

Chapter Two

Review of the Literature

This study was designed to address three issues. The first issue was to determine whether software that filters Internet content limits secondary school students' access to information necessary to complete Minnesota Academic Standards. The second issue relates to how teachers respond if they find that Internet filtering software denies students access to information necessary to complete assigned work to meet state standards. The third issue concerns how well-prepared teachers are to teach students media and information literacy skills and whether they intentionally present multiple perspectives when teaching the two standards addressed in this study. The result of the investigation of these three issues may also have implications regarding secondary school students' right to intellectual freedom.

The purpose of this chapter is to provide a context for the study of the implications of the Internet filtering required by the federal Children's Internet Protection Act (CIPA). This chapter begins with a review of the origins and development of the Internet in public schools, discusses how educators reacted to students' use of the Internet, and then chronicles the legislative efforts and court

rulings that resulted in the current requirements for Internet filtering. The chapter explains what schools and public libraries need to do to comply with CIPA; reviews research into the effects, limitations, and advantages of various Internet content filtering systems; reviews First Amendment advocates and educators' reactions to CIPA; and defines current issues related to Internet filtering. The final section provides a theoretical framework and describes the issues that will be addressed in this study.

The Rise of the Internet in Schools

When the Internet became a common educational tool in the mid-1990s, concern over its unregulated content quickly surfaced. Before computers connected to the Internet, use of computers in educational settings was limited to the software that schools installed on the hard drives of individual computers or on a local server within the school. Internet access in schools came first in the form of Local Area Networks (LANs) that connected within schools or connected schools to each other. LANs eventually grew to become Wide Area Networks (WANs), and finally school district networks began linking to larger unregulated networks and the “World Wide Web.”

Many people use the terms *Internet* and *web* interchangeably, but they actually are two different things. The Internet is a massive network of networks that connects millions of computers together, allowing them to communicate

with any other computer connected to the Internet. Information travels over the Internet in a variety of languages known as protocols. One of these protocols is the World Wide Web, or simply the web. The web is an information-sharing model that is built on top of the Internet. The web uses the HTTP protocol, only one of the many languages used on the Internet to transmit data.

At the Superhighway Summit in Los Angeles in 1994, Vice President Al Gore issued his now-famous challenge to connect every U.S. classroom to the Internet by the year 2000. Gore played a key role in developing and supporting the Educational Technology Initiative and its four pillars (computers, Internet access, educational software, and teacher training), introduced in President Clinton's State of the Union Address in 1996 (Nellen, 1999). Another person instrumental in wiring schools was John Gage, director of science for Sun Microsystems, who initiated the first "Net Day" in California in 1996 as a result of Clinton's State of the Union Address. This initiative encouraged a collaborative approach that used volunteerism to get schools wired. This concept was later adopted nationally (Nellen, 1999).

Educators' Early Reactions to Student Internet Access

As schools became wired and connected to the world, educators recognized the value of the Internet as an educational tool. Information found in a textbook can be ten years old by the time it reaches a student. Information

found on the Internet can be as current as the previous minute and is available every day and at any time. A student can find a wealth of information quickly without entering a library and can access information representing multiple perspectives. Because information sources on the Internet are unregulated, educators began to stress the need for media education in schools. Media education includes developing strong search skills to locate information and critical analysis to determine the validity of information (Heins, 2003; Thornburgh, 2002; Willard, 2002b). Given the same level of Internet access, students across the country can have the same quality of information whether they live in a rural community or in a metropolitan area.

At the same time, educators scrambled to implement strategies to educate, guide, and protect children from web sites that might be harmful to them. When Internet use began occurring in schools and libraries in the mid-1990s, conservative groups such as Concerned Women for America and Focus on the Family concentrated their efforts on limiting access to Internet content (Kingrey, 2005; Willard, 2002a). The mid-term elections in 1996 bolstered the conservative majority in Washington. Conservative groups such as the Alliance Defense Fund, Family Research Council, American Center for Law and Justice, and Concerned Women for America, had a platform to speak during congressional and committee hearings in favor of filtering legislation (Kingrey, 2005; Nickerson,

1999; Perkins, 2003; Peters, 2001; Willard, 2002a). Since the Internet was not regulated, concern was expressed that children could access material that might be pornographic or otherwise harmful to minors.

During this period, educators explored options for protecting school children on the Internet. As director of Responsible Netizen, an organization dedicated to providing strategies for protecting kids online, Nancy Willard produced a report to inform and educate parents and professionals about how to keep kids safe while learning online (Willard, 2000). Willard focused on “helping young people gain the knowledge, decision-making skills, and motivation to make safe and responsible choices when they are using the Internet.” Willard’s premise was that any young person wanting to access the “dark side” of the Internet could do so; the only thing to do was to empower young people to make good choices, to educate students about the importance of engaging in safe and responsible behavior, and engage students in high-quality educational uses of the Internet.

Willard also recommended updating Acceptable Use Policies (AUPs). An Acceptable Use Policy is a formal policy with procedures and guidelines for technology use, adopted by a school district’s Board of Education. A school board policy, if violated, typically has consequences such as denying a student’s computer access privileges. An updated AUP that would reflect increased access

and usage of the Internet might require that adults supervise students' access to the Internet, that there are seating charts and sign-up sheets for computer labs and workstations, that monitors are easily visible, and that use of the Internet be limited to educational purposes (Willard, 2000).

Willard stressed the importance of helping young people learn to do what is right, regardless of the potential for detection and punishment. She maintained that the two biggest problems with filtering were that filters raise a level of false security and that students' First Amendment rights may be violated (Willard, 2000).

History of Legislation Leading to the Children's Internet Protection Act (CIPA)

While educators struggled to react to the instructional and organizational complexities of the Internet, legislative attempts to regulate the Internet also surfaced. As noted below, several laws attempting to regulate Internet content passed but were quickly found to be unconstitutional. Eventually the Children's Internet Protection Act (CIPA), which required K-12 schools and public libraries to install and use content filters, passed and was signed into law by President Clinton in 2000. This section chronicles the legislative efforts that led to passage of CIPA, which is still in effect today.

