

Perceptions of Computer Literacy: A Case Study

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Researchers have noticed that there is a general inequality throughout education systems, our research group has focused on the inequality of access to technology within and across schools. Throughout history there have been differences in the quality of education because of the different resources that communities provide. The introduction to technology is seen with the potential to revolutionized education, and can head in two different ways. Technology has the potential to bridge the gap between the inequalities throughout schools, or it can head in the other direction, widening the gap. We believe that technology has the power and the potential to empower people, giving people a better opportunity to succeed in life.

Unequal access is a big problem that not only seen across schools and communities, but that also is seen inside schools. The first big issue is the inequality across schools and the unequal distribution of resources. All schools do not need the same amount of resources because every school is in different situation. Giving every school the same amount of resources will not benefit every school because some schools need more resources than others do. Some schools will need resources for safety, for example, security systems to protect the computers and to protect the students while they are using the computers. Giving each school the amount it needs will not make schools unequal, but it will actually bring schools closer, in the sense that each school, no matter what their social background is, will be able to give the same education. This would make the competitive field more manageable for everyone and it would give people an equal opportunity to get anything within schools is not available to everyone in the school because there are restrictions and/or certain rules that need to be follow in order to have access. It seems that this sometimes prevents students from using the available access because they think it is too much of a hassle to go through all of that just to get access. If the access was available to everyone, it seems that people will use it more because they can focus on the essential things and not have to worry about the small things.

Knowing if the access provided is being used to its full potential is another problem. One big issue after getting access to the schools and communities is being aware of what to do next. Many people seem to think that getting computers to the school and communities determines total access, but it actually does not. Getting the computers is just the first step of many that follow to obtain "total access". One of the biggest steps in achieving "total access" is perception of knowing how to use computers and how to work with it to get the biggest benefit from it. There are many other things that need to be done to get "total access", but those will be discussed throughout this paper.

From analyzing these problems we developed a question that we have not seen addressed before. One of the reasons maybe is that there is not just one possible answer to this question. The main question is: How do students, teacher, and policy-makers view the computer literacy that each student need? From our main question we developed three main categories of sub-questions: First, are there and where are there differences across and within schools in how computer literacy is viewed? How is the process of getting every one to be computer literate being followed through? How is computer literacy being obtained? Secondly, what resources exist that do and do not serve these goals? Lastly, do people have different information about computer access and resources?

Literature Review

Jay Macleod's piece, *Ain't no makin' it: Aspirations and attainment in a low-income neighborhood* explains that how reproduction theorists seek to find the reasons why the poor and working classes "are at a decided disadvantage in the battle for jobs and better living." This piece also introduces the "cultural capital" which he defines as the general cultural background, knowledge, disposition, and skills that is passed from one generation to the next.

Since most jobs in this society have computer literacy, most schools within the inner-city area lack in computer access. Therefore, its more that likely that

most school within the inner-city area have unqualified computer teachers or many don't have any computer literacy courses for inner-city youth or adults. As a result, students from these schools are denied access to skills needed in higher education and white-collar jobs, denying them the same chances to compete as students from schools with more technology built into the curriculum. Thus, it becomes more difficult to change their socioeconomic status through education or jobs.

Jean Anyon's article, *Social Class and School Knowledge*, focused on the four socio-economic schools: Working Class, Middle Class, Affluent Professional and Executive Elite schools. The article on how students from different socio-economic background experience their education in their elementary years and compares and contrasts their processes of recognizing and using knowledge with how their role will be in their future socio-economic status.

Jean Anyon's thoughts widely fail to mention the fact that some schools do have diversity, resulting in a school within a school. Anyon's piece does not acknowledge that students coming from a working class or middle-class school may beat the odds and achieve high-quality standards. Also, it does not mention that without computer literacy in this time and age it's more likely you will not be successful.

The main focus of David Bolt and Ray Crawford's book, *Digital Divide*, is quality access to technology in the educational system. *Digital Divide* also acknowledges that educators has not handled equality in the access in technology very well, and is not equally useful to everyone in education as it is presently structured.

In this piece the truth finally came out. Most the inner-city schools known in the nation have students who are provided with the access to have computer technology within their schools, but they never instructed on the technology will be useful to them into the future. This generation is suffering in the age of a "psychological holocaust." The "psychological holocaust" refers to the robbery of the education by the school district and some students unwilling to demand for a

education or equal access to computer technology and remain "ignorant." The theory applies to all schools instead of just applying to inner-city schools.

