

# Technology's Priceless Value in Education

by Alize Bhojani, Devon Chandler-Brown, Danielle File, and Karlyn Kurokawa

## Introduction

Technology is becoming increasingly integrated into many aspects of modern American life. It is used at home, in the workplace and is an important resource for facilitating education. The internet has become the locus of basic research for every level of education, ranging from elementary school students to doctoral candidates; it is employed as a means of recording information and is used to provide a venue for alternate means of educating (like the use of student created films or internet-based projects). Therefore, students who do not have an educational environment with access to technology experience fewer ways of learning, which disadvantages them in comparison with those who have the opportunity to utilize technology effectively.

In Seattle Public Schools, the ratio of students to computers is 5 to 1, making it difficult for students to access the few technological resources available.<sup>1</sup> In some classrooms, the disparity is even greater. This means that students have a difficult time gaining the fundamental computing skills that are necessary to succeed in business, politics, education and many other professions. In order to rectify this problem, more money needs to be acquired and appropriated for the purposes of improving the schools' technological resources because students who have access to technology in their education will have greater chances for future success.

In this way, technology is a resource that helps to level the playing field in a society where class and race gaps still distinguish who has access to certain life chances. Unfortunately, it can also widen these gaps when individuals cannot obtain access to technological resources and training. Therefore, it is a moral and legal obligation, under the equal protection clause of the Fourteenth Amendment, for public education to provide the best possible access to technology to all students. This access serves to narrow the gap between social groups because it gives students from underprivileged groups the tools necessary to succeed along with their better advantaged peers in America's technology-driven business, science, education and politics. If the goal of education is to provide the greatest number of chances for success, which in modern culture requires knowledge of computers and other technology, then technological access is imperative in all schools.

Funding is crucial to obtaining technology. No single source of funds or donations will fulfill the district's technological needs, but a combination of many sources will yield the greatest results. Although an increase in available technology is the first step in creating greater student access to technology, once it is obtained, there need to be more programs that allow students and teachers to learn how to use the technology. Increased numbers of classes, technology oriented after school programs, and integration into core curricula are some initial places to start; however, this is a long-term process and must be implemented in small steps. By acquiring money to obtain and incorporate technology in Seattle Public Schools, students' educational quality would improve because the access to technology would increase their opportunities by better preparing them for our technology-driven society.

## **Background: Technology and Equal Access to Education**

The extent and relevance of “equal protection” that the Fourteenth Amendment guarantees in terms of education has been fought over in many court cases, ranging from the landmark Supreme Court case of *Brown v. Board of Education* in 1954 to the recent *Parents Involved in Community Schools v. Seattle School District*. The underlying similarities among all cases like these are the attempts to give students equal access to education, regardless of race, socioeconomic status or gender.

Regardless of what stance citizens have taken in past court cases, a vast majority agree on one belief: a main goal of education is to give all students the greatest number of opportunities for success. The use of technology in education has proven to accomplish this goal. This background section will demonstrate the importance of technology in terms of improving the quality of education for all students, helping to bridge the socioeconomic gap between classes and thus, better preparing all of them for life in a technology-driven society.

### *The Importance of Technology in Terms of Improving the Quality of Education*

It is crucial that institutions provide the proper tools for students in order to best prepare its students for the future. Allen Glenn, a professor in the College of Education at the University of Washington, states that there is a community expectation “that no school can prepare students for tomorrow’s society if new technologies are not available for students.”<sup>2</sup> Thus, because there are technological breakthroughs that constantly affect and change society, it is important that students gain the proper exposure to and experience with technology in order to best prepare them for success in their lives beyond the classroom.

In addition to its applications in society, technology has proven to be beneficial to students because it improves their quality of education in several ways. Technology has increased student “motivation, improved student attendance [. . . and] improved student retention”<sup>3</sup> among students who have access to it. The use of technology to utilize different methods to teach and re-enforce concepts and ideas in the classroom has also shown its benefits. According to one study funded by the U.S. Department of Education, students from nine technology-rich schools showed that “the use of technology resulted in educational gains for all students, regardless of age, race, parental income, or other characteristics.”<sup>4</sup> These “educational gains” ranged from “rising scores on state tests [. . . to] improved placement in jobs.”<sup>5</sup> From this study, it is evident that the proper use of technology in the classroom has proven to help *all* students, regardless of their differences (race, social status, etc.), thus giving them all greater chances for success in the future.

