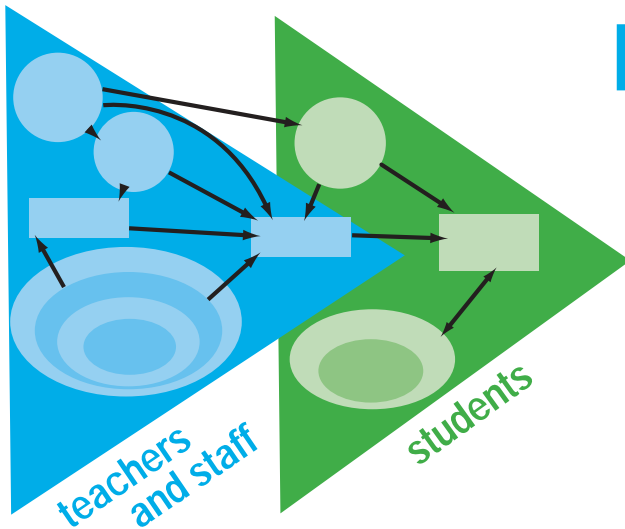


REPORT HIGHLIGHTS



Educational Technology: Availability and Use in Chicago's Public Schools

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The introduction of technology to education brings with it both promise and concern. Advocates see the opportunity for a student-centered teaching revolution and students well prepared to excel in an increasingly computerized labor force. Skeptics question whether costly equipment and training will meet these expectations, or only create more expensive typewriters and encyclopedias.

With expectations for technology use and its potential costs continuing to rise, the Consortium on Chicago School Research sought to provide baseline information on educational technology—the use of computers and the Internet for instructional purposes—in Chicago public schools. We addressed three questions in a year-long study that included both quantitative and qualitative analyses: (1) What are the current levels of technology availability and use? (2) Are availability and use distributed equitably across students, teachers, and schools in the district? and (3) What essential organizational supports are necessary to encourage technology use in schools? We examine these topics by looking at nearly 100,000 responses to the Consortium's biannual survey of teachers and students in 434 of Chicago's schools, in addition to other administrative data. Further insight was gained through site visits to schools with model technology programs.

What Does Good Technology Use Look Like? One Example

Two teachers decide to collaborate on a project on recycling that involves collecting and computing data and communicating findings to a wide audience. One group of students uses digital cameras to interview their peers about their recycling knowledge, while another goes undercover to get the real story. Afterwards, they make educational videos of their findings. A third group surveys classrooms and analyzes their data to create graphs and charts. These students work with the undercover team to break down the results classroom by classroom. A fourth group of students designs a web page on the topic. This transparent technology use services the instruction goal in a way that is natural and endemic rather than being an awkward addition to an old task.

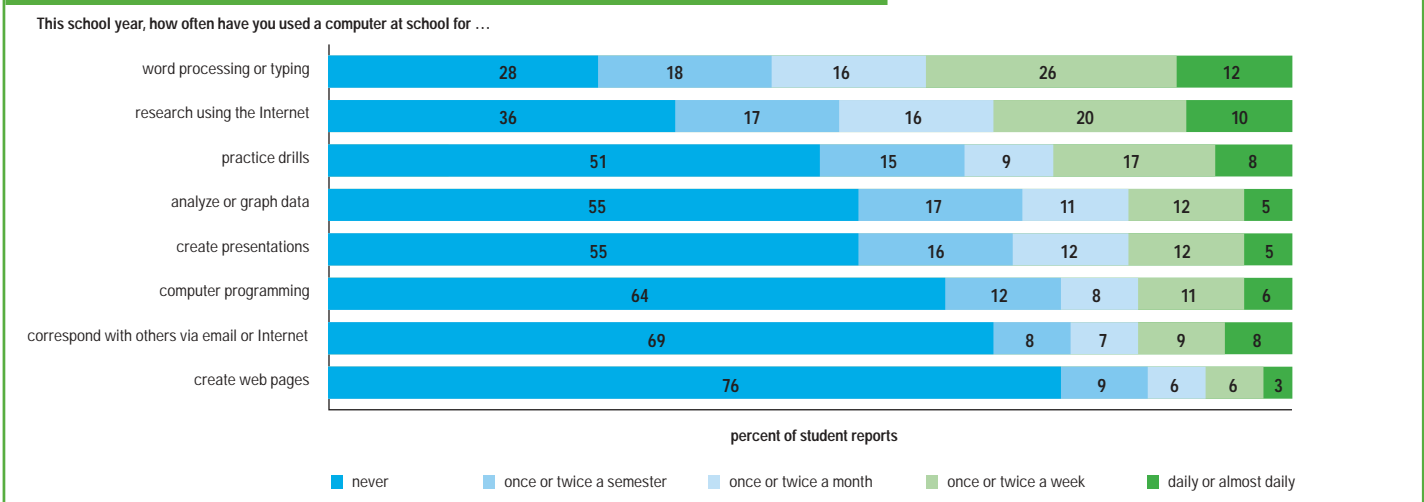
HOW ARE STUDENTS AND TEACHERS USING TECHNOLOGY?