The focus of Nicholas C. Burbeles and Thomas A. Callister, Jr. piece, *Dilemmas of Access and Credibility: Access for Whom?* is how access issues and credibility issues related. The other access issues is the necessary equipment and teaching workshop to provide access to everyone, people need to have technology access, skills, attitudes, dispositions of access and practical access.

This book also states that computer access is limited in schools with poor funding from the school district. The one inner-city school notified from the Digital High School Educational Technology Grant Program of 1997 has received very low assistance from the grant. The school has the computers, yet they are not "wired." This time around computer access is often seen as a luxury rather than a necessity.

The *Williams v. The State of California* case concerns with issue of access to AP courses. The case states that student are mostly overlooked, not informed, or supposedly not qualified to take Advanced Placement courses due to magnet schools, year-round schools, lack of course offerings, and other various reasons. The ACLU has had this case since May 17, 2000. The case has not yet gone to trial.

The case is a reminder of how most schools are not preparing California students to have equal access to compete at a college level. The most important fact of this case is that student are finally speaking out of the mistreatment of the state of California towards students in California schools.

However, we argue that while the *Williams* case does address some of the "basic" needs of education, the lack of inclusion of computers and technology imply that such skills are a luxury rather than a necessity. Schools will not really be "equal" while urban schools are only focusing on conditions of bathrooms while more affluent schools are racing ahead educationally in the *Technological age*.

In 1997 a bill called the Digital High School Education Technology Grant Program was established to provide installation grants and ongoing technology support and staff training grants to provide all high school pupils with basic computer skills to improve pupil achievement in all academic subjects.

The largest weakness in the effectiveness of this legislature is because the bill does not provide a definition for "computer literacy." The legislature states that students will have to be computer literate by the time they graduate from high school. Yet this legislature fails to provide any information about computer literacy. Since a universal definition has not been provided in this bill it leaves individual schools with the option to decide whether computer literacy is met by fulfilling typing requirements or if students must be able to do critical research on the Internet to be computer literate.

Methodology

As student researchers we focused on what we feel is an important part of a student's education. Computer technology and computer literacy have become some of the most essential parts in being successful in the world today. In order to research the importance of this, however, we needed data from a variety of sources, such as interviews (teachers, students, attorneys, and policy makers), surveys, and data from the Internet.

Interviews and surveys were done at both Central and Pacific High. We interviewed and surveyed students from about the same level, academically speaking, and from the same grades so that we could compare them in the quality of education the children at the two different schools were receiving. As researchers we acknowledge the fact that in order to compare two schools or students they must be similar in more than one way. We realized that our data would not be very accurate or fair if we compared two students who were different in a way that could negatively impact the accuracy of our research and our overall findings. For example, we could not compare a student who was enrolled in Advanced Placement classes and had attended the school for two or

three years to an English Learner who has only been in this country just a few months. We also made sure to include students from different ethnic and socioeconomic backgrounds from both schools so that we could compare them in order to seek the role these things played in the education of these students. The interviews were conducted during the student's free time during their summer school sessions. We conducted the surveys during class-time to two classes at Pacific and Central High School. Most students completed this one-page survey in five minutes.

Teachers were interviewed during their breaks when they did not have class in session. Most of the teachers interviewed were teaching a make-up course in which students were taking math, science, or some sort of computer course. During the regular school year the teachers taught college preparatory or lower level courses. They were very cooperative in sharing with us their insights about their feelings that the students and teachers were lacking regarding computer literacy and how technology was being applied at both schools.

Policy makers were interviewed, such as legislators, senators, superintendents, and attorneys. We interviewed these people who ultimately shape and make important decisions in the educational system. Our conversations with these decision-makers helped us reshape many of the questions in our surveys and interviews for both teachers and students. The interviews with the legislators were conducted by phone as well as in person. The senators interviewed included Marco Firebough and Bill Maybe, Chief of Staff for Richard Palanco. They both helped shape our research by sharing their interesting insights about the educational system with us. Thanks to their cooperation and the help of John Rogers and Jeannie Oakes the interviews with these senators were made possible. Our meeting with the state appointed superintendent of Central Unified School District helped shape our study on the school system and computer technology by giving us his overall perspective of what he felt computer literacy was and how it was applied to our schools. The

interviews with the attorneys from the ACLU, Catherine Lhamon and Rocio Cordoba, helped us mold our questions and research in general. They provided us with information about cases, such as the Williams case, which helped us analyzing our data and to further research things that we otherwise would not have researched if we had not interviewed them.