In another study conducted by Apple Computer, Inc. over the course of ten years, data shows that “students provided with technology-rich environments [. . .] explored and represented information dynamically and in many forms; became socially aware and more confident; communicated effectively about complex processes; became independent learners and self-starters; knew their areas of expertise and shared that expertise spontaneously.”<sup>6</sup> The various aspects in which technology has improved the quality of education, ranging from increasing students’ confidence to encouraging the sharing of their knowledge, demonstrate the importance of its extensive use in education.

### *The Importance of Technology in a Technology-Based Society*

Although there are other approaches that help to develop students' necessary skills of communicating their ideas effectively and help them to become more "independent learners," (which include the incorporation of more hands-on activities and group projects), the use of technology achieves these goals *and* prepares them for the increasingly technology-based world.

As of February 2007, the Pew Charitable Trusts, a non-profit organization that conducts research because it is dedicated to finding "fact-based solutions and goal-driven investments to improve society,"<sup>7</sup> reported that "nearly half (47%) of all adult Americans now have a high-speed internet connection at home [. . . and] the percentage of Americans with broadband at home has grown from 42% in early 2006 and 30% in early 2005."<sup>7</sup> In another survey conducted by the Pew Charitable Trusts, 1,100 people between ages 12 and 17 were asked about their Internet use. The findings were published in July 2005 and showed that "about 21 million teens use the Internet and half of them say they go online every day, [. . .] 76 percent of online teens get news online, which is 38 percent higher than four years ago [. . . and] 31 percent use the Internet to get health information, which is 47 percent higher than four years ago."<sup>8</sup> Evidently, teens have increased their internet use over the past years, and with no sign of this trend decreasing in the near future, it is critical for students to receive the proper exposure to technology and its capabilities in order to be productive, efficient and successful in our modern society. Without experience with technology, they are at a serious disadvantage for succeeding in a technology-driven world.

### *The Importance of Technology in Terms of Bridging the Class Divide*

Not only is the incorporation of technology essential to improving the quality of education, it also necessary to help bridge the gap between social classes. According to Charles Moran, an English Professor at University of Massachusetts at Amherst, and Cynthia Selfe, a Professor of Composition and Humanities Department Chair at Michigan Technological University, "The poorer [that] students and their families are—and in this country wealth is highly correlated with race—the less likely they are to have access to computers and, later, the less likely they are to gain access to high-paying, high-tech jobs in the American workplace."<sup>9</sup> Therefore, students whose families are unable to provide them access to technology at home depend on receiving the exposure to and experience with technology at school. If schools are unable to offer the appropriate exposure, then there is little hope that they will be able to compete with the higher income families who have access to computers and other forms of technology. Thus, because research shows that the use of and access to technology in schools has enhanced the educational quality for *all* students, regardless of their differences in race, gender or socioeconomic status, it is important that all students have equal access to technology in the classroom.

Once again, if the ultimate goal of education is to give students the greatest number of and most equal opportunities for success, then neglecting to level the playing field between classes actively hinders that goal. In other words, failure to learn with technology at schools effectively maintains the status quos of race, gender and socioeconomic status. Without technology as part of *all* students' education, those without access to it will be put at a disadvantage in terms of achieving success in the future.

## Problem

Currently, there are great disparities in the amount and functionality of technology within Seattle Public Schools. In an interview in 2000, the newly appointed head of Seattle Public Schools' technology department, Judy Margrath-Huge admitted, "Not all the schools have been wired [...] We have different levels of needs. Some people are way farther ahead than others."<sup>10</sup> Since then, new plans have been outlined and implemented in efforts to equalize technology access across schools; however, there are still reasons to believe that computer access remains unequal.