Observing the progression of Congressional bills pertaining to filtering and child protection can be helpful in understanding the context for the current

law. Internet-related bills began mentioning protecting children as early as 1996. Table 1 provides a historical perspective on the number of bills concerning the Internet introduced in Congress between the 103rd and 107th legislative sessions.

Table 1
Chronology of Internet Related Bills

Session	Year	Bills Introduced Concerning the Internet	Bills Introduced Concerning Filtering Internet Content
103	1993-94	4	0
104	1995-96	28	0
105	1997-98	222	7
106	1999-00	498	12
107	2001-02	605	4

The *Telecommunications Act of 1996* led to later legislation that mandated filtering of computers in public schools and libraries. Under the 1996 Act, schools and libraries became eligible for “Universal Service Support,” commonly known today as *E-Rate*. The concept of Universal Service Support was a direct result of Vice President Gore’s efforts to prepare schools for the 21st century and President Clinton’s State of the Union Address earlier that year. The

explicit goal of the Act was to ensure that schools and libraries had affordable access to telecommunications (United States Department of Education, 1997). The Federal Communications Commission (FCC) issued an unanimous ruling for implementing E-Rate service on May 7, 1997 (United States Department of Education, 1997). Schools and libraries became eligible to receive discounts of 20 to 90 % on telecommunication services, Internet access, and internal connections necessary for providing technology in the classroom. Embedded within the *Telecommunications Act* was the *Communications Decency Act* (CDA). The CDA was the first federal attempt to regulate sexually explicit material by seeking to prohibit the transmission of obscene or indecent messages to minors through the Internet, making it a felony to transmit or knowingly display indecent material over the Internet (McAfee, 2003). The American Civil Liberties Union (ACLU) immediately challenged the CDA as unconstitutional and obtained a preliminary injunction against enforcement from a federal district court. In 1997, the Supreme Court affirmed the district court's ruling that the CDA abridged First Amendment speech rights (McAfee, 2003; Reed, 1998). This ruling became a precedent for the future protection of electronic speech under the First Amendment, which states, "Congress shall make no law... abridging the freedom of speech..." Free speech can take many forms. Electronic speech encompasses traditional forms of speech in the display of words or

images on a computer, and it also includes newer forms of “speech” such as Internet addresses, domain names, and “code” (Hiller, 2004).

There were seven legislative attempts to mandate filtering in some form on computers in K–12 schools and public libraries between 1997 and 1999. Arguments supporting the bills introduced between 1997 and 1999 relied solely on legislators’ opinions. Some legislators made reference to research and/or journal articles, but they did not go so far as to hold hearings (Carney, 1998, 1999, 2000b).

Two bills that passed but were later found unconstitutional, the *Child Decency Act* (CDA II) and the *Child Online Protection Act* (COPA), had one thing in common: they both connected filtering with E-rate discount funds. Specifically, they stipulated that to be eligible to receive these funds, schools and libraries must install a filtering device. A byproduct of COPA was the formation of the COPA Commission in 1998 to study the issue of safety for children using the Internet. The resulting recommendations from this Congressional Advisory Committee provided data that was later used to pass CIPA. The COPA Commission consisted of nineteen members and included interests from Internet based companies, security software systems, the Department of Commerce, university professors, faith-based organizations, the Department of Justice, the Disney Corporation, and freedom of speech advocates. The purpose of the

Commission was to study methods to help reduce access by minors to certain sexually explicit material, defined by the COPA as harmful to minors. The commission concluded that no single technology or method could effectively protect children from harmful material online. The Commission recommended methods that included public education, consumer empowerment, increased law enforcement, industry action to develop best practices for online Internet Service Providers, and that the commercial adult industry take voluntary steps to restrict minor's access to adult content.

The House and Senate introduced versions of the Children's Internet Protection Act (CIPA) in 1999. CIPA went through three revisions before passage in the fall of 2000 and was subsequently signed into law by President Clinton. Unlike the previous legislative attempts to mandate Internet content filtering, there were hearings to bolster support for CIPA that included oral testimony and the presentation of the COPA Report. A review of the CIPA hearings shows that recommendations from the COPA report suggesting tighter controls on the Internet were included in the legislation but that the recommendations calling for media literacy education were not included in CIPA. Hearings also included testimony from the *Internet Safety Association* (ISA) and from conservative religious organizations (Kingrey, 2005; Willard, 2002a).

There was speculation from First Amendment advocates that CIPA passed because it was embedded in a larger omnibus Appropriations bill along with ten other bills of varying impact (M. C. Heins, 2001). When Clinton signed CIPA into law, a long list of stakeholders immediately began voicing their concern about Internet filtering (M. Heins, 2003; The Free Expression Policy Project, 2002; Willard, 2002c). Speaking out against mandatory filtering were the American Civil Liberties Union (ACLU), the American Library Association (ALA), and the National Coalition Against Censorship (NCAC).

In 2001, the American Library Association (ALA) and the American Civil Liberties Union (ACLU) filed a suit with several state and local library associations to challenge the library provisions of CIPA (*American Library Association et al. v. United States*, 2002). No suit challenged the school provisions of the rule. The language used to defend the bill had changed from “making the Internet safe” to *protecting children*, making it difficult for educators to stand up and publicly denounce the bill (Carney, 1998). The ALA filed suit because it represented library users. Many other “watchdog” organizations formed and/or joined the fight against the CIPA ruling, including Netizen, Peacefire, The Free Expression Policy Project, The Electronic Frontier Foundation, and The Electronic Privacy Information Center.

A three-judge federal panel ruled in favor of the plaintiffs and declared CIPA unconstitutional. Williams explains the court reasoning:

Under the First Amendment doctrine, content-based restriction on access to public forums trigger “strict scrutiny” – a form of constitutional analysis that requires courts to strike down challenged restrictions, unless the government can show that they are a “narrowly tailored” means of furthering a “compelling” governmental interest (Williams, 2004).