Surveys were distributed to students attending summer school for both Central and Pacific High. The students surveyed were taking a make-up math, science, or some sort of computer course. The students were at about the same level, academically, so that it would be easier to compare. All of the surveys distributed asked the same questions, although the answers to the questions varied upon the students and schools.

Results from the surveys taken from the Digital Divide issue *Teaching to Change* was applied to this research although we did not administrate of create those surveys. The surveys were also conducted at Central and Pacific High.

We decided to study these two schools to be able to compare and contrast two different schools. Central High school is an inner-city school made up primarily of Latino and African-American students, and 97% of students qualify for free/reduced lunches. In contrast, Pacific High School is a diverse beachside community where only 16% of students qualify for free/reduced lunches. Pacific High's student population is often referred to as an ethnic microcosm of California's population. We collected this self-reported data through the CBEDS data posted on the California Department of Education Internet site. This data included the amount of computers at the schools, how many of those computers were connected to the Internet, what the school populations were, and basically the overall demographics of the schools. This data was collected so that we could compare the numbers, or ratios, provided by the schools versus our findings through our own research.

In conclusion, all the information and data provided throughout our research, both through talking to people and written data, was essential in our

overall research. All of the information provided helped shape our research and our overall findings.

Policy-Maker Perceptions

In California's educational community, we felt it was necessary to interview and gather different perceptions on the issue of technology in the educational curriculum. We felt it was necessary to interview policy-makers that are influential with the decisions and policies of the State. We found that most of the policy-makers stated that technological skills are important. However, upon investigating deeper into their views, we found that there were differences of the degree they saw of the importance with technology.

We found many policy makers who felt that "computer literacy" was an essential skill to acquire in order to succeed not only in the college life but also in our society's technological world. Many agreed that in a fast-paced, multicultural digital world, it is now a necessity that all students are computer literate by the time they graduate from High School. Some were critical and frustrated with the efforts and commitment of schools and districts to push computer literacy into the educational curriculum. Assembly Member Marco Firebaugh expressed his concern on the great disparities that fall on low-income families and neighborhood because the grants and funding may almost always be based on academic performance. Since most of these schools lack of the basic essential equipment already; such as books, a safe learning environment, access to AP or Honors classes, they are unable to compete with other affluent and privileged schools that already have all the basic skills. The students are at an unequal starting point to begin with and have to struggle to catch up to the other privilege students. Firebaugh stated with honesty that the "sad reality in California today is that there are many High School students that cannot avail themselves effective technology training...It's a function of schools; it's a function of how we disperse resources to various schools." He feels all California schools should have

implemented technology into its curriculum to help give students the basic skills to be computer literate.

In agreement with Mr. Firebaugh, Senator Polanco is also an advocate for technology in the classroom and feels that students should have a right to equal access in technology. He feels that technology can take two routes 1) to strengthen democracy and communication amongst people and 2) if not shared, to widened the "Digital Divide" and leave people behind. The solution to this problem would be equal money allocation and policy action to improve the district's state. With a disappointment and frustration with schools, he has pursued other outside alternatives for students in California. We agree with Senator Polanco with the idea that computer literacy will bring democracy and give students an equal starting point to compete and survive in our unavoidable technological world.

With the same thought, we found that Assembly Member Anthony Cardenas agreed with the importance of computer literacy. Feeling that students should be computer literate by the time they graduate from High School because of future job skills, he is however, misguided by how the funding and grants are being spread out to schools and students. His misunderstanding was that it was unfair for schools to get the same amount of money for the grant despite the fact that schools serve different number of students. However, the Digital High School grant Cardenas referred to does in fact take into consideration the number of students in each school, allocating \$300 per student in award money. This simple yet important misunderstanding made us think twice about whom the public trusts in decision making with the education of our students.

In contrast with these views, many other influential people felt that computer literacy was not a priority and can only be used as a tool. We interviewed the Superintendent of Central School District and found that he felt that schools had other priorities to take into matter beforehand. These matters include lack of books, unsafe learning environment, dilapidated buildings, uncredentialed teachers, etc. These matters were more dire challenges schools

had to face and find solutions to before making computer literacy a main concern. With the same thought, we received feedback from a Fiscal Crisis Management Assessment Team (FCMAT) representative who claimed that FCMAT had established "legal and professional standards" that they consider being a foundation. These standards include computer technology and its importance for student achievement. These standards are made to have progress in the process of improving the educational standards. Yet, we see from our research at Central that FCMAT has not taken any actions to see that these standards are put into action. His words do not reflect his actions and therefore he does not find computer literacy an importance that can benefit students. We found that both felt that computer literacy is the responsibility of schools to provide to students with vocational skill only. It seemed to us that they felt that it should be the students' own initiative to pursue higher computer education.