Most students and teachers in the Chicago Public Schools (CPS) use technology infrequently and for a narrow range of activities. Only 19 percent of students in grades 6 through 10 use technology intensively at school. These students analyze/graph data or create presentations about once a week, as well as perform common tasks such as word processing or Internet research almost every day. The typical CPS student is a moderate (38 percent) or limited (25 percent) user of technology at school. Moderate technology users perform basic tasks once

or twice a week and activities such as analyzing/graphing data once or twice a semester. Limited technology users are only exposed to basic tasks (word processing and Internet research) and do these less frequently (from once or twice a semester to once or twice a month). Another 17 percent of students say they never use technology at school for any of the above activities. A breakdown of the tasks students use computers for shows very little high-level work.

Computer use among teachers mirrors that of students. The typical CPS teacher uses technology either not at all or in a limited way to prepare classroom lessons, and integrates

How Are Elementary and High School Students Using Technology?



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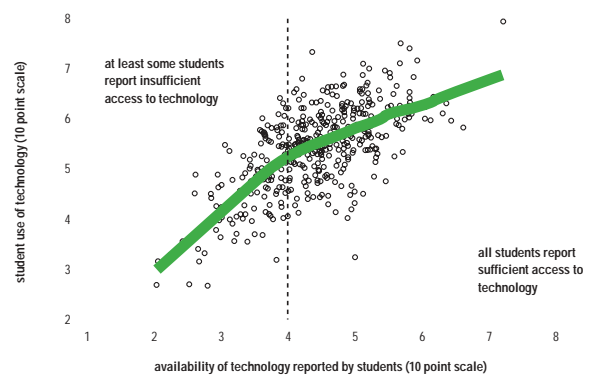
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The Consortium on Chicago School Research is an independent federation of Chicago area organizations that conducts research on ways to improve Chicago's public schools and assess the progress of school improvement and reform. Formed in 1990, it is a bipartisan organization that includes faculty from area universities, leadership from the Chicago Public Schools, the Chicago Teachers Union, the Chicago Principals and Administrators Association, education advocacy groups, the Illinois State Board of Education, and the North Central Regional Educational Laboratory, as well as other key civic and professional leaders.

The Consortium does not argue a particular policy position. Rather, it believes that good policy is most likely to result from a genuine competition of ideas informed by the best evidence that can be obtained.

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Relationship Between Technology Availability and Students' Use is Strongest in Schools with Insufficient Access



technology into classroom lessons either moderately or in a limited way. About a third of teachers use technology themselves either never or rarely. Although teachers integrate technology into assignments for their students more than they use it for their own professional work, few integrate technology in any significant way.

The modest use of technology by students and teachers cannot be attributed to a lack of belief in technology's benefits. The vast majority of students and teachers believe computer technology has educational and occupational benefits. For example, most teachers agree that technology should be used to

develop critical thinking, strengthen students' basic skills, and improve standardized test scores.

LIMITED AVAILABILITY

One obvious obstacle to increasing the use of technology in the classroom is the limited availability of hardware and Internet access. Chicago lags behind other US cities in providing computers and Internet access, especially at the classroom level. This is particularly true in high schools. Students are unlikely to use technology frequently if they have limited access to computers. Small improvements in computer availability are associated with substantial increases in student use, especially in schools with limited access.

