Technology and the Gifted Adolescent: Higher Order Thinking, 21st Century Literacy, and the Digital Native

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Abstract

Today’s adolescent is a native in a digital world to which adults can only hope to immigrate (Prensky, 2001). Students live in a world of instant communication, infinite information, and ever-changing technology. It is crucial that schools prepare their students for a 21st century literacy that goes beyond reading and writing text. Today’s literate individual utilizes higher order thinking, is creative, is at ease with technology, and can work collaboratively. Gifted students typically possess skills that are particularly effective with and enhanced by current technology, and it is incumbent upon educators of the gifted to incorporate technology within instructional practices. Benefits of applying constructivist theory and technology to teaching gifted adolescents as well as an example lesson plan are provided to illustrate successful use of technology with gifted middle school students.
Introduction

Education must prepare students for a technology-driven world of which many educators and adults cannot even conceive. Technology is changing daily. Cell phones are now utilized as cameras, music players, and organizers. Instant messaging, text messaging, and blogging enable communication with previously unthinkable ease, speed, and regularity. Teaching students to merely utilize today’s technology is insufficient; the innovation is often obsolete as soon as it is developed. It is necessary in today’s evolving world to prepare students to be proficient using technology in an academic and thought-provoking manner, to think critically, and to become creative problem solvers—in other words, to develop 21st century literacy skills (Burkhardt, et al., 2003).

The Gifted Digital Native

The modern teenager is a native in a digital world. Teens are coming of age in a communication era, at ease with a vast array of available technology and media. Unlike their adult counterparts, who must learn this new digital culture, adolescents are already a native in this new world (Prensky, 2001).

According to a 2005 Kaiser Family Foundation Study, children ages 8 to 18 typically spend a third of their day, approximately 8.5 hours, using media including screen media, music, computers, gaming, and print. Of this time, one-quarter, or approximately 2 hours, is spent multi-tasking or using multiple forms of media. The most often used media format is screen media followed closely by music. Although third in exposure time, children aged 8 to 18 report using a computer over 1 hour each day, doubling the findings from a similar 1999 study (Roberts, Foehr, & Rideout, 2005).

A 2005 Pew Study reported that 87% of adolescents aged 12 to 17 use the Internet, up from 73% in 2000. Of this 87%, half use the Internet daily. They communicate differently than their adult counterparts. Of the online teens, 75% regularly utilize the Instant Messaging (IM) format, nearly double the 42% of adults who use IM. When instant messaging, teens are sharing more than text; they are using multiple functions and attaching pictures, links, and documents to their messages (Lenhart, Madden, & Hitlin, 2005). Current adolescents are comfortable in the digital world. They are able to download and share music, images, and documents, and they communicate effortlessly with others, utilizing a variety of formats. It is this familiarity and ease with the digital world that makes technology a vital component in education. Though adolescents may enjoy using technology and are comfortable with a variety of formats, they do not necessarily know the most effective ways to apply technology as a student and a thinker. Essentially, they need to develop 21st century literacy skills. The gifted student is no exception.

The definition of giftedness has progressed from conservative definitions, relying on IQ scores, to more liberal definitions that incorporate student potential and performance
(Clark, 1997; Renzulli, 2002). In Renzulli’s (1977) three-ring conception of giftedness, giftedness is the intersection of above-average ability, commitment to task, and creativity (Reis & Renzulli, 1985; Renzulli, 1977, 2002). By conceptualizing giftedness in this manner, students whose talent may lie outside traditional verbal tasks can be recognized.

Renzulli’s Three-Ring Conception of Giftedness

Students whose ability, creativity, and task commitment fall within the technological fields are categorized as either programmers or interfacers (O’Brien, Friedman-Nimz, Lacey, & Denson, 2005; Siegle, 2004b; 2005). Programmers typically prefer to work alone with a computer, creating programs and developing web sites. Interfacers enjoy assisting teachers and other students in trouble-shooting, working with software applications, and improving out-dated technology. Although students can be specifically talented in the technical fields, all gifted students benefit from opportunities associated with evolving technology.