Furthermore, the court agreed with the ALA’s argument that the CIPA provision permitting libraries to disable the filtering software when requested by a patron did not succeed in making the law “narrowly tailored” so as to pass constitutional muster. The court ruled on May 31, 2002 that “any public library that complies with CIPA’s conditions will necessarily violate the First Amendment” (Williams, 2004). This ruling reaffirmed previous decisions on law attempting to restrict Internet access (COPA, CDA I & II) and provided hope that public schools would be able to take on CIPA as well.

Responding to the District Court’s ruling that CIPA was unconstitutional, Willard offered the clear opinion that this decision would eventually extend to schools:

It is probable, given the environment of schools that the standard of analysis that will be applied will be that such use must be reasonably related to legitimate pedagogical concern and not result in viewpoint discrimination. However, the findings and analysis of the ALA case provide important insight into the question of the constitutionality of the use of commercial filtering software in schools (Willard, 2002c).

The U.S. government appealed the decision of the Pennsylvania court and in June 2003, the Supreme Court reversed the decision, upholding CIPA (*United States v. American Library Association*, 2003). Chief Justice Rehnquist's plurality opinion for four of the nine Justices asserted:

Library patrons have no right to unfiltered Internet access – that is, filtering is no different, in principle, from librarians' decisions not to select certain books for library shelves... Because the government is providing financial aid for Internet access, it can limit the scope of the information that is accessed...If erroneous blocking of “completely innocuous” sites creates a First Amendment problem, “any such concerns are dispelled” by CIPA's provision giving libraries the discretion to disable the filter upon request from an adult (*United States v. American Library Association*, 2003).

These rulings left public libraries with the option of either installing software to filter Internet content on library computers or foregoing Federal aid that helped defray telecommunication costs and program support.

Complying with CIPA

CIPA requires that libraries and schools “provide reasonable public notice” and hold at least one public hearing or meeting to address the proposed “Internet Safety Policy.” The policy must include the installation and use of a “technology protection measure,” which is defined as, “a specific technology that blocks or filters Internet access to visual [not text] depictions that are obscene, child pornography, or harmful to minors” to receive Federal E-rate funding. Other funds tied to the CIPA are Title IID funds from the Elementary and Secondary Education Act (ESEA/No Child Left Behind), administered by the U.S. Department of Education; and the Library Services & Technology Act funds (LSTA) (Carney, 2000a).

To comply with CIPA, all Internet access must be filtered, whether minors (under 17) or adults are using the computer and regardless of how many computers with Internet access the library or school provides. Filters may be disabled for adults conducting *bona fide* research (American Library Association, 2000). However, CIPA's filtering requirements are more restrictive for minors than for adults, so libraries and schools may choose to implement different

settings for the filters depending on whether adults or minors are using the computer. The law states that when minors are using the Internet, access to visual depictions that are obscene, contain child pornography, or are considered harmful to minors must be blocked or filtered.

The definitions for these categories are somewhat vague and left open to interpretation. To define obscenity, the court usually uses a three-part test as defined in the landmark case of *Miller v. California* (1973). This test examines whether the average person, applying contemporary community standards, would find the work (taken as a whole) appealing to the "prurient" (disapproving) interest; whether the work depicts sexual conduct in a patently offensive way; and whether the work (taken as a whole) lacks serious literary, artistic, political, or scientific value (American Library Association, 2000).

CIPA refers to the definition of child pornography as defined in United States Code, 18 U.S.C. 2256. "Child pornography" means any visual depiction, including any photograph, film, video, picture, or computer or computer-generated image or picture, whether made or produced by electronic, mechanical, or other means, that involves the use of a minor engaging in sexually explicit conduct or appears to be of a minor engaging in sexually explicit conduct. In addition, visual depictions that have been created, adapted, or modified to appear as though an identifiable minor is engaging in sexually explicit conduct must be

filtered. The same holds true in cases where a visual depiction is distributed or promoted to convey the impression that the material is a visual depiction of a minor engaging in sexually explicit conduct (American Library Association, 2000).

CIPA defines “material that is harmful to minors” as any matter of any kind taken as a whole with respect to minors that appeals to a prurient interest in nudity, sex, or excretion. It also includes matter that represents an actual or simulated sexual act or sexual contact, actual or simulated normal or perverted sexual acts, or a lewd exhibition of the genitals if it, taken as a whole, lacks serious literary, artistic, political, or scientific value (American Library Association, 2000).

Complying with CIPA has financial implications. Schools and libraries cannot use E-rate funds to pay for the filter but they can apply for LSTA funds to pay for filtering software (American Library Association, 2000). In most cases, schools and libraries entered contract with outside providers, with costs ranging between \$2 and \$6 per student.

How Filters Work

Filters can be set up to block content by several methods and most companies use one or more of the methods described in this section to block Internet sites. This section explains how Internet filtering software works to meet CIPA requirements and reviews considerations about Internet filters. First, the section reviews various filtering methods: *black listing*, *white listing*, *keywords*, *images*, or *by use*, and summarizes the pros and cons of each method. Secondly, the section reviews different ways filtering software can be installed and updated, and explains how changes may be made to correct mistakes when the filter either overblocks or underblocks content. The section concludes with considerations for evaluating Internet filtering software.

Filtering products use the following terminology to describe the methods available for selecting content to be blocked. Many filtering products use a combination of the following methods to filter Internet content.

Black Listing. The filter company creates lists containing the addresses (URLs) of web sites or Internet Protocol (IP) addresses identified as unsuitable or containing inappropriate material. If a web page matches one of the sites on this list, the filter denies access to the user. Black lists place web sites into one or more categories, such as “violence,” “pornography,” or “extreme.” Using keyword such as “sex” to generate black lists saves time, but increases the

probability of unnecessarily blocked sites. For example, the filter will block information from sites that contain word combinations such as “Chicken *breast*, Anne *Sexton* or Mars *Explorer* (Electronic Frontier Foundation, 2002; M. Heins, 2003; M. Heins, Cho, C. , 2001; Kranich, 2004; The Library.Network, 2000; Youth Free Expression. Network, 2003).