As a component of our research, we called two middle schools and two high schools within the Seattle Public School District to inquire about the current student to computer ratios are of each school. With this information, we hoped to see if disparities still remain within the district between the more wealthy schools and the less affluent ones. We chose to compare Rainier Beach to Ballard High School and Aki Kurose Middle School to Eckstein Middle School based on the fact that they have the greatest and least amount of students eligible for the free and reduced lunch program for each level of education, respectively. None of the schools could tell us what their student to computer ratio or an estimate of the number of computers they had available for student use. This led us to believe that schools are not measuring the amount of technology available to students, making it impossible to ensure equal access to it.

Although our inability to gather information about the student to computer ratios implies that we have no statistics to compare current technology access within the schools, using information obtained through personal observations during our tutoring and through a conversation with a Ballard High School graduate, we believe that there is still significant inequality in technology availability within the Seattle Public School District. It seems that despite claims that funding is distributed with the specific needs of schools in mind, schools in less affluent neighborhoods continue to have less access to technology. In this way, technology accessibility appears to be creating an additional inequality for students. This realization is discouraging given that "since the 1950's, public policy has sought to provide greater equity—that is, equality of educational opportunity for all Americans."<sup>11</sup> Technology implementation could serve as a means of providing greater equity by making academic resources and curriculum more universally accessible; however, it has not yet been able to do so effectively.

Obviously, the goal of the Seattle Schools is not to create inequalities but to do the opposite. Fostering equal opportunities is so fundamental that the vision of the Seattle Public School District is that "every student—regardless of race, ethnicity, gender, or socioeconomic background—will graduate and be fully prepared to lead a successful life."<sup>12</sup> Technology is becoming a greater component of success and as a result, the vision of the district implies a need for greater access to technology for all students to better prepare them for the future. The original technology release in the late 1980s and early 1990s provided equal computers and resources to all schools; however studies have found that since 1997, poorer schools are falling further behind more wealthy schools in terms of technology modernity and availability.<sup>13</sup> This could have an effect on how well students are prepared for the world when they graduate and shows that the "regardless of race, ethnicity, gender or socioeconomic background" clause of the Seattle Public Schools' vision may not apply to technology assignment.

Even in situations where technology is available, there may not be enough to be beneficial. In 2005, one study found that the ratio of students to computers in schools nationwide was 3.8 to 1.<sup>14</sup> In comparison, the students to computers ratio within the Seattle School District is 5 to 1, showing that Seattle students have less access to technology compared to other students across the nation.<sup>15</sup> However, the functionality (that is, whether or not they had updated software or were working properly) and availability (essentially when and for how long computers are available to students) of the computers were not taken into account in the study. Thus, the actual student access to computers may be even less than the ratio suggests, particularly in schools that cannot afford to update software regularly.

The study also found that schools with higher minority enrollment had a greater ratio of students to computers than schools with fewer minority students.<sup>16</sup> Aki Kurose Middle School, which has a high minority enrollment, seems to demonstrate this trend. It has only one computer lab with less than thirty functioning computers available to a student body of over four hundred. Its printers are unreliable and cause the delay of assignment deadlines simply because students cannot print their work. This reliance on failing technology is used as an excuse for wasting class time and engaging in less focused academic work which should not happen at any educational level (see Appendix 1).

With less computer access at school, many minority students may be expected to use computers outside of class in order to experience the same technological benefits as their district-wide peers. Unfortunately studies show that black and Latino students generally have less access to computers and internet at home than white students, further compounding the problem of low technological availability at school. In the same study mentioned above, it was found that 85% of white or Asian students have computers at home while only 54% of black or Hispanic students have computers at home.<sup>16</sup> Since schools with high minority enrollment tend to have more students that face financial difficulties than schools that are predominately White (as seen by the correlation between number of minority students and percentage of free and reduced lunch qualifying students), racial demographics must also be taken into account when assigning technology within the district.