Interestingly enough, the mission statement posted in the main hallway at Central High School states the school's commitment to providing students with meaningful access to technology, highlighting the school's supposed commitment to education. However, whenever asked about the discrepancy between such words and reality, we were brought back to priorities mentioned above.

Similarly, we found that the Superintendent of the Pacific School District felt that computer literacy was not a priority because of his lack of personal experience with computers and their applications. This disadvantage resulted in his misconception that computer literacy can only be used as a tool and is not essential for students to gain to be able to compete in a higher academic level. He admits that he is not computer literate but his children are. We take his views an importance because he is both influential and is suppose to work in the best interest if students. If his views of computer literacy are only blocked by his lack of experience with it, we feel he is unable to comprehend the possibilities and benefits that come hand in hand with computer knowledge. He did mention,

however, that students in Pacific School District are being exposed to classes that would result in computer literacy by completion of high school.

Teacher Perceptions

Despite the socioeconomic and ethnic differences of Central and Pacific High school, there is a general agreement from both schools that a significant level of computer literacy is necessary to compete in today's advancing society. Consequently, all teachers felt that the access to computer technology and hardware was more of a necessity now than ever for high school students. The teachers did, however, differ in the important definition of what computer literacy actually was and the role that teachers could play with the addition of technology.

In general, the teachers at Pacific High School felt that school provided significant support and encouragement for the incorporation of technology into their curriculum. The consensus among these teachers was that all students needed more than "low level typing skills." Because of this belief and since most of the students at Pacific High already owned a computer at home, much of the faculty required the use of technology and the Internet in many of their assignments. One teacher felt that students have "improved their commitment to the education" because of the use of technology, while an English teacher felt that word processed papers are "taken more seriously this way." Many teachers have their students on the computer and the Internet regularly as they require that the students look up information and even do their homework online.

Through online methods of communication, teachers at Pacific High are not only teaching computer literacy, but more importantly, also establishing a closer relationship with their students that transcends the classroom environment. Students who turn in homework via e-mail or through an online website have the opportunity of receiving immediate feedback on the work they have done. A psychology teacher at Pacific feels that online communication allows him to better care for his students. All these perceptions among the

teachers create access to a culture of higher learning and thought for the students of Pacific High School.

Yet, our research at Central High School uncovered a different perception about the level of computer literacy that is needed by every high school student. More importantly, the teachers at Central do not feel a high level of support from their school and community in the area of technology. One particular teacher/temporary administrator felt that in order "to get anything accomplished, [teachers] really need to take [their] own reins and pull these resources together."

Ironically, all students at Central High need to complete a semester class called "Computer Literacy" as part of their requirements for graduation. Yet, what is Central's definition of Computer literacy? "Not very much. Typing maybe," said the same teacher mentioned above. "I've seen the computer literacy classes they're very low, basic...as if they are typing classes and that's it."

A better example, however, of technology use at Central High can be seen in the Visual and Performing Arts (VAPA) program, which received a special fund called a Desegregation Grant. When interviewed, the head of the department felt that the technology provided by the grant is preparing students for any type of job they may encounter. Two such classes where one can see the technology being used are "Office Occupations" and "Communication and Design." The latter class, taught by the head of the VAPA department herself, was supposed to be completely wired by the time we visited the campus. Yet, the teacher explained that there had been slight electrical problems and that the only computer with Internet access was one she had to crudely set up with a 33k modem that she brought on her own.

The teacher expressed that although such a limitation existed in her class (the lack of online communication in a "Communication and Design" course), she hoped her students would improve their typing, learn to have several programs open at one time, be able to recreate basic geometric figures on worksheet she had given them, and learn how to use Microsoft Powerpoint. When asked whether the class was for students to get ahead in credits, she expressed that

the class was for both “get ahead” and “makeup” students. “Some of them are lazy and that’s why they’re taking [the class] over,” she said, eyeing a student in the third row. “You see, they know the stuff, they simply didn’t turn in the work.” With such upper level computer classes offered at Central High and the presence of a strong Regional Occupation Program on campus, there seems to be a great push that students acquire the skills necessary to compete in the work force and office environment. Such a push offers students an opportunity for serious work without the need of higher education or critical thinking skills.