White Listing. The filter contains a “white” or “inclusion” list containing the URLs of web sites or IP addresses of allowable sites. The filter blocks all web sites that are not on this list. This type of filtering is very restrictive but is generally effective in producing content that meets the CIPA requirement (Electronic Frontier Foundation, 2002; M. Heins, 2003; M. Heins, Cho, C. , 2001; Kranich, 2004; Youth Free Expression. Network, 2003).

Keyword. Lists of content keywords and/or phrases contained within a web page deny the user access to the site. With this method, many unnecessary sites are blocked, but pornographic sites without words could pass through the filter. *Keyword* filtering has the same pitfall as *black listing* because it will unnecessarily block certain word combinations. This method of filtering only blocks text. It will not block unlabeled graphics, even though the CIPA law specifies that inappropriate pictures must be filtered (Electronic Frontier Foundation, 2002; M. Heins, 2003; M. Heins, Cho, C. , 2001; Kranich, 2004;

Youth Free Expression. Network, 2003).

Image. The filter analyzes images and blocks them, if, for example, they contain a large percentage of flesh-colored images. This method for blocking Internet content results in a high percentage of overblocking (Electronic Frontier Foundation, 2002; Free Expression Policy Project, 2003; M. Heins, 2003; M. Heins, Cho, C. , 2001; Kranich, 2004)

Filtering by use. This method restricts access to information by the type of program used. For example, the content filter may deny access to email, chat, and other interactive services such as online banking. It is difficult to use this method without restricting access to legitimate sites. An example of a legitimate site blocked using this method might be access to an online, real-time homework help site (The Library Network, 2000).

Many content filtering companies use a combination of these methods, and allow the user or the system administrator to edit the lists that contain URLs, IP addresses or keywords. A filtering company may use humans, robots, or a combination of both to create lists. Robots are the least reliable method for choosing sites to block (The Library Network, 2000)

Filtering software can be client-side, server-side, or determined by the Internet service provider (ISP). Installations of client-side filters on individual workstations usually occur in homes and small work settings. Updates and

maintenance require regular attention and the filter becomes unreliable if not maintained on a regular basis. Server-side filters are installed on a central server and are maintained by the company providing the Internet content filtering. Updates occur automatically and on a regular basis. Some ISPs provide filtered Internet access. In this case, the user has very little control over the sites that are blocked (The Library Network, 2000).

There are several factors to consider when evaluating Internet filtering software. Such software becomes more reliable when less overblocking and underblocking occurs. Filtering software has a greater reliability factor if it is possible to block by category and to turn off keyword blocking. In addition, reliability increases if it is possible to override blocked sites, to locally unblock sites, and to locally modify locked lists so that sites may be added and removed as needed (The Library Network, 2000). Most Internet filters block more than is required by the CIPA law. If the user wishes to make sure that filters do not overblock or underblock content, the user must review and adjust the filter configuration to ensure that the filter is set to block only what is necessary to comply with CIPA. In order to avoid overblocking or underblocking, the user must test the filter for accuracy on a regular basis. The Best Practices section of the California State Library website states that there should be a person assigned to monitor blocked sites and to adjust the filter as needed when allowable sites

are blocked. It also states that schools and libraries should not rely upon patrons' complaints to determine if the filter is working because experience shows that most patrons do not complain when a site is blocked (California: State Librarian, 2006). Most Internet filtering companies use several methods to filter content so that schools and libraries can meet the CIPA requirements. None of the methods is foolproof and both overblocking and underblocking occur. Key factors in ensuring the least restrictive information access environment are having the ability to make adjustments locally, using server-based installation, and monitoring the filter's effectiveness on a regular basis (California: State Librarian, 2006).

Educators' and First Amendment Advocates' Reactions After CIPA

As noted earlier, First Amendment advocates and opponents of Internet software filtering may have been overconfident that CIPA would not become law because earlier bills to regulate the Internet were found to be unconstitutional. Educators were also slow to react to legislative attempts to mandate Internet content filtering and it appears that the importance of teaching students "media literacy," and how to use the Internet "safely" did not become widespread until after CIPA passed.

Four major reports that were released shortly after CIPA passed challenged mandated Internet content filtering and instead advocated for policies and

procedures to educate Internet users on how to make decisions. First Amendment advocates Marjorie Heins & Christina Cho (2003) issued a report to inform the public and policymakers on the importance of media literacy education. The report stated that media literacy education should be embedded in legislation and educational standards and that media literacy can relieve pressure for censorship:

Media literacy is far better than censorship, not only for those concerned about troublesome media messages but for everyone committed to modern education, intellectual freedom, and the healthy development of youth

(Heins, Cho, 2001).

Educator Nancy Willard continually stressed the importance of helping young people learn to do what is right, regardless of the risk of detection and punishment. She maintained that the two biggest problems with filtering are that filters raise a level of false security, and that their use may violate First Amendment rights (Willard, 2000, 2002c).

Perhaps the most referenced of this series of reports were those authored by Dick Thornburgh, the former Attorney General under President Ronald Reagan, in 2002 and 2004. Thornburgh did not denounce filters altogether but stated that there are three elements to a balanced framework for protecting children online: public policy and law enforcement, technology, and education.

By public policy and law enforcement, Thornburgh referred to adhering to, and prosecuting those who violate, laws concerning pornography. He stated that prosecutions decreased during the very time that Internet usage exploded. He backed the recommendations from Heins, Cho, and Willard, supporting public policy that promoted media literacy and Internet safety education. Thornburgh acknowledged that using technology-based tools such as filters may be common but the tradeoff is that they may filter out large amounts of appropriate material. Thornburgh stated that filters are often used to relieve “political pressure” and that the cost of installing and maintaining filters sometimes outweighs what schools and libraries receive in federal funds. He also echoed Willard’s recommendations for increased media literacy education, noting that Internet safety education is analogous to safety education in the physical world. Thornburgh supported the importance of learning how to evaluate the content of media messages and stressed that none of these strategies are inexpensive. He compared dangers of the Internet to children and the dangers of a swimming pool:

Swimming pools can be dangerous for children. To protect them, one can install locks, put up fences, and deploy pool alarms. All of these measures are helpful, but by far the most important pool protection measure for children is to teach them to swim” (Thornburgh, 2002).

