



Computers for Youth

We Bring Learning Home

Summary Report on CFY Comparison Study (2004)

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Overview

In the spring of 2004, CFY conducted a comparative study to examine our program's impact on students' engagement in learning and their academic performance.

Research Participants: For this study, we worked with 133 students from three middle schools in New York City. Two of these schools participated in CFY's program and are herein referred to as *CFY schools* (Multicultural Institute and the Byron Wilson School¹). The third school, referred to as the *comparison school* (the Henry Cisneros Academy), did not participate in CFY's program at the time. However, it is now participating. The Multicultural Institute and Henry Cisneros Academy are small middle schools housed in the same building in Manhattan. Both serve predominantly Hispanic students (63%) in the seventh and eighth grades. The Byron Wilson School, CFY's second school, is a larger middle school located in Brooklyn. It serves sixth, seventh, and eighth grade students who are predominantly of African- and Caribbean-American heritage (94%). This study included sixth graders from the Byron Wilson School and seventh graders from the two Manhattan schools.

About the study: This investigation was conducted in the spring of 2004. Data was collected from students and teachers in January and then again in late May or early June. Telephone interviews with parents were conducted throughout the summer and fall. Parental consent was obtained for all students who participated in the study.

Student data consisted of: 1) pre- and post-surveys, which included self-reports of home computer use, academic engagement, and perceived impacts of computing, and 2) pre- and post-writing samples in which students responded to writing prompts similar to those used in the National Assessment of Educational Progress (NAEP). Student writing samples were scored by two independent raters; these raters were middle school teachers who were trained for the process and not informed about the students' identity. Writing scores were then analyzed statistically in relation to data from students' surveys and teachers' ratings.

Teacher data was collected only from English/Language Arts teachers (herein referred to as "English teachers"). It included pre- and post-ratings of individual students' effort, participation, and performance in class. For example, teachers were asked "compared to students of the same age, how hard does this student work in your class?" Each student's English teacher responded using a 7-point Likert scale: 1= much less; 2 = somewhat less; 3 = slightly less; 4 = about average; 5 = slightly more; 6 = somewhat more; 7 = much more. CFY's teacher rating measure was adapted from the teacher version of the Child Behavior Checklist (Edelbroch and Achenbach, 1984)

Due to local constraints, teacher ratings were not obtained for sixth grade students in CFY's Brooklyn school, the Byron Wilson School. Complete sets of ratings, however, were obtained for seventh graders in a CFY school (Multicultural Institute) and the comparison school (Henry Cisneros Academy).

Thirty-nine (39) adult family members were interviewed by telephone as part of CFY's study. The purpose of these interviews was to determine how families used their home computers to support children's learning. Four categories of questions were asked: 1) use of the computer to provide socio-emotional support; 2) use of the computer to provide academic support; 3) use of the computer to become more involved in the school community and 4) use of the computer to communicate certain values to children (e.g., the value of knowing about what's happening in the world beyond one's own neighborhood). Interviews were summarized and analyzed thematically.

¹ The names of schools have been changed.

Outcome 1: Students become more engaged in their learning.

Our comparison study showed improved student engagement through the following indicators:

- A. English teachers' ratings of students effort in class
- B. Students self-reports on liking school more, becoming more curious and becoming more confident as a result of having a home computer.

A. English teacher's ratings of students' effort. Students in the CFY school put significantly more effort into their English classes after they received their computer than before as measured by pre- and post-teacher ratings. In contrast, seventh graders in the comparison school were not observed to have improved in effort over the same time period (from January to June).

English Teachers' Ratings of Students' Effort

Student's Academic Effort	CFY 7 th graders Multicultural Institute	Comparison 7 th graders H. Cisneros Academy
Average Pre-rating	4.45	3.89
Average Post-rating	5.29	3.59
Statistically significant difference	Yes (p<0.001 level)	No

B. Students' self-reports of impact. On post-surveys conducted in May 2004, students in both CFY schools indicated that having a home computer helped them like school more, become more curious about things, and increase their confidence. Impact was greater for sixth grade students at the Byron Wilson school than for seventh grade students at the Multicultural Institute.

**Students' Reports of Liking School More, Becoming More Curious
and Becoming More Confident**

Impact Statement	% CFY 6 th graders Byron Wilson School	%CFY 7 th graders Multicultural Inst.	% All CFY students
Having a home computer made me more curious about things.	75%	69%	72%
Having a home computer helped me feel more confident in what I can do.	70%	63%	66%
Having a home computer helped me like school more.	63%	44%	52%

Outcome 2: Students perform better academically.

Our comparison study showed improvements in students' academic performance through the following indicators:

- A. Students' self-reports of doing better in school as a result of having a home computer.
- B. Pre- and post- writing samples.

A. Students' self-reports of impact. On post-surveys conducted in May 2004, students reported that having a home computer helped them do better in school. Once again impact was greater for sixth grade students at the Byron Wilson School than for seventh grade students at the Multicultural Institute.

Students' Reports of Doing Better in School

Impact Statement	% CFY 6th graders Byron Wilson School	%CFY 7th graders Multicultural Inst.	% All CFY students
Having a home computer helped me do better in school.	81%	64%	72%

B. Pre- and Post-Writing Samples. We found that seventh grade students in both the CFY school (Multicultural Institute) and the comparison school (Henry Cisneros Academy) scored lower on the post-writing sample than the pre-sample. We attribute this decrease in performance in part to decreased motivation at the end of the school year when the post-writing sample was completed. Despite this, however, writing scores for the students at CFY's partner school decreased less over time than the scores for the students at the comparison school.