Another teacher at Central felt that “if students aren’t reading and writing at a certain level, all this technology isn’t going to help too much.” With staggering standardized test scores and many more problems at their school, the teachers at Central gave the impression that creative use of technology for students was by far not one of the priorities of the faculty.

The biggest contrast we saw between the perceptions of teachers at these two schools dealt with the reason teachers saw computers as important. For teachers at Pacific High, students were using skills they could use in college. At Central High School, teachers felt that it was more important and appropriate to focus was on vocational skills to work in an office.

Student Perspectives

Student perceptions at Central High School indicated that the quality and quantity of computer literacy and access is very poor compared to the information provided by the teachers, administrators, and staff at these two schools. When asked about how many courses the students had taken 67% of the students at Central High reported they had taken only one course, while only 52% of the students at Pacific High reported to had taken one course. When asked how many of the students had taken more than one course at Central High, 21% of the students reported they had. On the other hand, when Pacific High was asked the same question, only 12%of the students said they had taken more than one course. The amount of students who did not take any courses at

these schools varied at the two different schools as well. Only 12% at Central High students said that they had not taken any course, while 36% of the students at Pacific High reported they had not taken any courses in high school.

Of the students that claimed to have not taken any courses at Central High, 9% of the students said that they had not taken any courses due to the fact that they were not informed or aware that computer courses were available to them at their school. On the other hand, 48% of the students at Pacific High reported to have not taken any computer courses because they did not know of any computer courses available to them.

The course that was taken the most at Central High was the mandatory Computer Literacy course that they had to take their freshman year for a total of one semester. More than half of the students, 54%, took this Computer Literacy course. The course that was taken the most at Pacific High was a typing, or keyboarding, a class that was not required since many students had taken this course in middle school. It is important to note, however that 37% of the students who took the keyboarding class at Pacific High only knew of that class. It can, therefore, be assumed that the reason this course was taken was not because they necessarily wanted to be enrolled in that class, but because that was the only class they knew of. This is much like the Computer Literacy class at Pacific High, which was often taken because the students were unaware of any other courses available to them. The same basic skills were taught in both these classes. The skills taught were the same basic typing that was taught to students who attended LA high school twenty years ago.

Other courses that were taken by students at Central High were Business Careers (4%), Beginning computers (16%), Keyboarding/Typing (10%), Computer Applications (2%), Graphic Design (6%), and Computer Design (22%). Other courses that were taken by students from Pacific High included Computer Aided Drafting (9%), Word Processing (4%), Computer Programming (4%), Graphic Design (6%), Web Design (2%), and Physical Technology (2%).

When the students were asked what courses were available to them to the best of their knowledge, 46% of the students from Central High reported to not know of any courses available to them. On the other hand, only 26% of the students attending Pacific High reported to be unaware of any courses available to them. Out of the students who knew of computer courses at Central High (54%), an alarming 26% of those students only knew about the mandatory Computer Literacy course. Although the amount of students who knew of computer courses at Pacific High (74%) increased from that of Central High, 26% of the students who knew of computer courses were only aware of the basic keyboarding/typing class that is offered.

It was noted that most of the students at Central High were only aware of the mandatory Computer Literacy program. When we researched the courses that most of the students surveyed or interviewed were aware of, however, we found that it was Graphics Design, Web Design, and Keyboarding/ Typing.

Besides the data about what students knew about the available classes and the classes that were taken by students, we also found it important to find out where the students from both these schools felt they had access to computers. We asked, Where could you use computers? Our findings from Central High were that 63% of the students that were interviewed felt they had more than one option as to where they have computer access, but 37% felt that they had only one option. Out of the 37% that only have one option, 8% had computer access in their homes and 15% had computer access in libraries, which is not good because there are restrictions. One student said, "I only have access at school, but it is limited to half-an-hour and sometimes less than that." At Pacific High things were not that different because 74% of the student that were interviewed felt that they had more than one option as to where they have computer access, and 26% felt they only had one option. Out of the 26% that only had one option as to where they had computer access, 11% had computer access in home and 10% had computer access in their libraries, which had a smaller gap between access in homes and in libraries. An example of Pacific

High having more access is exemplified as by a students stating, "I use the computer everyday."

The last question asked looked at students' perceptions of how their teachers use computers in their lesson plans and assignments. At Central High some students said that they are assigned required to type their projects and reports. Others said that teachers use computers to illustrate and explain assignments and projects. Finally, one thing that was mentioned a lot was that teachers only used computers to work on grades. Several students said, "Teachers only use computers to type worksheet." Pacific High had some of the same answers, but there were some signs of computer interaction. One example of computer interaction is that students have to do research on the Internet for their assignments and reports. Another example of this interaction is what a student said, the student said, "Teachers use computers to interact with us (the students) through the Internet."

