performance Level



Students completing Cognitive Tutor also achieved **significantly higher** math content scores for four out of five strands, as compared to their conventional Algebra I counterparts (Figure 6).

Figure 6. FCAT Strand Performance



In Figure 6, “Number Sense” was the only strand that ranked Cognitive Tutor performance at par with conventional Algebra I students; other strands were significantly higher.

FCAT outcomes for ESE Cognitive Tutor students were even more dramatic. ESE Cognitive students had **significantly higher** mean FCAT scale scores of 273.45, compared to ESE conventional FCAT scores of 229.5 (p=.000). Figure 7.

Figure 7. FCAT Math Scores - ESE Students

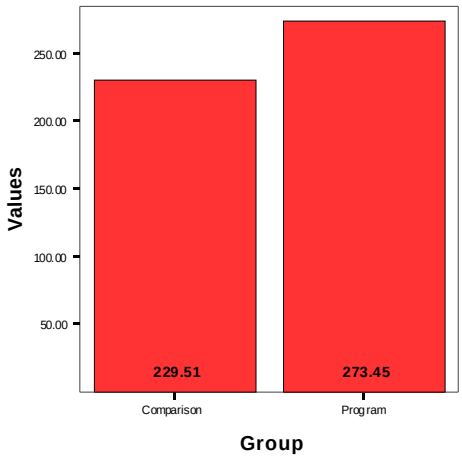
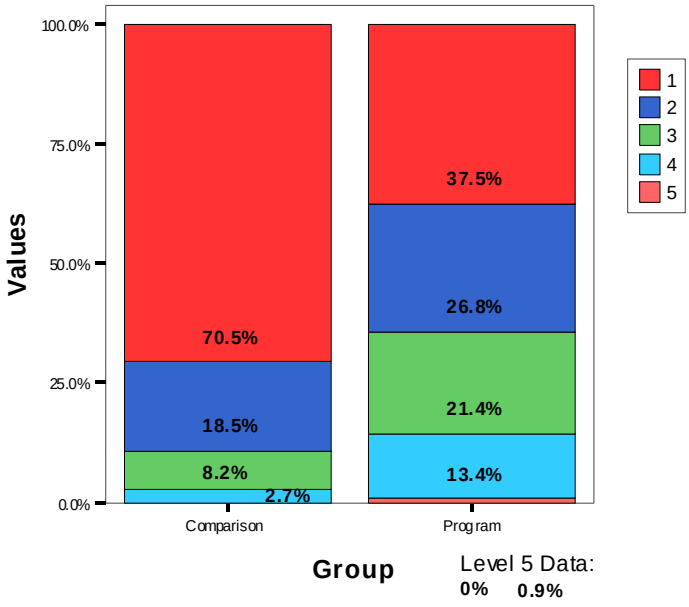


Figure 7a illustrates the FCAT scores by Performance Level for ESE students. Significantly higher percentages of cognitive students attained Level 3 (FCAT 296-331) and Level 4 (FCAT 332-366) status than did their conventional counterparts.