Thornburgh's proposed strategies as well those from Willard and Heins, were ignored for the most part by Congress when they drafted CIPA; the only strategy CIPA included was to require filtering on computers.

Issues Related to Internet filtering

There are many issues related to the use of Internet filters, including the accuracy of the filters, the impact that Internet filters may have on the "digital divide," and the impact that Internet filtering may have on meeting educational standards.

Prior to CIPA's enactment, filtering opponents focused their concern primarily around three issues: the inaccuracy of filters, whether or not filters violated First Amendment rights, and the potential impact that filtered computers would have on the digital divide (Heins, Cho, & Feldman, A., 2006). The term "digital divide" refers to the division caused by economic and ethnic groups' unequal access to levels of technology, learning, and information (Heins, 2003). One other concern that surfaced after CIPA was the involvement that faith-based organizations may have had in CIPA becoming law. First Amendment advocate and educator Nancy Willard raised the concern that there was bias within the COPA commission because it included representation from faith-based organizations that also had connections with the filtering companies. One example was the testimony heard from CEO and President of N2H2, Peter

Nickerson, (1999). After CIPA became law, N2H2 became one of the primary companies selling filtering products to public schools. At the time of Nickerson's testimony, the primary clients of N2H2 were religious organizations, such as FamilyClick, an Internet Service Provider (ISP) run by Tim Robertson, son of Pat Robertson of the Christian Coalition; Christian Purity; and What would Jesus View (Willard, 2002a).

Once CIPA became law and established specific legal criteria for filtering, research shifted from observational and anecdotal data to statistical analysis and formal research studies. Studies conducted to demonstrate the effectiveness of filters before 2001 were mostly anecdotal. However non-scientific, they repeatedly suggested that filtering software did not work for the intended purpose of meeting the CIPA rule. According to these studies, filters set at the maximum settings deny users information by overblocking. They also underblock sites, allowing access to sites that should not be accessible according to CIPA (Free Expression Policy Project, 2003; M. Heins, Cho, C. , 2001; Tramontana, 2002; Willard, 2002a, 2002b, 2002c). Most filters use a keyword method to block inappropriate material as defined by CIPA. As noted earlier, this method relies primarily on mechanical blocking by keywords or phrases such as "over 18," "breast," or "sex," (Free Expression Policy Project, 2003; M. Heins, Cho, C. , 2001). Some companies also have employees who review web sites;

however, there appears to be a high rate of subjectivity in this method because of religious and/or political attitudes reflected by manufactures in blocking decisions (M. Heins, Cho, C. , 2001; Lau, 2002). N2H2 is a filtering software company that has a significant presence in public schools across the country. It originated as a provider for religious groups and encourages those groups to recommend sites to block. The Edelman Report, researched over 6,000 URLs and found that the Alan Guttmacher Institute, an Affiliate of pro-choice Planned Parenthood Federation of America and research organization on issues related to sexuality, AIDS Vancouver Island: Welcome, and the Coastside Social Group, a networking group for gays, lesbians, family and friends are three of the many sites that may be blocked by N2H2 because their content is not consistent with conservative religious doctrine (Edelman, 2002; Willard, 2002a).

A major consideration with all of these methods is that the majority of software companies do not reveal their criteria or process for categorizing and blocking web sites. This makes it difficult for purchasers to make decisions when selecting a filter (California: State Librarian, 2006; M. Heins, Cho, C. & Feldman, A., 2006). Part of the value of a filter is the number of web sites categorized because the filter becomes more accurate with the identification of more categories. An Internet filtering company is not required to use information specialists to identify sites to filter and Internet filtering companies typically use

automated methods to identify and classify the 3 billion web pages on the Internet (California: State Librarian, 2006).

There are more than five million new web pages added each day to the Internet and they have an average life span of 44 to 90 days. Only about 1.5% of Internet sites are considered pornographic (Kranich, 2004). Filters set at the most restrictive setting block about 75% of the pornographic sites, while at the same time blocking at least 20% of the legitimate sites available at any given time (Kranich, 2004). The sheer number of Internet sites and the rate at which they grow, change, and expand daily make it impossible to have a system in place that would be able to block sites based purely on the CIPA law. As a result, those opposing CIPA stipulate that filters simply do not work (Board, 2002; Free Expression Policy Project, 2003; M. Heins, Cho, C. , 2001).

A study conducted by Peacefire in 2000 found that a commonly used filtering software package, Cyber Patrol, blocked the following sites as “sexually explicit”: Amnesty International Israel, The Canadian Labour Congress, the American Kurdish Information Network, the College of Humanities and Social Sciences at Carnegie Mellon University, and Peacefire itself (M. Heins, Cho, C. , 2001). Another study found that the Smartfilter content filtering software system blocked a variety of web sites relating to “extreme” sports, such as a page on desert off-roading and a site dedicated to rock climbing. Additional blocked sites

included one for gay and lesbian Mormons and 64 newsgroups ranging from one on Mesoamerican archaeology to a discussion group on the Baha'i religion (Peacefire & EPIC, 2000). SmartFilter also has been found to block the site "BabelFish," a foreign language web site translation service (Bromberg, 2002; M. Heins, Cho, C. , 2001).

A joint report produced by Peacefire and Epic revealed that the software product N2H2 found 48 educational and political web pages blocked under the setting "mature content," a category schools typically choose to block. This category intended to block "sexual content, violence, drugs, hate, and profanity." Two blocked sites were: "How a Bill Becomes a Law," a brief lesson plan for teachers to help them explain the legislative process to their students, and "Don't Tread On Me," a site inviting message postings about right-leaning political candidates (Peacefire & EPIC, 2000).

Research after CIPA began using statistical approaches to determine filtering effectiveness. A research study conducted under the direction of Professor Paul Resnick at the University of Michigan analyzed methods used for analyzing web sites, pointing out the pitfalls, and developing better research techniques. Resnick recommended avoiding bias when analyzing the effectiveness of Internet filters by: using a process for collecting target group sites that can be duplicated, using a large enough sample size to produce valid

results, and measuring (identify) overblocking (percentage of acceptable sites wrongly blocked,) and underblocking (percentage of sites that should be blocked) (Resnick, 2004). This process will demonstrate how many overblocks there are compared to correct blocks but will not provide data on how the filter works overall.