THE DIGITAL DIVIDE

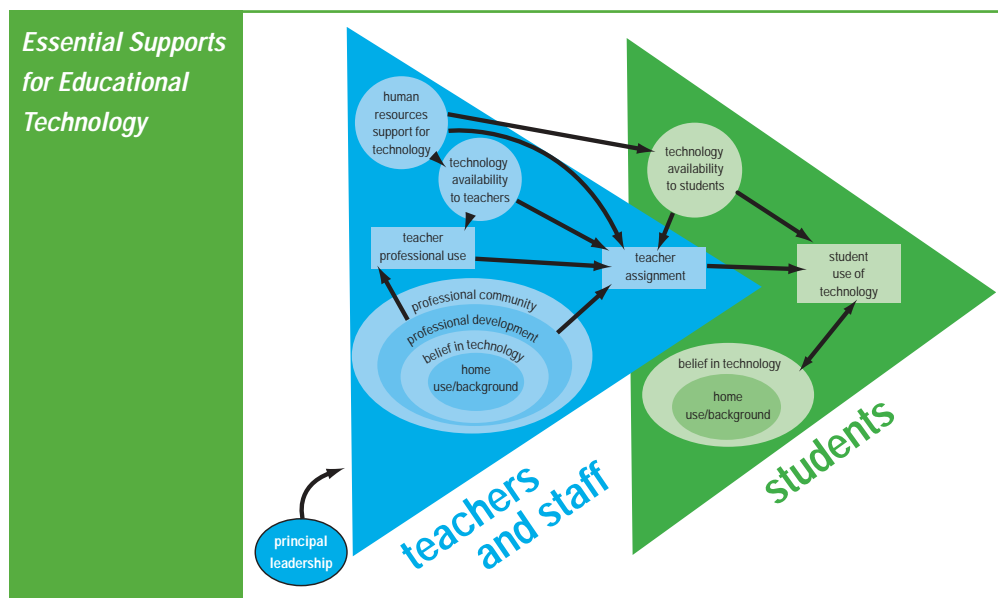
National studies have shown that a "digital divide" exists among the information rich and the information poor.¹ Looking at equity issues between students, between teachers, and between schools, our findings confirm that a digital divide does exist in Chicago students' use of computers and the Internet at home. In general, however, schools do not seem to be magnifying the problem. Where disparities along the line of the digital divide do exist, they are small. This is not to say that students and teachers in all schools have the same levels of technology availability, or that they are using it to an equal degree. They do not. However, **differences in a school's availability and use are not strongly related to the racial composition or family income levels of students in the school.** There are only two significant exceptions: First, teachers at selective admissions high schools assign more tasks that require their students use technology, and their students report higher levels of computing resources. Second, elementary schools with predominantly African-American enrollments show slightly lower levels of access to computers than other types of schools. Although schools are not exacerbating the digital divide, they are not compensating for substantial inequity in home use.

ENCOURAGING TECHNOLOGY USE IN SCHOOLS

Creating technology-rich learning environments takes more than a one-time infusion of computers or even a few professional development seminars on basic use. Many distinct components are necessary to make technology a regular part of

students' academic lives. The two most important are adequate resources and the development of teachers' capacity to integrate technology well.

ADEQUATE RESOURCES include computing hardware and human resource support, which the typical CPS school has yet to secure. Schools must find funding not only to purchase equipment and software, but also to ensure that technical assistance and upgrades will be available. The scarcity of computing resources in CPS high schools in particular may be lessening with the Chicago Board of Education's new initiative to provide laptops for high school teachers and administrators and to establish networks in schools.



Students are unlikely to use technology frequently if they have limited access to computers. In fact, availability explains almost half of the differences between schools when comparing their students' use of computers in school.²

DEVELOPING TEACHERS' INDIVIDUAL CAPACITY builds on previous Consortium research on the necessary organizational supports for quality professional development. Teachers require:

Time to participate in training and to evaluate new ideas
Principal Leadership to provide goals and secure resources

A **Professional Community** where teachers can collaborate and learn together

Teachers appreciate professional development that produces classroom-ready lessons so that evaluating and working through new skills can take place at the same time. Many teachers also prefer professional development that models techniques in the classroom and encourages interaction and collaboration among colleagues. Additionally, the presence of an expert at the school

who is knowledgeable about technology's capabilities can greatly facilitate teachers' adoption of new practices. A technical coordinator provides many kinds of support to teachers—from ensuring reliable access to working hardware and software, to identifying quality professional development opportunities and serving as an advisor before, during, and after implementation.

ENDNOTES

¹ See the National Telecommunication and Information Administration's *Falling Through the Net: Defining the Digital Divide* (Washington, DC: US Department of Commerce, 1999), xiii.

² Computer availability explains about 45 percent of the school variance in student computer use beyond schools' demographic characteristics and student-level characteristics alone.

MORE ON THIS TOPIC

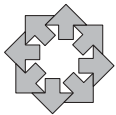
This research brief is based on findings from a full-length report, *Educational Technology: Availability and Use in Chicago Public Schools*. This report is available for download or purchase on the Consortium's website at www.consortium-chicago.org.

Contents of the full report include:

How Do Chicago Public Schools Use Educational Technology?
(Including examples of good technology use)

The Digital Divide: Equity Analysis of Technology Availability and Use

What Encourages Technology Use in Schools?
(Including examples of strong leadership leading to strong technology use)



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