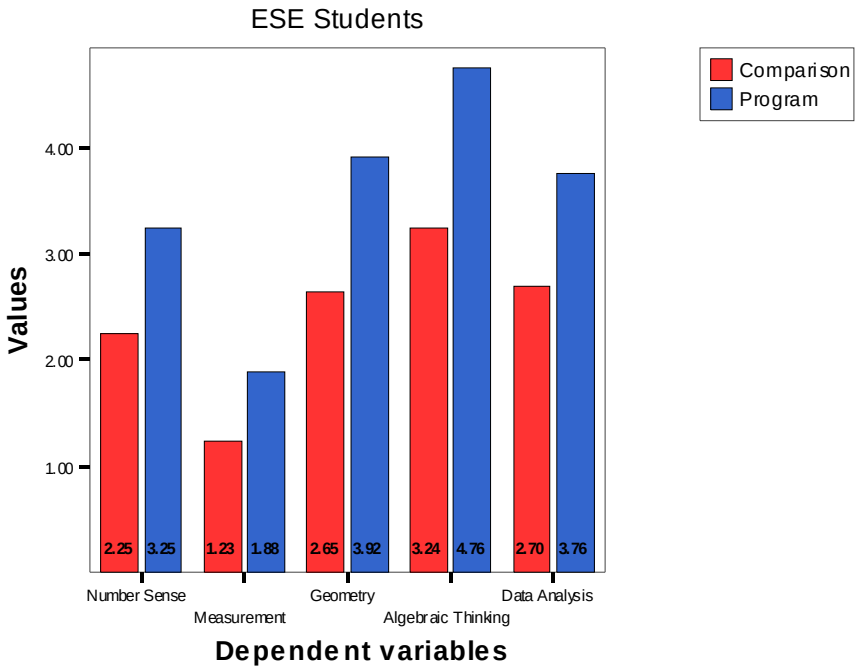
Figure 7a. FCAT Performance Level

ESE Students



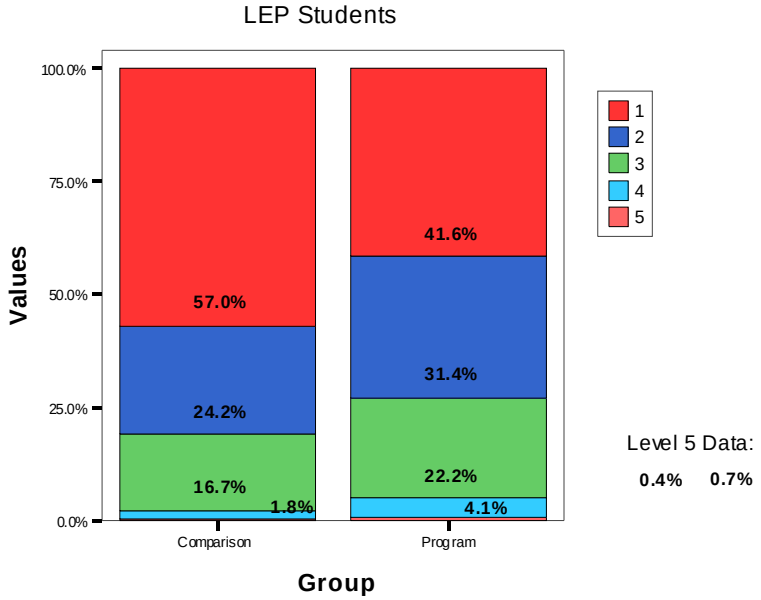
At the strand level, ESE students completing Cognitive Tutor scored **significantly higher** across all five dimensions as compared to their conventional counterparts (Figure 8). These are dramatic differences (all p=.000).

Figure 8. FCAT Strand Performance



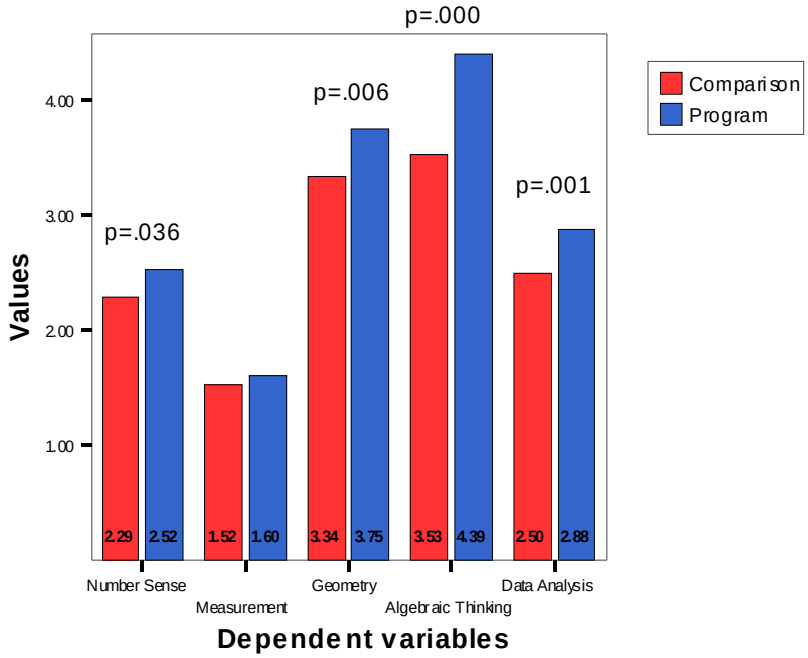
FCAT outcomes for LEP Cognitive Tutor students were also **significantly higher** (259.94) than LEP conventional students (243.62; p=.000). Figure 8a illustrates the FCAT scores by Performance Level for ESE students. Significantly higher percentages of cognitive students attained Level 3 (FCAT 296-331) and Level 4 (FCAT 332-366) status than did their conventional counterparts.