Gifted students are as heterogeneous as any group of students. However, there are some cognitive characteristics that have been identified in many, if not most, gifted students. A full listing of cognitive traits as identified by Clark (1997) is found in Figure 1. These traits can be summarized into five general trends in cognition. First, gifted children typically demonstrate above average verbal ability. They are able to use word play, see connections, speak extemporaneously, and communicate their ideas. Second, gifted students often appear sponge-like, soaking up and retaining large quantities of information, thereby demonstrating a vast array of knowledge. Third, gifted children possess the ability to think quickly, processing information more rapidly than their same-age peers. Fourth, gifted students typically demonstrate high levels of flexibility in thinking. They are able to develop various solutions to problems and readily see alternative perspectives. Finally, gifted students demonstrate originality and creativity in thought and product. These students are able to “think outside the box.” The gifted child’s ability to process large quantities of information, to think creatively, and to effectively communicate ideas enables him or her to process and work through the vast amount of information available on the Internet. Current technology, especially the Internet, provides the classroom teacher with a tool to challenge the gifted student’s cognitive abilities.
According to Tomlinson (1996), there are no environmental modifications unique to gifted education. Indeed, many of the strategies implemented in gifted education are indicative of “good” teaching for all students. Differentiation for the gifted child is found, not in the type of activity, but rather in levels of abstractness, complexity, ambiguity and pace. In an analysis of the available gifted education literature, VanTassel-Baska (1986) found that effective gifted curriculum typically followed one of three models: a content model, an epistemological model, or a process-product model. The content model of instruction focuses on acceleration of content instruction and the complexity of content information. This model is highly individualized and can be difficult to implement in a traditional middle school class with heterogeneous student grouping (Tomlinson, 1992). The epistemological model of gifted education examines the process of learning and knowing, focusing heavily on metacognition. This approach to gifted education is most often found in the high school via humanities classes or in gifted pull-out programs (VanTassel-Baska, 1986). The process-product model relies heavily on investigatory learning, where students engage in research and problem solving. It is in this model of gifted education that the use of technology is essential.

The Internet, especially online databases, provides access to information previously unavailable to all but a select group of scholars. This access to information is essential.

**Figure 1:** Cognitive Characteristics of Gifted Students as Described in Clark (1997)

### Cognitive characteristics of gifted students:
- Extraordinary quantity of information, unusual retentiveness
- Advanced comprehension
- Unusually varied interests and curiosity high level of language development
- High level of verbal ability
- Unusual capacity for processing information
- Accelerated pace of thought processes
- Flexible thought processes
- Comprehensive synthesis
- Early ability to delay closure
- Heightened capacity for seeing unusual and diverse relationships, integration of ideas and disciplines
- Ability to generate original ideas and solutions
- Early differential patters for thought processes
- Early ability to use and form conceptual frameworks
- An evaluative approach toward self and others
- Unusual intensity, persistent, goal-direct behavior
To the process-product model of gifted education, where students need to examine and analyze information in order to solve problems or discover answers to their research questions. Additionally, the opportunities for production are boundless. Students are able to use the information obtained through research to create any number of products (e.g., documentaries using movie-making software, presentations using PowerPoint or other presentation software, and publications using word processing software). The available software packages found in most schools, or as freeware online, enable students to produce products that rival professionals in quality. A teacher who utilizes technology in the process-product model of gifted education literally provides a world of opportunities for the students.

Technology is a vehicle for gifted curricular differentiation. The vast array of information available on the Internet necessitates that students be able to synthesize large amounts of information, analyze for meaning and patterns, and decipher relevant information from distracters. The infinite possibilities associated with digital technology, especially via the Internet, means that students are limited solely by their interests and abilities.

**Defining 21st Century Literacy**

Today’s students are living in a rapidly changing world of technology and communication, requiring a level of literacy that surpasses that of previous generations. In addition to the basic skills of reading and writing, students today must be able to think creatively and critically to solve problems and process voluminous amounts of information found in a variety of locations, including the Internet. Students also need to possess flexibility and confidence in the use of technology and be able to adjust innovative technology that will inevitably be part of their future life. The issue of 21st century literacy has become so pervasive that the topic dominated the cover of the December 18, 2006 issue of *Time Magazine* (Wallis & Steptoe, 2006). The article describes a situation that most educators recognize. Schools are incompatible with the modern world--classrooms remain in the 20th century while the outside world is a rapidly evolving matrix of communication and technology. These observations are corroborated by findings of the Partnership for 21st century Learning Skills (2002), which found a significant gap between knowledge and skills taught in the schools and those needed in the modern work force.