Conclusion and Implications

In the text of the California Digital High School Grant is a provision that requires all high school students to be computer literate by the time they graduate. Yet, the text does not give a useful definition of what computer literacy actually is or what level of computer literacy every high school student should have to be adequately prepared for a 4-year college or the work force. We discovered in our research that such an ambiguity in the state text creates different perceptions of what computer literacy is between various policymakers, teachers, and students at Central and Pacific High School. It was also revealed that there are even differences in the definition of computer literacy between individuals of the same schools.

The research showed a kind of irony about the education process dealing with computer literacy. Computer technology and Internet access are supposed to provide its users a surplus of ready and easy attainable information. Yet, each

of the three different groups - policymakers, teachers and students, did not seem to have an accurate perception of what the other two groups saw in terms of computer literacy and access. This lack of information in the information age created ineffectiveness and confusion in the process of attaining the technological goals of the school.

This ineffectiveness was greatly seen at Central High School. Whereas policymakers in the Central District insisted that Central had become a "wired" school complete with the info-structural hardware needed for Internet access, it was quite disconcerting to discover that only one computer in only one classroom was found to have Internet access. It was also interesting to find that students and teachers defined computer literacy to be very low-level management of the computer software and technology. Yet, many of the students did not feel that their school was even giving them the skills necessary to be what they saw as computer literate.

Although there was some degree of ineffectiveness also found at Pacific High, the lack information there seemed to be geared towards a student lack of understanding of the all the opportunities offered by the school. Two cultures of students were uncovered by the research. One culture was a technologically aware group of students that took advantage of the computer advances of the school and curriculum. Such students were acquiring profound research skills and higher levels of communication. The other culture of students seemed to be garnering only the skills and information necessary to survive in society's advancing workforce and not be a leader in it.

One can imagine that this type of disparity in views of how technology should be actually used continues to many high schools other than Central and Pacific. Our research was greatly limited due to the time allotted for it. The greatest limitation in our research was the inability to talk to more students and teachers. An understanding of the perceptions of computer literacy on a much wider range in both schools would have provided much depth an insight into the problem facing these schools. Additionally, a greater representation of politicians

is needed in further research to reveal perceptions of non-Democrat representatives. Further, more research can also attain additional information on the different perceptions of computer literacy within different groups of students of different schools and even the same school. More observations are required during the course of instruction as to be able to better gauge the skills being acquired by students. Such findings can be beneficial to present to policymakers talked to in this study or others found by future researchers.

However, our research has shown that there is undoubtedly a problem of unequal access to various groups of students. Because of this, policymakers in the State of California dealing with the technology of education must have as their number one priority the completion of a specific and feasible definition of what computer literacy actually is. Such a definition should include a focus that every high school student, by the time they graduate, must have the ability to:

- Word process creatively and effectively
- Find and be critical of the great amount of data available over the Internet.
 - o This includes the use of various search engines over the web.
- Communicate effectively through online methods of communication such as e-mail, chatrooms and instant messengers

Once a universal definition of computer literacy and access is engrained in California policy, schools can begin to organize themselves to effectively prepare their students for the changing technological needs and advances of today's society. Schools could now realize the need for computer labs that would be open until evening hours so as to afford students greater access to the Internet and technology as well as computer courses that support students as creators of more technology and advancements. Such courses should not discriminate

against students due to their economic, language or ethnic background so as to provide more innovators that can create technology sensible to the great diversity of people in American society. It would also be necessary for even teachers demonstrate some level of computer literacy in efforts to receive and renew their teaching credentials. Such a definition of computer literacy and the skills necessary of all high school students would also facilitate legal action by the schools that are not receiving the same access as other schools. Provisions in the Williams's v State of California case or new cases can be inserted to accommodate these newly defined rights and necessities of all high school Students.

It is still very unclear as to where technology and the information age are actually leading society. Yet, the awareness remains that technology has become more than a tool into a new way thought. Computer technology and the Internet have the enormous potential to revolutionize the educational structure and provide equal access to information for all people in the United States and around the world as well. Such equal access to the information would instill a great sense of empowerment and equality for the youth of generations to come. Finally, a new and dynamic weapon to bridge the divide between the "privileged" and "underprivileged" can be used that still triumphs the principles of democracy and liberty while bringing equality to all.

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