Figure 8a. FCAT Performance Level



At the strand level, LEP Cognitive students scored **significantly higher** across four out of five dimensions as compared to their conventional counterparts (Figure 9).

Figure 9. FCAT Strand Performance
LEP Enrolled in Course



Based on this data, Cognitive Tutor Algebra I students are significantly more likely to achieve higher FCAT scale and content scores than their conventional Algebra I peers. **This outcome is particularly pronounced for ESE and LEP students.** One caveat: these measures are *correlative* and a small possibility exists that certain types of students may be predisposed to enroll in one type of class over another. It is the evaluator's opinion that there is a credible *causative* basis for the increased FCAT performance via the Cognitive Curriculum.

FCAT Scale Scores – By Subgroups. Figure 10 illustrates mean FCAT scale scores by ethnicity. FCAT outcomes for black students completing Cognitive Tutor were **significantly higher** than scores for black students completing conventional Algebra I (p=.049). Differences for Hispanic students were marginally significant (p=.102; a *two-tailed* significance level). FCAT scale scores for white students did not differ significantly across the two groups.

FCAT cognitive scale scores for *females* were significantly higher than females in conventional algebra classes (p=.093; two-tailed test). Similarly, FCAT cognitive scale scores for *males* were significantly higher than males in conventional algebra classes (p=.001, Figure 11). The impact of Cognitive Tutor on FCAT performance appears to be more pronounced for males rather than females.

Figure 10. FCAT Scores by Ethnicity

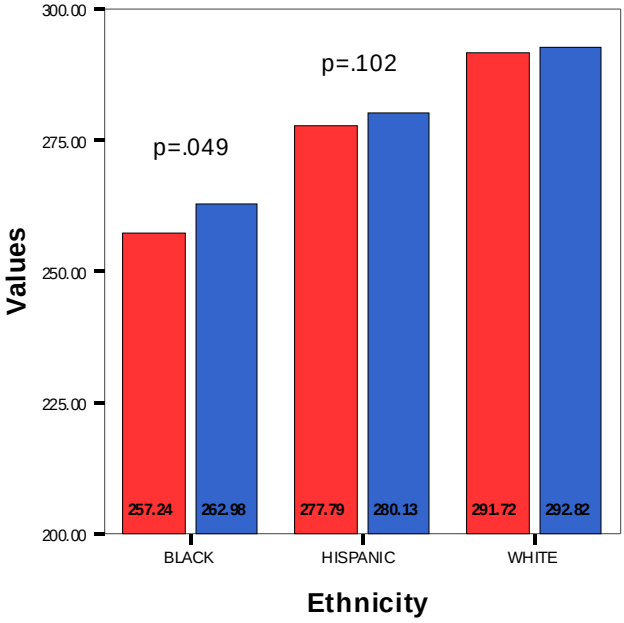
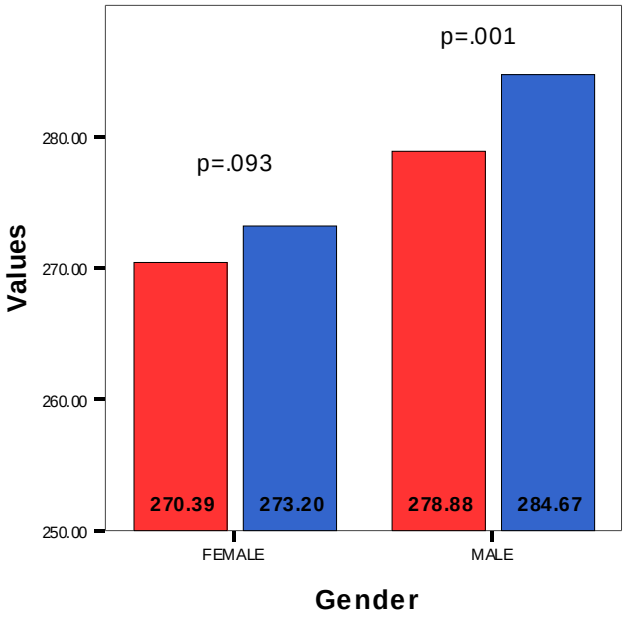