Difficulties with at-home access are also applicable to a broader socioeconomic issue. A study conducted in 2003 by the U.S. Census Bureau found that only 47% of children in families with incomes of less than \$25,000 have a computer at home while 97% of students in families whose income exceeds \$100,000 have computers.<sup>17</sup> Since studies have shown that “having access to computers at home correlates positively with student achievement,”<sup>18</sup> it is clear that these students are also at a disadvantage compared to their peers. Yet, based on the current technology distribution plan of the district, it seems that the different levels of home access are not taken into account when budgeting for and assigning technology to schools within the district. Students with less at-home access must be given more opportunities to use computers at school for educational purposes.

Because of the notable disparities in technology access between various socioeconomic groups, race/ethnicities and household compositions, the term “digital divide” has been developed to address the widening technological gap.<sup>19</sup> As newer and more efficient technology continues to flood society, the gap in technology access of students (and the broader population) is widening,

increasing the inequalities in education through technology and creating greater disadvantages for students with limited technology access. The U.S. Department of Education declared that it is necessary “to assist every student in crossing the digital divide by ensuring that every student is technologically literate by the time the student finishes the eighth grade, regardless of the student’s race, ethnicity, gender, family income, geographic location, or disability.”<sup>20</sup> This is a substantial challenge that requires attention to *all* of the factors mentioned above such as computer functionality and availability and at home technology access. Access to technology within education is crucial to narrowing this gap and giving students the best possible opportunities.

In order to provide students with the instruction and materials they need to succeed technologically, the school district must be properly equipped. Although the Seattle Public School District has an unusually large budget, it is also the largest district in the state of Washington and is in constant need of more funding. As faculty and administrative salaries continue to absorb a higher percentage of the district budget, less money is available for purchasing textbooks and pencils, let alone computers and printers.<sup>21</sup> There is great need for increasing student technology access and the use of technology for education, but it is difficult to address these problems without first addressing the limitations imposed by district finances.

## **Proposal**

Through extensive research, we found that the Seattle School District utilizes levies in order to gain necessary funding for technology.<sup>22</sup> We could not locate information on existing grant application procedures, other than mention of the recent loss of the Bill and Melinda Gates Foundation Grant.<sup>23</sup> Thus, we believe that the Seattle School District needs to turn its focus from public levies to other methods of gaining funds. We propose that the district create a system specifically for grant research and submission of grant applications to increase funding and, subsequently, technology accessibility for students.

This system should be implemented at two levels: the district level, and then at the individual school level. At the district level, a team should be created to specifically find grants and write proposals on behalf of the district. At the individual school level, this team would also distribute information for schools and teachers on grant opportunities available. An organization that may be helpful in finding and distributing such information is School Grants, which was created specifically for school districts with few resources but great need. The website provides free access to grant writing tips, successful proposals and grant opportunities. School Grants also publishes a free newsletter that is emailed to subscribers twice a month. The newsletter ranges from fifteen to twenty-five pages and includes grant writing tips, upcoming grant deadlines and new grant opportunities.<sup>24</sup> The Seattle School District would use this website to create a basis for a newsletter or information packet sent out to all the schools in the district. This information packet would include grant deadlines, eligibility requirements and application information. The packet would also include tips on how to write grant proposals and the district could organize grant-writing workshops to allow teachers and administrators practice in writing successful proposals. The information packet would be sent out once a month, thus providing a convenient grant resource designed specifically for the educators and schools of Seattle Public School District. In this way, specific schools and teachers could apply for grants and funding and fulfill

eligibility requirements which the school district itself cannot meet.

To aid in the development of such an information system, we researched numerous not-for-profit agencies, corporations and foundations throughout the United States with programs to help schools gain access to funding and technology. However, the processes for applying for grants are often difficult to sift through because they are so numerous and are often accompanied with perplexing eligibility requirements. Therefore, listed in Appendix 2 are some examples of the more prominent technology and education grant programs available to school districts as well as individual schools and teachers.