Key Mechanisms Driving Outcomes

Through this study and studies preceding it, we have learned that home computing can affect students' socio-emotional processes (feelings of autonomy, belonging, competence, pride, curiosity, and confidence) and their family relations. We believe that it is through these two mechanisms that home computing may help students improve academically. For example, in this comparison study, we found that students who improved in their English classes (as indicated by teacher reports) and who said that having a home computer helped them do better in school, were significantly more likely to say that having a home computer improved their confidence (100%) and their family relationships (91%). Among students who did not improve in English or did not attribute their improvement to computing, these percentages were much lower, around 50%.

Examples of how families used their CFY computers to support student learning are presented in Appendix A. These research findings were presented at the Annual Meeting of the American Educational Research Association (AERA) in April 2005.

Next Steps

The results from this comparison study are encouraging. They provide evidence that CFY's program improves student engagement in school and academic performance. There are, of course, limitations to the research. First, this sample size for this study was small, and we would like to see these results replicated with a larger number of students. Second, CFY's research has consistently revealed that sixth graders experience much greater impact than seventh graders. Had we been able to secure a comparison school with sixth graders and to collect teacher ratings from CFY's Byron Wilson School, we believe we may have observed much larger and more significant impacts of the program on academic engagement and performance. Third, this study collected data only from English teachers and therefore missed student performance gains in other classes. In future studies, we hope to expand our data collection to include science, math and social studies teachers. Fourth, though the comparison school in this study was demographically very similar to CFY's treatment school, we found that it actually differed considerably in one important way: Parental involvement at the Henry Cisneros Academy was much higher than that at the Multicultural Institute. Given that students' often associate home computing with improved family relations, we suspect that the high family involvement at our comparison school may have masked some of the differences we otherwise would have seen. In the future, we hope to better match our treatment and comparison schools.

We are currently designing new research to help strengthen and elaborate on findings from this comparison study. This research will include a greater number of participants from both CFY schools and comparison schools. Comparison schools will be selected on the basis of comparable demographics, student need, and student achievement. Using refined measures, we will assess contextual variables (e.g. school climate and home environment), non-cognitive outcomes of home computer use (e.g., effort, engagement, self-beliefs, positive identification with school) and achievement outcomes. Achievement data will include pre- and post-ratings from teachers as well as standardized test scores.

We have been consulting with researchers at ETS on the development of this study and are confident that the enhanced research design and revised instruments will enable us to better explore differences in impact across communities and students of different grade levels that have consistently been an issue in prior studies.

Appendix A: Examples of How Families Used Their CFY Computer

Research Summary Presented at AERA Meeting

Study based on interview data with 39 family members.

This study found that family members in the sample were *most likely* to:

- Use educational programs installed on the PC with students (64%);
- Praise students for their computing expertise (61%);
- Discuss items that students create on the PC (51%);
- Set limits around computing (49%); and
- Enhance students' roles in family by asking them to help others with computing (46%).

Family members were *least likely* to:

- Communicate on-line with teachers (3%).
- Use Internet to find enrichment activities for students (3%).
- Purchase hardware/software for students (11%)
- Use Internet to teach their children (21%)

Examples of how families use computers to support students' learning include:

- *Validation of students' efforts (Socio-emotional support)*
 - o Student is developing his drawing skills and goes to web sites to learn more and practice. His mother has asked him to illustrate the memoir that she is writing.
 - o Grandmother praises her granddaughter for going on-line to find better or longer explanations for difficult homework assignments that she cannot complete on her own.
- *Spending time together (Socio-emotional support):*
 - o A mother and son often look at jokes together on the Internet.
 - o One student was very excited about the Internet research he did on Latin American countries. His parents, from Mexico, supplemented with their own first-hand knowledge.
 - o A father was happy that his son spent more time at home using the computer; the student previously spend his time hanging out on the street.
- *Enhancing children's roles in the family (Socio-emotional support):*
 - o A mother asked her daughter to help her brother, who has a learning disability, with math. The student uses websites to help her brother.
 - o A mother asks student to show her younger siblings how to do things on the computer.
- *Researching together (Informational support):*
 - o A mother helped her daughter find information on-line on for science class about human body parts. It was interesting for both of them.
 - o A mother and son looked on-line for info about wheelchair parks where he could go for fun.
- *Setting goals and expectations (Informational support):*
 - o Because her granddaughter is interested in writing, the grandmother gave this student a goal to research specific authors on the Internet and try to emulate their writing styles.
 - o A father wants son to learn to repair computers and encourages him to do this on-line.
- *Teaching student using on-line resources (Informational support):*
 - o One mother found a website for her sons on which they can write stories and get critiqued.
- *Purchasing items (Instrumental support):*
 - o Parents bought printer for student.

- One mother purchases spelling and vocabulary builders from the Internet for her son.
- *Communicating values of literacy practices:*
 - One mother is in college herself and has access to Lexis/Nexis. She and her son go on-line together to do research. She wants him to understand the power of information.
 - A father and his son frequently use the Internet to stay on top of current events. The father thinks it is important for his son to know what is happening beyond the neighborhood.