Figure 11. FCAT Performance by Gender



Variability Across Schools. FCAT outcomes for the program and comparison groups were evaluated across individual schools participating in this study. Variability was extreme; in fact, a few schools had mean cognitive FCAT scores *below* FCAT scores for conventional algebra students. At the school level, it appears that Cognitive Tutor performance is influenced by the quality of implementation, specifically the availability of computers.

Interview and Survey Feedback. Many of the questions in the three surveys developed for this evaluation asked similar questions. Table 1 summarizes responses to these common questions (note that the response options for the Mathematics Department Chairpersons Survey differ from the other surveys).

When asked if the **Cognitive Tutor Program was implemented as planned**, Department Chairs were somewhat more positive (88%) than were teachers or principals (78-80%). Based on interviews and written survey comments (see Appendix page A2), a primary concern was the availability of labs, both in scheduling students and maintaining equipment. Many students were scheduled in labs only once per week. Larger class size was cited as an impediment to lab access. "Limited lab facilities" was cited as a reason for the inability to expand the Cognitive program.

One administrator remarked that the program was dropped this year because they could not keep the labs functioning. She cited instances of stolen hard drives, missing mice, and vandalized equipment. A Department Chairperson complained of problems with computer viruses. Another cited ongoing breakdowns in equipment.

Table 1.

SURVEY QUESTION	ASSISTANT PRINCIPAL	DEPARTMENT CHAIRPERSON	TEACHER
Was The Cognitive Tutor Program Implemented As Planned?	78% Yes	88% Yes	80% Yes
Did The Cognitive Tutor Program Increase Student Interest in Algebra?	33% Yes 22% No 44% Don't Know	38% Strongly Agree 38% Agree 25% Slightly Disagree	80% Yes 20% No
Did the Program Increase Student Motivation To Learn?	44% Yes 22% No 33% Don't Know	38% Strongly Agree 38% Agree 13% Slightly Disagree 13% Disagree	80% Yes 20% No
Did the Program Have A Positive Effect on Learning?	44% Yes 33% No 22% Don't Know	25% Strongly Agree 50% Agree 25% Slightly Disagree	80% Yes 20% No
Should The Cognitive Tutor Program Be Expanded?	56% Yes 22% No 33% Undecided	38% Strongly Agree 38% Agree 25% Slightly Disagree	70% Yes 20% No 10% Not Sure

Assistant principals were asked if **computers were available for instruction**; 89% responded "yes."

When asked if the **Cognitive Tutor increased student interest in Algebra**, 78-80% of Department Chairs and teachers either agreed or responded "yes," compared to 33% of Assistant Principals. When asked if the program **increased the students' motivation to learn**, 78-80% of Department Chairs and teachers either agreed or responded "yes," compared to 44% of Assistant Principals. Similarly, when asked if the **program had a positive effect on learning**, 75-80% of Department Chairs and teachers either agreed or responded "yes," compared to 44% of Assistant Principals.

Ninety percent (90%) of teachers reported that they **received training to teach the Cognitive Tutor curriculum**. When asked if the **program allowed more time for individual assistance** to students; 80% of teachers responded "Yes."

Finally, when asked if the **Cognitive Tutor Program should be expanded**, 56% of Assistant Principals, 76% of Department Chairs, and 70% of teachers agreed. Based on survey feedback and interviews, Assistant Principals tended to be less supportive of the program than Department Heads or teachers.