Burkhardt et al. (2003) identify four key components to 21st century literacy: digital-age literacy, inventive thinking, effective communication, and high productivity (see Figure 2). Each of these four components include facets that are already imbedded within gifted education (Siegle, 2004a; 2005). _Digital-age literacy_ refers not only to the basic literacy of reading and writing, but also includes an understanding of scientific principals, economics, and global issues, as well as an ability to use technology and analyze information. _Inventive thinking_ incorporates the cognitive skills necessary to grapple with the volume of information available with current technology, including higher order thinking, flexibility, curiosity, and creativity. _Effective communication_ includes the ability to collaborate and utilize interpersonal skills, the knowledge of civic and personal responsibility, and the ability to effectively communicate ideas (Burkhart et al. 2003). A
A highly productive individual is identified as having the ability to plan, prioritize and execute ideas using the appropriate tools and knowledge.

![Figure 2: 21st Century Literacy Skills from Burkhardt et al. (2003)](image)

Although an ability to use diverse technologies is obviously crucial in this digital age, most teens are already comfortable using an array of technologies. The key to literacy in this new era is the adolescent’s ability to research, hypothesize, analyze, synthesize, and problem solve. In other words, today’s literate individual is proficient in higher order thinking.

**Higher Order Thinking**

Higher order thinking “occurs when a person takes new information and information stored in memory and interrelates and/or rearranges and extends this information to achieve a purpose or find possible answers” (Lewis & Smith, 1993, p. 136). It is a broad term used to describe complex thinking skills, such as critical thinking and problem solving (Lewis & Smith, 1993). What is considered to be higher order thinking varies by individual. The construct of higher order thinking and its subordinate constructs of critical thinking and problem solving are nestled within the context of an individual's prior knowledge. What could be classified as critical thinking or problem solving for one individual, for whom the knowledge is new, could be prior knowledge for others (Newmann, 1990). Although the level of higher order thinking can vary among
individuals, there are skills that can be addressed and developed through a curricular model (Fisher & Scriven, 1997).

Higher order thinking inherently falls within the constructivist theoretical framework. Constructivist theory is based on the idea that knowledge and understanding are individually derived, as opposed to universally defined (Land & Hannafin, 2000). With each of the tasks embedded within higher order thinking (e.g., problem solving, critical thinking, value analysis, and hypothesis testing), it is incumbent upon the learner to construct his/her own understanding of the problem or information and to make decisions accordingly.

Critical thinking has long been discussed in educational research. Dewey (1933) referred to critical thinking as “reflective thinking,” which is “active, persistent, and careful consideration of any belief or supposed form of knowledge in the light of the grounds that support it and the further conclusions to which it tends … it includes a conscious and voluntary effort to establish belief upon a firm basis of evidence and rationality” (p. 9). Since Dewey, there have been a number of other definitions of critical thinking that offer slight modifications of one another (Fisher, 2001). Glaser (1941) described critical thinking as:

1. an attitude of being disposed to consider in a thoughtful way the problems and subjects that come within the range of one’s experience;
2. knowledge of the methods of logical inquiry and reasoning; and
3. some skill in applying those methods. Critical thinking calls for a persistent effort to examine any belief or supposed form of knowledge in the light of the evidence that supports it and the further conclusions to which it tends. (p. 5)

Ennis (1993) describes critical thinking as “reasonable reflective thinking focused on deciding what to believe or do” (p. 180). Paul, Binker, and Weil (1990) explain critical thinking as “taking charge of your own mind. … it involves getting in the habit of reflectively examining our impulsive and accustomed ways of thinking and acting in every dimension” (p. 7). Fisher and Scriven (1997) define critical thinking as the “skilled and active interpretation of observations and communications, information and argumentation” (p. 21). Each of the definitions of critical thinking listed above includes reflective thinking, analysis, and meta-cognition; it is understanding what you know, what you think, and knowing how you came to that conclusion.