While gaining funds for improved technology is important, its success as a means of creating greater student access to technology must be observed in a measurable way. One good measure is the student to computer ratio. The current district-wide ration is 5:1 and the goal according to the 2007-2011 Technology Plan is 4:1, which is still worse than the national average (3.8:1). Perhaps a timeline of smaller segments using this measure would be a better goal. An improvement of .5 students per computer per year (year one is 5:1, year two is 4.5:1, etc.) would provide a way to track progress in smaller intervals. Also, a goal for increasing the number of technology-related classes at the school level would provide a measure of success because classes not only provide student access to the technology, but also require an improvement in existing technology to increase. This means that the access and implementation would have improved.

## **Conclusion**

Technology is a major part of modern society. It is practically impossible to travel anywhere without encountering computers, automated terminals and various forms of media. Access to technology is crucial to students' future success in America's modern technology-powered society and it is imperative that students are provided with the skills to excel in such an environment. Without these skills, existing societal gaps continue to widen, perpetuating class and race conflicts. Therefore, it is necessary that the education that students receive works to create the most opportunities for every individual, regardless of their backgrounds.

Funding is the primary barrier to obtaining the technology needed to provide the greatest opportunity for all students; however, there are options to help augment existing resources, including private companies and organizations, in addition to the U.S. Government. With the help of a grant proposals system, we believe that the Seattle School District and its educators will be able to best make use of all the opportunities available. These resources provide the means to increase the number of technological resources.

It is imperative that greater action is taken to increase students' access to computers and other forms of technology in the Seattle Public Schools. Once again, because the ultimate goal of education is to provide students with the most opportunities for success, it is crucial that technology be a part of students' education in order to achieve this goal.

## Appendix 1

The following is the personal testimonial of one of our team members, Danielle File. We believe that her experience best exemplifies all of our experiences with technology—or lack thereof—at Aki Kurose Middle School.

During Danielle's visit to Aki Kurose on November 21, 2007, she observed a dilemma in class that she had never considered to be an issue in her years attending a public high school. A month-long project that eighth-grade students had been assigned was due, but they could not turn it in on the due date because the printer in the computer lab was not working properly. The teacher did not require students to print their projects prior to coming to class because many of them did not have computers or printers at home. Therefore, the deadline relied solely on the school's functioning technology.

Despite the printer dilemma, class was conducted in the computer lab to give students a chance to make any final changes to their projects. As Danielle walked around and witnessed nearly every student doing something other than working on their project, the students gave every excuse imaginable about why they were not academically focused. Some students were sitting at computers that simply did not work because there were not enough computers in the lab. Others could not log-in with their school passwords because the system would not respond. Thus, the students could not save their work on the network, even if they were to do something productive. Many said that they did not need to work on their project because the printer would probably not work until the following Friday, giving them nearly a week to complete an assignment that was already supposed to be due. As she witnessed seven students custom designing shoes on a website instead of working on their science project, it occurred to her that they seemed not only accustomed to, but also reliant on, their school's technological inadequacies.

Two things stood out to her in relation to the technology failure. One was that the unreliability of technology was only adding to the lack of stability and dependency that many students face at home. If they could be assured access to technology when it was needed, they may have had more faith in the school system and become more invested in it. The other realization was that students were using technological difficulties as an excuse for procrastination and were forming habits of assuming that deadlines were not final because of the printer issues.

In life beyond school and even when students reach high school, they will experience higher expectations, and thus they need to develop skills that allow them to stay focused and complete assignments on time. Providing reliable technology is one way to help eliminate excuses for incomplete or late work, which will better prepare them for higher levels of education and for life beyond the classroom.