In 2001 and 2006, the National Coalition Against Censorship released quantitative studies on the most commonly used filters (M. Heins, Cho, C. , 2001; M. Heins, Cho, C. & Feldman, A., 2006). The first report reviewed 19 software filters. The second report contained evaluation and commentary of 22 studies and used the criteria identified by Resnick to inform readers of the probable validity of the research conducted about filters after 2001. The report also evaluated the effectiveness of Internet content filters between 2001 and 2006. The report stated that identifying better ways to evaluate web sites is useful but the bottom line is the resulting statistics are still open to interpretation. Even an error rate of 1% can mean that millions of sites are wrongly blocked. Despite identifying flaws in data collection and analysis within virtually every study, the report concluded that “even at their narrowest setting, filters block much more than CIPA requires” (Heins, Cho, & Feldman, A., 2006). Both studies found that the extent of overblocking depended on the filter manufactures and on the settings chosen by the school or library, and that the “packages” offered by

manufactures far over-reach the CIPA requirement. Findings from the 2001 report on the most common filters include the following summary:

Bess, manufactured by N2H2 provides 29 categories of blocked content in its “Typical School Filtering” setting, ranging from “Adults Only and Alcohol” to “Gambling,” “Personals” and “Tasteless/Gross.” Four additional settings are also “History,” “Medical,” “Moderated,” and “Text/Spoken Only.” Under these settings, researchers found examples of the following sites blocked: Friend of Lulu (friends-lulu.org), a site promoting comic books for girls, a portion of the Columbia University Heath Education Program site, and *Time* magazine’s “Netly News,” which has reported, positively and negatively, on filtering software (M. Heins, Cho, C. , 2001).

Table 2 reveals the major findings conducted between 2002 and 2006 on the effectiveness of Internet content filters. All seven reports found that Internet content filters set at their most restrictive settings blocked material not mandated by CIPA.

Even though data emerged that less restrictive filter settings allowed greater access to information, many schools and libraries retained the standard filter settings recommended by filtering companies. Librarians found that “public pressure” and the lack of an organizational decision system inhibited them from

choosing only the filtering categories required by CIPA (Oder, 2003; Willard, 2002c). One librarian stated that she felt under less scrutiny and less likely to run into trouble if she chose the standard package rather than be selective (Minkel, 2002).

In an informal survey conducted in 2002 of Minnesota state technology leaders, seven of the ten educators surveyed stated that they chose the filtering software “standard package” because they did not have a mechanism, such as a committee, to adequately review the categories and decide which categories to choose or eliminate. They stated that they felt safer in today’s political climate to err on the side of caution (Finsness, 2002).

Table 2

Summary of Significant Findings Concerning Internet Content Filters

Organization	Source	Major Findings
Center for Advanced Technology in Education	(Willard, 2002a)	Reviewed eight filtering companies. Found filtering products used in schools prevented students from accessing certain materials based on religious or other inappropriate bias
The Free Expression Policy Project	(The FEP Project, 2002)	The Court found in <i>American Library Association v. United States (2002)</i> filters overblock/underblock. Filters expand the “digital divide” when demographic groups without unfiltered access are denied information.
Kaiser Family Foundation	(Oder, 2003)	Filters not set at most restrictive levels “can effectively block pornography without significantly impeding access to online health information.” Restrictive settings blocked 24% of health sites and 50% of “safe sex” sites.

Organization	Source	Major Findings
Internet Filters: A		
Public Policy Report	(Heins, 2006)	Updates original finding from 2001 and concurs “filters are especially dangerous because they block large amounts of expression in advance.”
Online Policy Group /Electric Frontier	(OPG & EFF, 2003)	Least restrictive filter settings blocked .5% to 5 % results for state mandated curriculum. Most restrictive settings blocked more than 70% more results based on state curriculum.

One school district formed a committee of stakeholders (teachers, technical support, media specialists, administrators and curriculum specialists) to review the various categories offered by its content filtering product. The committee determined which categories to block and presented the recommendation to the cabinet of higher-level administrators. The committee recommended using only the three categories required by law. The cabinet accepted this recommendation (Finsness, 2002). Even with this careful process, students and teachers found that they could not access some sites they legitimately used for schoolwork before the installation of the filter.

Another concern with CIPA was the effect it would have on the already recognized “digital divide.” Those who fall into the digital divide may be impacted more by mandatory filtering than any other group of stakeholders because they often do not have access to unfiltered computers. The digital divide puts Black and Latino students at a distinct disadvantage, as well as students living in rural areas without easy access to unfiltered computers (Heins, 2003).

In a 2004 report from the Department of Commerce, only 54.6 % of U.S. households had Internet connections (54.1% in households with a personal computer or laptop, plus an additional 0.5 percent using a mobile telephone or some other home Internet access device). It may be reasonable to infer that since the quality of data now available on the Internet almost requires a high-speed

connection, the statistics identifying the limited number of homes with high-speed access have identified an even larger digital divide than was previously measured. The report stated that although 31.2% of households earning less than \$15,000 in 2003 had access to the Internet, only 7.5% had broadband (i.e., high speed) access at home. Nearly 85% of homes with income levels of \$75,000 or more reported having some type of Internet access, with close to half (45.4%) stating that they had broadband access. Another new study in 2004 reported on those with income levels of \$150,000 or more and found in this group, 86.1% had some kind of Internet access, with 57.7% of those having broadband access. An updated report stated that Broadband availability continues to increase across all income levels (Turner, 2005). Between March 2005 and March 2006 there was a 40% increase in broadband use among those earning less than \$30,000 per year (Federal Communications Commission, 2005; Maddox, 2006).