Twelve critical thinking skills, derived from Glaser (1941) and Fisher and Scriven (1997), emerge as being necessary for working in today’s digital age (see Figure 3). Evaluation,
interpretation, and synthesis are essential in order to draw meaning from the array of information available online. Such higher order thinking is an integral component in gifted education (Renzulli, 1977; Tomlinson, 1996). Indeed, in this digital world, with ever-changing technology, the ability to critically reason and solve problems is more important than the ability to use a specific type of technology (Siegle, 2004a).

![Critical Thinking Skills](image)

Figure 3: Identified critical thinking skills as adapted from Glaser (1941) and Fisher & Scriven (1997)

**Technology and Higher Order Thinking**

Over the last 25 years, the use of computers in schools has transformed from electronic worksheets to interactive multimedia formats (Jonassen, 2000; Siegle, 2004a). In the 1980s computers were typically used as drill and practice tutorials, requiring little in the way of higher order thinking. In the 1990s, computer usage began to evolve. As the Internet became available in more classrooms, computers were being used as tools to gather and present information. Students were required to analyze, synthesize, and communicate information—characteristics of critical thinking. Today, as technology becomes ubiquitous in the nation’s classroom, computers are being incorporated in a more dynamic fashion. The available technology enables students to utilize a variety of skills and formats toward a single purpose, such as digital storytelling (Porter, 2006). It should be noted that the presence of dynamic technology in a classroom is insufficient to encourage higher order thinking. Oliver and Hannafin (2000) found that students did incorporate higher order thinking in technology-driven tasks only after instruction in critical thinking skills.

Siegle and Foster (2001) reported that students do benefit from the open access to technology through the use of laptop computers, appropriate software, and constructivist activities, as compared with peers who did not have open access to technology. Their study was inconclusive as to the attributing factor in student achievement. The factors influencing achievement were confounding and no indices could be identified as specifically influential. It is likely that student achievement was a result of the combination of open access to technology, the different perspectives
offered through software, and the construction of knowledge through presentation activities requiring research and analysis.

Constructivist theory is particularly appropriate for the discussion of the use of technology to develop higher order thinking. Jonassen (2000) uses the term *mindtool* to describe the use of computers and other technology to construct knowledge. The term mindtool is synonymous with cognitive tool, which is a mental or computational device that extends and supports the thinking process (Liu & Bera, 2005). Jonassen (2000) specifically defines mindtool as “computer-based tools and learning environments that have been adapted or developed to function as intellectual partners with the learner in order to engage and facilitate critical thinking and higher order learning” (p. 9). He suggests that the computer, when used as a mindtool, aids in scaffolding information and maintaining student engagement with the information. Mindtools aid in the thinking process; they assist students in extending beyond their zone of proximal development, the zone between the learner’s existing and potential characteristics (Jonassen, 2000). Jonassen suggests that this cognitive expansion is due in a large part to the nature of the current technology when used as a mindtool. It is also possible that student interest in technology, either through novelty or practiced interest, may also permit students to lower their inhibitions with new knowledge and stretch into new realms.

Constructivist pedagogy embraces authentic learning environments, which are student-centered and goal directed (Land & Hannafin, 2000). In a constructivist classroom, students work independently on authentic tasks and the teacher circulates as a facilitator. Gifted students thrive in such an environment (Siegle, 2005).

An example of a technology-oriented student-centered task is the creation of multimedia presentations, such as digital documentary films (Siegle & Foster, 2001). Movie making software, such as Apple’s iMovie or Microsoft’s MovieMaker, is rapidly becoming available in classrooms nationwide. Through using this type of software, students are able to combine film and photographs, sounds and music, and text and transitions to create an original product. Nonlinear in nature, digital filmmaking provides students an opportunity to collect materials and information and edit them in such a way as to best develop a story or line of reasoning. The availability of primary source material on the Internet and in digital archives provides students with previously unfathomable access to a variety of knowledge. Creating a documentary requires students to access these sources, gather available information, determine relevancy, and structure the material in a meaningful way. The selection of sounds and images requires students to critically analyze information and judge the appropriateness and significance of each. Siegel (2004b) identifies four modes of learning associated with technology: acquiring, retrieving, constructing, and presenting information. Digital video production uses all four modes. Students use technology to research information, capture images and sound from the Internet, construct meaning from the information they have acquired, and present it through the filmmaking process.