## Appendix 2

Microsoft is a corporation heavily invested in the educational success of its community. They have many opportunities for funding available to not-for-profit organizations involved with after school education enhancement programs. One program available to K-12 schools is their Fresh Start for Donated Computers program. This program recognizes that many schools depend on donated computers, which often come without proper software licensing or upgrades, to comprise a large part of their technological resources. Therefore, the Fresh Start program fully licenses and upgrades Microsoft software on donated computers for free, allowing the computers to fully function and granting students more access to technology. The application is available year round, and a school may apply once in a year. The application is accessible through the Microsoft Education Center.<sup>25</sup>

Two associations that do not directly fund K-12 schools are the Annenberg Foundation and the Toshiba America Foundation. The Annenberg Foundation accepts applications year round from not-for-profit organizations that are involved in after school programs, and requires that a letter of inquiry be sent before any proposal can be considered. The guidelines for application can be found on their website.<sup>26</sup> The Toshiba America Foundation offers grants of up to \$1000 to teachers of grades 7-12. The teachers must create an innovative math or science curriculum that improves understanding of these subjects to win the grant. The applications may also be found online on their website.<sup>27</sup>

The United States Department of Education also has generous grants and programs available to state educational agencies (SEAs) to improve learning through the use of technology.<sup>28</sup> One such program is the Enhancing Education through Technology (Ed-Tech) State Program, which is a formula grant. Grants are given on a noncompetitive basis based on a pre-determined formula. Under this grant, the Ed-Tech program provides funding to SEAs based on their proportionate share of funding under Part A of Title I of the No Child Left Behind (NCLB) Act of 2001. NCLB funding is allotted according to the student (children ages 5-17) population of the district at the rate of 40% of the average state spending per student.<sup>29</sup> This is about \$4,000 per student (the Washington State average is \$9,594), and any addition to that money could provide a great deal of additional technological resources.<sup>30</sup>

Additionally, the No Child Left Behind Act attempts to raise student achievement and help increase their opportunities in the future by setting up specific provisions intended to provide for the technological needs of schools. For local agencies, at the district level, there is an application process to acquire funds for technology and related resources. Additionally, NCLB dictates, to certain degree, the proportion of funds that can be used for different purposes. This legislation provides an important means of improving technology within the school system.

In order to obtain the money necessary for technology under NCLB, the law requires a plan similar to the Technology Plan for 2007-2011 by Seattle Public Schools.<sup>31</sup> Once this plan is mapped out the Department of Education will approve and issue funds to carry it out.<sup>32</sup>

The money obtained can be used for a variety of purposes but 25% must be devoted to professional development to help educators integrate the technology into the classroom and the

educational community. The remainder can go to *any* technology-related program. This can include acquiring new technology in greater numbers, implementing technology for communication and parental involvement, and adding courses related to technology as well as integrating computers into core courses.<sup>33</sup>

## Notes

- <sup>1</sup> Ovena, Manny. *Technology Plan: 2007-2011*. Seattle Public Schools: Technology Services. 13 Mar. 2007. Seattle: Seattle Public Schools. <<http://www.seattleschools.org>>.
- <sup>2</sup> Glenn, Allen D. "Technology and the Continuing Education of Classroom Teachers." *Peabody Journal of Education*. 72.1 (1997): 122-128. JSTOR. U of WA Lib., Seattle, WA. 20 Nov. 2007 <<http://www.jstor.org>>.
- <sup>3</sup> "Technology's Impact on Learning." *National School Boards Association*. 2007. 20 Nov. 2007 <<http://www.nsba.org/sbot/toolkit/tiol.html#Enhanced>>.
- <sup>4</sup> "Technology's Impact on Learning."
- <sup>5</sup> "Technology's Impact on Learning."
- <sup>6</sup> "Technology's Impact on Learning."
- <sup>7</sup> "Broadband Adoption 2007." *The Pew Charitable Trusts*. 2007. 26 Nov. 2007 <<http://www.pewtrusts.org/>>.
- <sup>8</sup> "Teens Forge Forward With the Internet And Other New Technologies." *The Pew Charitable Trusts*. 29 July 2005. 26 Nov. 2007 <[http://www.pewtrusts.org/our\\_work\\_ektid23330.aspx](http://www.pewtrusts.org/our_work_ektid23330.aspx)>.
- <sup>9</sup> Moran, Charles and Cynthia L. Selfe. "Teaching English Across the Technology/Wealth Gap." *The English Journal*. 88.6 (1999): 48-55. JSTOR. U of WA Lib., Seattle, WA. 24 Nov. 2007 <<http://www.jstor.org>>.
- <sup>10</sup> Branigan, Cara. "From supe to 'nets: Seattle Public Schools taps a superintendent as its new technology chief." *eSchool News*. 31 July 2000. 25 Nov. 2007 <[www.eschoolnews.com](http://www.eschoolnews.com)>.
- <sup>11</sup> "Public Education in the United States." *Microsoft® Encarta Online Encyclopedia*. 2007. Microsoft Encarta. 26 Nov. 2007 <<http://encarta.msn.com>>.
- <sup>12</sup> "School Board-Seattle School Board Vision, Values, Beliefs, Goals and Mission." *Seattle Public Schools*. 2007. 27 Nov. 2007 <<http://www.seattleschols.org/area/main/index.dxml>>.
- <sup>13</sup> Yau, Ray. "Technology in K-12 Public Schools: What Are the Equity Issues?" *The Mid-Atlantic Equity Consortium*. 1999. 26 Nov. 2007 <<http://www.maec.org/techrev.html>>.
- <sup>14</sup> Lewis, Laurie and John Wells. "Internet Access in Public Schools and Classrooms: 1994-2005." *National Center for Education Statistics*. U.S. Department of Education. Nov. 2006. 23 Nov. 2007 <<http://nces.ed.gov/pubs/2007/2007020.pdf>>.