CONCLUSIONS

The results of the analyses of mathematics FCAT outcomes indicates that students who completed Algebra I Cognitive Tutor were significantly more likely to achieve higher overall scores than those students who completed conventional Algebra I classes. Students from cognitive classes demonstrated significantly higher FCAT strand scores for measurement, geometry, algebraic thinking, and data analysis than did their comparison group peers.

Comparing ethnic/gender subgroups, black males tended to achieve the highest benefit from the Cognitive Tutor Program.

The most pronounced impact of the Cognitive Tutor Program was its effect on ESE and LEP students. Exceptional students who completed the Cognitive Tutor Program scored 44 points higher on the FCAT mathematics scale score than did their comparison group peers. Similar positive results were achieved by LEP students who completed the Cognitive Program. They scored over 16 points higher on the mathematics portion of the FCAT than did the comparison group peers. These results are summarized in Table 2. If these results can be consistently duplicated, Cognitive Tutor should be mandatory for all Exceptional Education and LEP students.

Table 2.

	COMPARSION GROUP FCAT	PROGRAM GROUP FCAT	GAIN IN FCAT SCORE
Main Study Group	274.7	279.1	4.4 points
Exceptional Students	229.5	273.45	44 points
LEP Students	243.6	259.9	16.3 points

There was no measurable difference in grade distributions across the two study groups. This is of little consequence since grading standards tend to vary by teacher, course, and school.

An area of concern is the wide variability in performance of the Cognitive Tutor Program across schools. As mentioned previously, this is most-likely related to the availability of computers. The program is designed for 40% computer work, but many administrators and teachers referred to once-a-week computer sessions. A related problem was that the computers were not always working.

Another common issue was the perceived need to assign conventional textbooks as an adjunct to the cognitive manual. Teachers reported that some parents didn’t like the Cognitive textbook because it made it difficult to tutor their children. Several teachers remarked that a reference handbook would make the program more effective.

RECOMMENDATIONS

1. Sufficient resources must be allocated to maintain and enhance the availability of computers in Miami-Dade County's high schools. Both the Miami-Dade and Broward Public Library Systems do an excellent job of ensuring the availability of computers to the general public. Miami-Dade County students should be offered the same opportunity.

   "There has to be a real, definitive, and serious commitment to have the technology working on a daily basis" (quote from a mathematics department chairperson). Computers must be available to students as per the Carnegie design.

2. Given the FCAT mathematics score gains demonstrated by Exceptional Education and LEP Cognitive students, top priority for enrollment in Cognitive courses should be given to students from these groups. Every high school should offer (at least) a few cognitive courses as an option to students.

3. Carnegie representatives should be asked to address concerns voiced by several teachers regarding the availability of reference materials.

Appendix

Assistant Principal, Curriculum Comments

Was the program implemented in accordance with its design? If NO, please comment:

- Computer labs were scheduled once per week. It was difficult to schedule more than one hour per week
- Labs are a problem
- Two days of labs per week were not possible
- With classes of 25 students, it is impossible to implement the program in accordance with its design.

Comments or suggestions about the program, workbooks and software it uses, and its implementation in your school:

- The program is not tied to FCAT preparation.
- We had a slow start last year – the kids started late (study year). Teachers love the program. Some parents are concerned with the lack of a traditional textbook – they like to coach their kids using a text. Carnegie should provide some type of review guide or content document. Last year we had only two labs per week (study year) – this year we have four.
- We are disappointed with the results of the program. The students are not transferring gains to grades. We're not sure if we will continue the program.
- Many teachers have to assign an additional text book in addition to the Cognitive manual
- The Cognitive Tutor program was not used this year. The problem concerns labs – stolen hard drives, stolen mice, and damaged equipment. We cannot keep the labs functioning.
- Teachers comment to the strong problem-solving aspect of the program, however supplemental resource material of the program is weak. This is for both Algebra I and geometry.
- Some teachers feel the program makes algebra more relevant for some students. Sometimes not all computers are working so not all students get to go on a computer.
- The major drawback of the program is that it does not cover topics such as factoring that students should be introduced to in algebra1. As a result, teachers must supplement the program quite often with other text and materials. In addition, the teachers find the program too easy, so students are not challenged enough. Finally, since students can work at their own pace (at the lab) there is a great disparity between one student and another in the number of lessons covered and skills achieved. All of the above assumes that all computers are working all of the time and that there are no difficulties.