In addition to the creation of digital products, technology can be used to create a portfolio of student work (Siegle, 2005). Electronic portfolios, maintained on either flash
drives or net servers, enable students to reflect and analyze their previous work and progress. Reflecting on their educational development allows students to develop a mature level of metacognition, a key component in higher order thinking.

**Technology and the Gifted Adolescent**

Technology should be an integral component of the adolescent gifted student’s education for three reasons. First, technology is continuously part of the teenager’s life. The gifted individual is able to seamlessly integrate technology into daily interactions (Lenhardt, Madden, & Hitlin, 2005; Roberts, Foehr, & Rideout, 2005). To ignore the presence of technology and the student’s interest in technology would be negligent. Second, educators must prepare students for the world of tomorrow’s technology (Burkhardt et al., 2003). Future innovations are on the horizon, and educators can ensure that students are able to utilize technology as a way to develop higher order thinking and collaboration—both goals of gifted education and keys to 21st century literacy. Third, gifted students typically possess skills that are particularly effective when using today's technology, specifically abstract thinking and rapid processing (Siegle, 2004a, 2005).

To use effectively the multimedia format of current technology, it is necessary to combine information from a variety of sources to construct meaning. Information on the Internet can be seen as a series of puzzle pieces. It is the task of the user to put these individual pieces together to create a whole picture. Gifted students are able to transfer knowledge from one venue to another, which enables them to see the larger picture. This skill is particularly effective when utilizing multimedia formats such as digital filmmaking software, which requires the integration of music, text, and images to tell a story. Technology provides opportunities for creation limited only by an individual’s skill and creativity. A blank screen is a blank canvas awaiting text, images, color, transitions, sounds, and much more. To demonstrate how to incorporate technology in the middle grades gifted curriculum, an example lesson that infuses technology within a gifted seventh grade social studies class is provided (see Appendix A).

Gifted students benefit from the use of technology. Today’s teen is engulfed in a world full of information and media. These students, whether or not they are talented in technology-specific fields, possess skills that enable them to maximize the use of current innovations. Incorporation of instruction that uses the computer and other technology as a mindtool is essential in gifted education. Requiring students to construct their own meaning through on-line research; to analyze, evaluate, and synthesize information; and then to present their work via a multimedia platform is the embodiment of the curricular goals of gifted education (Renzulli, 1977).

**Future Directions**

There are numerous essays and literature reviews analyzing the role of technology and 21st literacy skills; however there is little in the form of empirical research. The research that has been conducted is tangentially related to higher order thinking. Typically, the
studies are subject-specific and usually focus on a specific program or software product. Liu and Bera (2005) addressed the role of problem solving. However, their evidence for problem solving development, a change in the use of cognitive tools, is related to a specific computer program in an isolated problem solving activity. Siegle and Foster (2001) examined the use of PowerPoint, but, it was ancillary to other program materials and the effects could not be attributed to PowerPoint, media or other methodologies. This study also focused on achievement in a certain field—not on the development of higher order thinking. What is lacking is an analysis of higher order thinking and other 21st century skills when students are engaged in the use of technology available in most classrooms.

Appropriate gifted education involves the development of higher order thinking, critical thinking, and collaboration. Twenty-first century literacy skills incorporate all of these characteristics. Gifted education should include the development of literacy for the digital age. The question remains, however, as to what is the best path to take in order to accomplish this desired literacy. Logic dictates that the incorporation of technology in a constructivist learning environment will encourage 21st century literacy. Unfortunately, at this time, there is little evidence to support this logical supposition. Further empirical studies are needed to remedy this gap in information.

Today’s teenagers live in a digital world. It is incumbent upon educators to utilize the students’ digital culture and talents to develop the skills and knowledge they will need to become successful in their future lives. Meaningful education in the 21st century includes a constructivist approach to the use of the technology. If educators incorporate the gifted students’ talents and their digital culture, then the goal of educating truly literate citizens is feasible.
References


**About the Author**

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Appendix A

Nazification of Germany: A Story in Digital Pictures – Example Lesson

Picture books provide an extension of the human element to stories of the past through the connection of visual imagery and powerful prose. A picture book is the medium through which an author has chosen to portray a story. The combination of image and text tell the author’s story more thoroughly than can be accomplished through text or image alone (Billman, 2002; Giorgis, 1999). Far from being appropriate for just the elementary classroom, picture books often address topics and issues that are more appropriate for the older student (Giorgis, 1999; Osborn, 2001). The Holocaust is such a topic. It is complex and often difficult for young adolescent learners to fully grasp. Picture books provide a sense of relevancy that enables the adolescent reader to associate with the events of the era.