Consumer advocates disagree with these statistics, stating that the data gathered using zip code information does not necessarily represent the income level of households with Internet access. Likewise, the Department of Commerce report (2004) identifies broadband access by income level and does not differentiate whether that access is at home, at work or in a public location. The Free Press (2005, 2006) reports that America's digital divide between rich and poor areas, and between urban and rural areas, shows no sign of closing. The

report cites several statistics highlighting the disparities. For example, residents in urban areas are nearly twice as likely to have home broadband access than those living in rural areas. Broadband thus is still very dependent on socioeconomic status. Although six out of every 10 households with incomes above \$100,000 have broadband access, only one out of 10 households with incomes below \$30,000 reported having broadband access (Turner, 2005, 2006).

Going beyond the common definition of a digital divide, a report from the Colorado Department of Education concluded that “it is not just the poor and under-educated that may not have Internet access, ... libraries provide the only Internet access for a substantial portion of every age group” (Heins, 2003). In any case, it may be fair to conclude, as did the National Telecommunications and Information Administration, “that we are approaching the point where not having access to these (Internet) tools is likely to put an individual at a competitive disadvantage and in a position of being less than a participant in the digital economy” (Heins, 2003).

Another area of concern is the possible effect Internet content filters have on instruction. Heins (2006) noted that “CIPA, the law mandating filters in schools and libraries that receive federal aid is not likely to be repealed very soon, nor are most school districts or libraries likely to throw away filters despite their dangers and flaws.” She and others have begun to shift focus to the

question, “how does CIPA actually affect learning?” (Electronic Frontier Foundation & Online Policy Group, 2003; M. Heins, Cho, C. & Feldman, A., 2006).

Nancy Willard (Willard, 2002a, 2002b, 2002c) and the American Library Association (ALA) (*American Library Association et al. v. United States*, 2002), have stated that, because of the perception that filters “protect” kids, it is difficult for teachers themselves to speak out against filters until substantial evidence is found to support the restrictions that filters place on accessing information. Anecdotal evidence from Minnesota teachers suggests that they feel helpless when they encounter a blocked site during their teaching day. For example, in one informal study, teachers stated that they often found sites at home, for lessons that were later blocked at school. The teachers did not have authority to “unblock” the sites themselves (Finsness, 2002). The media coordinator from one Minnesota school district stated that the use of the high school computer lab had decreased over 30% during the three-year period since filtering has been in place (St. Peter, 2004). When questioned, students in this school said that they were frustrated because they could not find information on the Internet and preferred to use their unfiltered computer at home. In another Minnesota school district, a technology integration specialist made three requests and waited six weeks until the requests to unblock a site were fulfilled by a colleague who, ironically was

located just across the hall (Yoder, 2004). Heins stated that “in the year and a half since CIPA was enacted, our organization has received letters from disgruntled teachers across America” (Heins, 2002). Heins reports:

As a California high school teacher who called filters a frightening form of “modern day censorship” noted, ‘I have been unable to ask questions about filtering policies without being made to feel that I must be looking up porn sites on my lunch break’ (Heins, 2002).

Heins noted that students also have written to express their frustration. Student research topics rendered useless because of filters include school violence, teen pregnancy, drug and alcohol abuse, AIDS, and mental illnesses (Heins, 2002). Students have formed action groups and created mechanisms to voice their frustration with CIPA. Two such groups are the Youth Free Expression Network (YFEN) and Wiretap. Both have web sites with information educating their web readers about the problems they find with filters. YFEN has a letter template addressed to legislative officials protesting CIPA (Kender, 2002; Youth Free Expression Network, 2004). Articles within these sites reflect the positions of the ALA, ACLU, and the National Coalition Against Censorship (NCAC) (Leibrock, 2000; Youth Free Expression Network, 2003). Students state that they feel the effect of censorship and loss of intellectual freedom when they are able to find the information they are looking for on an unfiltered computer

but not in institutions (schools, libraries) designed to provide access to education and information (Leibrock, 2000; Youth Free Expression Network, 2003). High school student Eric Dorney questioned the effect Internet content filtering had on Intellectual Freedom and censorship. He posted form letters on the web that readers could link to “send your members of Congress (or school board) a fax or email opposing federal mandates for Internet blocking in schools” (Dorney, 2002). Writer David Kender referred to the campaign against filtering software organized by Peacefire stating that, “we shouldn’t raise people to blindly accept rules [without being informed of] the reason behind them” (Peacefire, 2000).

Intellectual Freedom advocate, Marjorie Heins wrote:

The time-honored practice of banning and burning books is alive and well in America's education system today, albeit with a 21st century twist. In an effort to shield innocent minds from online "smut," the Children's Internet Protection Act -- or CIPA -- has mandated that all public schools and libraries using federal funds for Internet use or connections must install a filtering system by this July or risk losing the aid altogether. Not only does this directly impinge upon the free expression rights of youth and adults, it subverts the education process as a whole (Heins, 2002).

The Electronic Frontier Foundation (EFF) and the Online Policy Group (OPG) (2003) conducted a study to measure the extent to which blocking software impedes the education process by restricting access to web pages relevant to the required curriculum. The study examined N2H2 (Bess) and SurfControl, two of the most commonly used filtering software products used in schools across the country. Testing nearly a million web pages, the researchers found the following: Schools that implement Internet blocking [filtering] software with the least restrictive commonly used settings will block between 0.5% and 5% of search results based on state-mandated curriculum topics.

- Although curriculum topic categories more often blocked by N2H2's Bess product in an East Coast high school include such topics as the Klan (36% of web pages related to this curriculum topic blocked), firearms (50%), drunk driving, slavery, genocide, and perjury (33%), they also contain topics such as pogo-stick (46%), comedy (42%), personal care (32%), likes and dislikes (32%), and short poems (32%).
- Schools that implement Internet blocking [filtering] software with the most restrictive setting block 70% or more of search results based on state-mandated curriculum topics (Electronic Frontier Foundation & Online Policy Group, 2003).

Based on the findings of the study, the researchers concluded that the use of Internet filtering software does not necessarily ensure school compliance with requirements of CIPA. Filtering software may damage significant educational opportunities for students by unnecessarily blocking student access to web pages that are directly related to state-mandated curricula and by restricting broader inquiries of both students and teachers (Electronic Frontier Foundation & Online Policy Group, 2003).