Department Chairperson Comments

Was the program implemented in accordance with its design?

- No. Most cognitive classes at the school had labs scheduled once a week (spending 4 days per week in the classroom). One class did schedule labs twice a week (spending three days in the classroom).

How is the Cognitive Tutor Algebra I program viewed by teachers in your school?

- Most teachers are unaware of the program.
- The program is liked, however, since we have only one lab, the only way I can get more teachers involved is if I reduce the lab time for existing students and those teachers have asked me not to do that. Therefore I only have two Cognitive Tutor teachers doing both Algebra I and Geometry with regular and honor students.
- The time was closer to 50% in the lab 50% in class. It receives a mixed review, most teachers like the computer part of the course, however there is a wide disparity in performance levels: some students move along very well, while others seem to get stuck despite the help offered by the hints, helps, other students, and teacher.
- Extremely beneficial.
- Very positive!
- Some teachers know nothing about it and are not interested in learning about it. Some want to learn more about it and are looking forward to being trained. Of those who use it, there are mixed feelings about the program.
- Very positively – there are concerns regarding the textbook materials yet the overall impression is good.
- The teachers are excited and love the experience with this technology.

Comments or suggestions about the program, workbooks and software it uses, and its implementation in your school:

- Cognitive is a very beneficial program since embedded in its design is the notion of sparking student interest & thereby increasing the learning that takes place. The only problem that I see is that it is dependent on technology and it is very difficult to keep our labs 100% operational at all times. Computers break, viruses, etc.
- There are several aspects of the program that need to be implemented exactly as Carnegie has trained us. The first is the use of the computer lab 40% of the instruction time. The tutor allows the students to work at their own level and gives the teacher the opportunity to circulate and focus on those students that need the extra help. Secondly, teachers need to trust the curriculum the way it was written. They must adopt the new style and avoid falling back into their traditional teaching roles.
- I have spoken to some schools who are very satisfied with the program. However, in our school, most of

the math teachers did not want to participate in the program and I have heard from many students that they did not feel they were learning. Some teachers of Geometry have said that the students who participated in the program the previous year did not learn as much as the other students. I understand this is hear-say and I am aware that it really depends on the individual student.

- The program is very effective especially in the area of problem solving. Students learn to not be afraid of word problems since it becomes a part of their everyday curriculum. This is something that the student under the traditional program does not have. Also the one-on-one assistance that the tutor can afford the student cannot take place in the classroom of a traditional course. By the same token, I want to be clear that the program can never replace the classroom teacher since the strategies, explanations, and immediate response to student-made questions can only take place through a classroom teacher. This might be a fear across the district, especially with all of the different things that are going on within the teaching profession. The virtual classroom is a thing of the future but it will never be effective if the classroom teacher is not there. Teaching touches mind and heart, a computer can only touch the mind.

- Most of the teachers have asked to supplement the course materials with a regular textbook to fill in the apparent gaps in the curriculum.

- The special education department has found that the program has increased their student interest.

- The District should pay for it!

- There has to be a real, definitive, and serious commitment to have the technology working on a daily basis!

- It is a difficult program to implement if the teachers mathematical knowledge is weak. Training is needed for all teachers new to the program. We have found the program (regardless of teacher knowledge) has allowed our students to show progress.

Teacher Comments

Was the program implemented in accordance with its design?

- No. There are not 2 teachers for the 1 computer lab. There's only one teacher in the lab all of the time.
- No. Students only go once per week to the computer lab.

Comments or suggestions about the program, workbooks and software it uses, and its implementation in your school:

- The program is interesting to some but not the majority of the students. Students are not transforming what's learned in the lab to the classroom.
- Workbooks and software – love it. At my school, more teachers need to be trained so that we can implement the program appropriately.
- The program does not provide enough practice for factoring. Not everything should be a word problem.
- The text book needs additional materials, i.e. a glossary. Also could use more practice problems.
- I feel the program has some glitches that must be fixed. The workbook is poorly organized and several mathematical concepts are introduced late in the program.
- It would be better if students did not have to change classes to go to the labs – more labs should be available.
- It has proven to be an incredible tool for algebra, and has improved our attendance among freshmen.
- I was recently informed that our school will not be implementing the Carnegie program next year!
- The software really motivates students – they are not afraid to try. Students enjoy helping each other.