The creation of a picture book provides students with an authentic exercise in higher order thinking – requiring students to research the time period, identify the most important events, and analyze available images obtained through database research. These activities are rich in complex thinking skills and require students to construct their own understanding of the era.

In this activity, students were tasked with the exploration of how the Nazi regime was able to transform 1930s Germany, arguably, the most technologically advanced and modern society of the time, to a fascist state of prejudice, social conformity, and violence. Through their research, students became aware of the political and historic factors that set the stage for the rise of the Nazi party and the policies enacted by the
regime after gaining power. Through this activity students explored the factors, both historical and societal, that permitted the events of the Holocaust to unfold.

The students utilized Internet research and digital archival photographs to create a digital picture book of 1930s Germany, similar to The Children We Remember by C.B. Abells (1986), a picture book of historical photographs of the Holocaust. This activity can be used as a self-directed research activity or as a unit culmination assignment guided by materials presented in class.

Abells’ book is a powerful picture book of black and white photographs from the Yad Vashem archives combined with minimal text. The pictures largely tell the story, with the sparse text creating context. Students were charged with creating a picture book with a similar feel. They were required to use the images available in digital archives to tell the story of the Nazification of Germany and pair these images with sparse text to create meaning. For this assignment, as in Abells’ book, the images tell the story and the text provides support. The emphasis was on developing student visual literacy, as well as assessing their understanding of the unit. This activity differs from the paper and scissors cut and paste activities where images are taken from magazines or other printed sources, because students are required to systematically search through thousands of digital images to find the few they deem the most appropriate to tell their story. This was not an easy assignment. The research requirement was significant, and the students had to learn how to tell a complete story with limited text. For the verbally talented students, it was a unique challenge – requiring them to be parsimonious with their words and still relate the meaning. For the visually talented
students, this activity proved a unique opportunity to utilize their talents in social studies class, which is typically linguistically-dominant.

Students worked collaboratively in pairs or groups of three to plan, research and create their picture books. Students were given one week to complete the project. In that week students were required to brainstorm, storyboard, research, and create their picture books. In the interest of time, students were required to pre-plan their picture books, identifying the types of pictures they wanted to use before going on-line. By requiring students to pre-plan their product, archival searches were focused and purposeful. Digital archives can be a maze of information; therefore, without a plan for research, students can easily become lost in the amount of material available. Once students identified the images they desired for their book, they began searching the digital archives available on the Holocaust. Students were provided a listing of appropriate websites in which to search. With thousands of digital images, these websites (listed in the appended lesson plan) provide ample material for the creation of the book. Students were required to capture both their desired image and the website URL and copy them into a word document. This step is the equivalent to writing note cards in a research page. The students gathered their images and sources in a central location before creating their final document. Once students collected all necessary images, they were ready to begin construction of their books using PowerPoint presentation software. This software package provides the combined advantage of easy manipulation of images and text and has an appearance similar to a picture book when printed. Students imported their captured images into a slide show and combined these images with text to create their picture books. As part of the assignment, students were
required to create a reference page at the back of the book identifying the websites from which all images were obtained. The final step in the creation of the picture books was the physical construction of the book. The PowerPoint slides were printed and glued to card stock to provide rigidity to the pages. The pages were then bound using metal rings. The final picture books were then displayed in a student-designed display in the local public library during Holocaust Remembrance month.

Completed projects were assessed in four areas: accuracy, research, presentation, and participation. As this was a social studies project, accuracy of information was the most heavily weighted portion of the assessment. Included in this portion of the assessment was whether the book answered the question “How did it happen?”, and if the provided information was historically accurate. The selection of appropriate images indicated if the students understood the information and had been successful in their research and technology use. The attractiveness of the visual presentation of the picture book was also taken into consideration – specifically, if the product looked like a picture book and was neatly presented. Finally, as this was a group project, students were assessed on their participation within the group. This portion of the grade was a combination of student self-assessment, teacher assessment, and peer-assessment.