Meridian, an electronic journal dedicated to “research and practice of computer technology in middle school classrooms” sponsored another study where middle school students felt that legitimate sites are blocked (Simmons, 2005). Another investigated the experiences of students conducting term paper research using filtered Internet access in a suburban media center. The study did not make a correlation with mandated standards but findings indicated that filters used in the media center blocked legitimate, constitutionally protected speech. In addition, students recognized how they would be disadvantaged if they were not able to go home and use their own unfiltered computers (Sutton, 2005).

A fourth study conducted in Canada using focus groups of rural Saskatchewan elementary and secondary teachers concluded in part that “focus group interviews show that filtering Internet access in schools leads to lost

education opportunities...suppressed ideas, incomplete research and short-changed students” (St. Onge, 2004) This conclusion supports the work of Callister:

Filtering operates in opposition to what students need to learn in school: to discern, discriminate, synthesize, and evaluate. How can students learn to be responsible, to make good social and intellectual choice, if those choices are made for them by filtering the information they can access. It is difficult to teach young people self-control and judgment by denying them access to the very things about which they need to exercise critical judgment (Callister, 2004).

In addition to any First Amendment questions about the legitimacy or constitutionality of CIPA, research shows that Internet filters often block much more than is necessary to comply with CIPA’s requirements. When overblocking occurs, the sites blocked often consist of legitimate information needed by students and teachers and, sometimes, even necessary information required to complete required state standards. Additionally, students who do not have access to unfiltered computers may be unable to locate the information needed to complete assignments, potentially creating an even larger digital divide.

Conclusions

Led by John Dewey, the progressive era in education existed in our country

from the late 19th century through the mid-20th century (Hickman, 2001). Educational philosophy shifted during the 1950s to standards-based education. The last quarter of the 20th century brought about a national expectation that each state establish increased measures of accountability by adopting academic standards for all students to achieve in order to graduate from high school (U.S. Department of Education, 2007). During this same period, the Internet expanded and became an educational tool and source for information. This unregulated tool was challenged and, as a result, CIPA became a mandate to filter content on school and library computers. The connection between an increased demand to standardize education and a mandate to limit information on the Internet is reflected in this statement from Dewey (1916):

Lack of the free and equitable intercourse which springs from a variety of shared interests makes intellectual stimulation unbalanced. Diversity of stimulation means novelty, and novelty means challenge to thought. The more activity is restricted to a few definite lines -- as it is when there are rigid class lines preventing adequate interplay of experiences -- the more action tends to become routine on the part of the class at a disadvantage, and capricious, aimless, and explosive on the part of the class having the materially fortunate position (Dewey, 1916).

Current curricula is structured for students to master assessments that are designed around discipline-based knowledge in core curriculum subjects (National Center on Education and the Economy, 2006). A recent report from the National Center on Education and the Economy (NCEE) (2006), cites information that shows a decline during the past 30 years in our educational system's ability to produce students that are ready for college, able to complete college, and/or have the skills that the commission deems necessary to compete in the 21st century. The skills outlined in the NECC report are remarkably similar to those stressed by Dewey: "creativity and innovation, facility with the use of ideas and abstraction, the self-discipline and organization needed to manage one's work and drive it through to a successful conclusion, and the ability to function well as a member of a team." The NCEE report outlines a new direction for American education: to improve graduation rates, increase college participation, and prepare students to be life long learners. NCEE maintains that this is necessary for the United States in order to create a work force that is capable of maintaining our global competitiveness (National Center on Education and the Economy, 2006).

The validity of the recommendations in the NCEE report remains to be seen, but the identification within this report for our students to become better critical and creative thinkers is supported by many current educational

researchers and writers who agree that the advent of technology creates an even greater need to develop these skills (Cotton, 1991). Kathleen Cotton, education writer for the Association for Supervision and Curriculum Development (ASCD) and the North West Regional Educational Laboratory, noted this correlation between technology and critical thinking even before the Internet was widely used in schools and before the topic of restricting the Internet became a public topic of conversation. Cotton began her report with the following quote by Deborah Gough, from the National Association of Elementary School Principals:

Perhaps most importantly in today's information age, thinking skills are viewed as crucial for educated persons to cope with a rapidly changing world. Many educators believe that specific knowledge will not be as important to tomorrow's workers and citizens as the ability to learn and make sense of new information (Gough, 1991).

Cotton emphasizes the importance of developing thinking skills as an anticipatory set in her review of 56 articles on this subject by highlighting a framework for developing school materials that cultivate decision-making skills when complete information is available to the learner. Authors of this article state, "Thinking skills are necessary tools in a society characterized by rapid change, many alternatives of actions, and numerous individual and collective choice and decisions" (Beyth-Marom, 1987). Cotton defines critical thinking in

several ways and highlights three definitions that would also be compatible to Dewey's definition:

- Reflective and reasonable thinking that is focused on deciding what to believe or do (Presseisen, 1986);
- The disposition of evidence in support of one's conclusion and to request evidence from others before accepting their conclusions (Hudgins, 1986);
- The process of determining the authenticity, accuracy, and worth of information or knowledge claims (Beyer, 1985).

The need to develop creative and critical thinking skills has not diminished. Alfie Kohn (1999) and Susan Ohanian (2002) are in a growing group of educators warning that requiring students to learn many discrete facts lessens their ability to become creative, critical thinkers and problem solvers, skills they say students need to succeed and excel in the 21st century.

The correlation between being an effective, creative, critical thinker, and problem solver and using the Internet to conduct research may be best exemplified in Beyth-Marom's 1987 study, which creates a framework for decision making when all information is available (Beyth-Marom, 1987). If students are not able to find information that represents multiple perspectives of an issue, then they may not be able to develop the creative, critical thinking skills

deemed necessary for the 21st century.

The objective of this literature review was to gain understanding of the educational and political events that led to CIPA and to summarize the issues concerning mandated Internet filtering in schools. The next chapter will outline the methodology for an extensive study that will examine three issues that intersect with Dewey's call to provide free and equitable resources.