School: _____

Miami-Dade County Public Schools
Carnegie Learning Cognitive Tutor Algebra I Program – 2002-2003
Assistant Principal, Curriculum Questionnaire

1. **In your school, is the program implemented in accordance with its design? If NO, please comment.**

   a. Yes b. No _____

_____

2. **Were computers available during the entire time of instruction?**

   a. Yes b. No

3. **Does the program make Algebra more interesting and/or relevant for students?**

   a. Yes b. No

4. **Does the program increase student motivation to learn Algebra?**

   a. Yes b. No

5. **Overall, does the program have a positive effect on student learning?**

   a. Yes b. No

6. **Should the Carnegie Learning Cognitive Tutor Program be expanded within Miami-Dade County Public Schools?**

   a. Yes b. No

7. **Please provide your comments or suggestions about the program, workbooks and software it uses, and its implementation in your school. Use the other side of this paper if necessary.**

DIVISION OF MATHEMATICS AND SCIENCE EDUCATION
CARNEGIE LEARNING COGNITIVE TUTOR ALGEBRA I PROGRAM
DEPARTMENT CHAIR SURVEY
2002-03

Your Name: _____ School name: _____

1.) What position do you currently hold in your school?

Department Chair____ Algebra Teacher ____ Other (specify) ____

2.) For the 2002-2003 school year, was the Cognitive Tutor Algebra I program implemented in accordance with its design? (For example, were materials available? Did students spend 60% of their time in the classroom and 40% in the computer lab, etc.)

Yes _____ No _____

If No, please explain _____

_____

3.) How is the Cognitive Tutor Algebra I program viewed by teachers in your school?

_____

_____

4). The Cognitive Tutor program makes Algebra I more interesting and/or relevant for students.

Don't Know ( ) Strongly Agree ( ) Agree ( ) Slightly Disagree ( ) Disagree ( )

5.) As compared to the conventional Algebra I curriculum, the Algebra I Cognitive Tutor program increases student's motivation to learn Algebra.

Don't Know ( ) Strongly Agree ( ) Agree ( ) Slightly Disagree ( ) Disagree ( )

6.) The Algebra I Cognitive Tutor program has a positive effect on student learning.

Don't Know ( ) Strongly Agree ( ) Agree ( ) Slightly Disagree ( ) Disagree ( )

7.) The utilization of the Cognitive Tutor Algebra I program should be expanded within Miami-Dade County Public Schools.

Strongly Agree ( ) Agree ( ) Slightly Disagree ( ) Disagree ( )

8.) Please provide your comments or suggestions about the program and its implementation in your school.

Miami-Dade County Public Schools
Carnegie Learning Cognitive Tutor Algebra I Program – 2002-2003
Teacher Questionnaire

INSTRUCTIONS: The following questions are part of a study about the Carnegie Learning Cognitive Tutor Algebra I Program for the 2002-03 school year. Please circle your response. All responses are strictly confidential. ***If you have never taught Algebra I Cognitive Tutor please do not complete this survey.***

8. Have you ever received training to teach the Carnegie Learning Cognitive Tutor Algebra I program?

a. Yes b. No

9. In your school, is the program implemented in accordance with its design? If NO, please comment.

a. Yes b. No _____

_____

10. **Does the program give you more time to provide individual assistance to students?**

a. Yes b. No

11. Does the program make Algebra more interesting and/or relevant for students?

a. Yes b. No

12. Does the program increase student motivation to learn Algebra?

a. Yes b. No

13. Overall, does the program have a positive effect on student learning?

a. Yes b. No

14. Should the Carnegie Learning Cognitive Tutor Program be expanded within Miami-Dade County Public Schools?

a. Yes b. No

15. Please provide your comments or suggestions about the program, workbooks and software it uses, and its implementation in your school. Use the other side of this paper if necessary.