For students who are technically gifted, the use of presentation software alone may be too simplistic. This project was structured using the picture book format for several reasons – i.e. the experience of “publishing” a book, ease in sharing the final product, and the ready availability of PowerPoint software in the school. This project, the way it is originally designed, can be accomplished in schools with even the most
limited technology. All that is necessary is a Microsoft Office package, the Internet, and a printer. These tools are found in most schools today. However, if movie production software is available, technically gifted students could create a documentary about the Nazification of Germany using the same research skills and research question. If such software is not available, then the technically gifted students could be used as class troubleshooters, assisting the teacher with addressing technical problems that invariably arise in technology-oriented activities.

In this activity, students were challenged to research, create, and cooperate to produce a product to be shared with an authentic audience. Although this particular assignment centered on the Holocaust, the same activity could easily be incorporated into any lesson for which digital archives exist. Similarly powerful picture books could be created for the civil rights movement, World War II, the Vietnam War, September 11, 2001 or any number of other topics. Literally, the world is the limit.
Lesson Plan – The Nazification of Germany: A Story in Pictures

Grade Level: 6-8

History/Social Studies Discipline: World History; Holocaust Studies

NCSS Thematic Strands:

Individuals, Groups, and Institutions

Performance Expectations:

- identify and analyze examples of tensions between expressions of individuality and group or institutional efforts to promote social conformity
- identify and describe examples of tensions between belief systems and government policies and laws

Time, Continuity, and Change

Performance Expectations:

- identify and use processes important to reconstructing and reinterpreting the past, such as using a variety of sources, providing, validating, and weighing evidence for claims, checking credibility of sources, and searching for causality
- develop critical sensitivities such as empathy and skepticism regarding attitudes, values, and behaviors of people in different historical contexts

Power, Authority, and Governance

Performance Expectations:

- give examples of how government does or does not provide for needs and wants of people, establish order and security, and manage conflict
recognize and give examples of the tensions between the wants and needs of individuals and groups, and concepts such as fairness, equity, and justice

NETS-S National Educational Technology Standard for Students:

Technology communications tools

Performance Expectations:

- Design, develop, publish, and present products (e.g., Web pages, videotapes) using technology resources that demonstrate and communicate curriculum concepts to audiences inside and outside the classroom.

Technology research tools

Performance Expectations:

- Use content-specific tools, software, and simulations (e.g., environmental probes, graphing calculators, exploratory environments, Web tools) to support learning and research.

Objective:
Students will be able to create a digital photograph picture book chronicling the transformation of Germany under Nazi rule through the use of Power Point software. Students will research the events of the era through the use of appropriate internet websites; organize information for the picture book through the use of a storyboard; identify and capture appropriate images to use in the picture book; and, create the digital picture book through the usage of Power Point presentation software.

Time: A minimum of five 1-hour sessions
Instructional Steps:

There are four steps to this assignment: introduction, research, planning, and publication. This assignment may be completed individually, in pairs, or in groups.

Introduction:

- The most effective method to introduce the assignment is by reading aloud Abell's (2002) *The Children We Remember*. Following the read aloud, discuss the information presented, the emotions triggered, and the interaction between images and text.
- Upon completion of the discussion, the teacher will distribute the assignment rubric and explain the assignment objectives.
- Teachers and students will re-visit the example picture book to explore the mechanics of the book. Discussion will include an examination of the types of photographs utilized, the text associated with the images, and how the combination of text and image creates a more powerful message than either alone.

Research:

Research on these topics will include gathering informational material as well as surveying the available photographs illustrating the topics. Through their research, students should be able to make educated decisions of topics to address, images to include, and the appropriate text to write.

- Prior to students being provided access to the internet for research, the teacher should discuss internet safety and methods for ensuring web material validity.
Students should be directed to focus their research on the websites provided with this lesson plan. The teacher may want to create a word document with the suggested websites hot-linked and load the document to the student computers. This step will lessen the chance of students engaging in unsafe activities while on-line.

- Depending on the technical skills of the students, the teacher may be required to model internet research skills for the students. Included in this demonstration should be an explanation of how to access and use the suggested websites. It is an efficient use of time to demonstrate how to capture and save images and web addresses from the internet, as this will be a vital skill for the creation of the picture books.