- <sup>15</sup> Ovena.
- <sup>16</sup> Lewis and Wells.
- <sup>17</sup> “Computer Use in 2003.” *U.S. Census Bureau*. 2003. 28 Nov. 2007 <[www.census.gov](http://www.census.gov)>.
- <sup>18</sup> “Computer Use in 2003.”
- <sup>19</sup> Yau.
- <sup>20</sup> Lewis and Wells.
- <sup>21</sup> Bach, Deborah. "Seattle school district gets a balanced budget-But good financial news is one-time only." *Seattle Post-Intelligencer*. 23 June 2005. 22 Nov. 2007 <<http://seattlepi.nwsource.com>>.
- <sup>22</sup> Ovena.
- <sup>23</sup> Shaw, Linda. “Gates Foundation exec pans Seattle school district.” *Seattle Times*. 20 Oct. 2005. <[http://seattletimes.nwsource.com/html/localnews/2002571939\\_gates20m.html](http://seattletimes.nwsource.com/html/localnews/2002571939_gates20m.html)>.
- <sup>24</sup> Fernandez, Donna. "Welcome to School Grants." *School Grants*. 1999. 24 Nov. 2007 <<http://www.scholgrants.org/index.htm>>.
- <sup>25</sup> “Microsoft in Education.” *Microsoft*. 2007. Microsoft Corporation. 20 Nov. 2007 <<http://www.microsoft.com/education/default.msp>>.
- <sup>26</sup> “Grants.” *The Annenberg Foundation*. 2007. The Annenberg Foundation. 19 Nov. 2007 <<http://www.annenbergfoundation.org/grants/>>.
- <sup>27</sup> “Grants.”
- <sup>28</sup> “How to Apply.” *Toshiba America Foundation*. 2007. Toshiba USA. 19 Nov. 2007 <<http://www.toshiba.com/tafpub/jsp/about/HowApply.jsp>>.
- <sup>29</sup> “Grant Programs: Office of Educational Technology.” *ED Technology Grants*. 15 June 2007. US Department of Education. 22 Nov. 2007 <<http://www.ed.gov/about/offices/list/os/technology/edgrants.html>>.
- <sup>30</sup> Williams, Bob. “2003 Policy Highlighter.” *Evergreen Freedom Foundation*. 12 Feb. 2003. 28 Nov. 2007 <[http://www.effwa.org/main/article.php?article\\_id=300](http://www.effwa.org/main/article.php?article_id=300)>.
- <sup>31</sup> Ovena.
- <sup>32</sup> United States. *No Child Left Behind Act of 2001*.
- <sup>33</sup> United States. *No Child Left Behind Act of 2001*.