- If this assignment is to be treated as a self-directed activity, students will need to be provided guidance on topics to research. Appropriate topics related to the Nazification of Germany include the following: pre-war Jewish life, anti-Semitism, the Treaty of Versailles, the Great Depression, the Nazi party platform, the election of 1932, the arrest of intellectuals and political dissidents, the eugenics movement and the T-4 program, censorship and book burning, the Hitler Youth, propaganda, the Nuremberg laws and the isolation of Jews, the 1936 Nazi Olympics, Kristallnacht, the Anschluss and the invasion of Poland, the establishment of the ghettos, and the Wannsee conference.

- If this assignment is to serve as a culminating activity for an instructional unit, students should be directed to review the materials presented in class and
conduct additional research to enhance their understanding of the topics listed above.

Planning:

A significant portion of the time necessary to create the picture book will be spent in the planning phase. Students will be provided blank copies of a storyboard format to use in their planning (See Figure 4).

- The teacher will need to display a copy of the storyboard form and explain its use.
- Students will need to be provided with a minimum of 10 copies of the storyboard form. This will allow for sufficient space to address the pertinent topics, include both covers and introductory pages, and still provide space for errors.
- In each of the boxes students will need to draw a rough sketch or describe the type of image she/he would like to include. The text for the page is to be written on the provided lines.
- After the pages are storyboarded, students will need to return to the photo galleries from the web and verify that the pictures to be included are available. If not, the students will need to revise the storyboard. If the desired images are available, students should capture both the information and the picture’s web address and save them in a word document for future use.

Publication:

Publication of the picture book requires the capture of images from internet databases, the import of these images into PowerPoint presentation software, and the addition of text to each slide.
• Depending on the proficiency of student with PowerPoint, the instructor may need to demonstrate the use of the software.

• The students will create their picture books by creating a separate slide for each storyboard frame. Appropriate backgrounds and fonts are to be added after all images and texts have been placed within the slides.

• Students are to save their picture books to the school network, the laptop, or to a flash drive and print out the slides. The printed slides will then be combined and bound to create a hardcopy version of the picture book. This hardcopy can then be shared with audiences outside the classroom.

Assessment:

Students should be assessed on their performance in several categories: accuracy of information, appropriateness of visual images chosen for the text, technical skills in searching for information and images, researching skills – as evidence in references for images and information, and overall picture book creativity and presentation.

Teaching Tips:

• Partner students who have limited computer proficiency with other students more proficient in using computers, the internet, and PowerPoint software.

• If saving to a network is not an option, the teacher may wish to use a flash drive to store student works. This alleviates issues of missing material and will simplify computer management. Additionally, the teacher will be able to monitor the student’s on-going progress. For efficiency, it is beneficial to use more than one flash drive – this streamlines both loading and saving of projects.
• Due to the graphic nature of the some of the photographs from the Holocaust, student research must be carefully monitored. Limit the extreme violent and graphic photographs associated with this era by having students focus on images from the time before the “Final Solution.” Additionally, teachers may wish to send parental notification letters, explaining the assignment and the potential risks of exposure to graphic images and concepts.

• Teachers will want to preview the website photo galleries and direct students to photo galleries most appropriate to the topics of research.

• If this activity is to be used as a culminating assignment for a unit, an effective technique would be to have the students storyboard pages associated with topics they have discussed in class. This will reinforce material discussed in class, lessen the total time spent on the project, and result in more accurate information and appropriate images.

**Technology Resources:**

**Hardware:**

- Personal computers with internet access, and printing capabilities.
- LCD projector (for demonstration of research skills and PowerPoint software)
- Flash drive (preferably 1G)

**Software:**

- PowerPoint presentation software
- Microsoft Word software
Appendix References and Suggested Websites


Figure 4: Planning Storyboard Form

Student Name(s): _______________________________________________________

Title: __________________________________________________________________

__________________________________________________________

__________________________________________________________

__________________________________________________________

__________________________________________________________

__________________________________________________________

__________________________________________________________
Figure Caption

*Figure 5:* Student working on the Holocaust picture book on a classroom computer.
Figure 6: A group of students working on the Holocaust project on two classroom computers.
Figure Caption

*Figure 7:* A group of students working on the Holocaust project in the school’s computer lab.
Figure Caption

Figure 8: Students working on a technology-related class project using one of the school’s laptop carts.