

California State University, San Bernardino

**CSUSB ScholarWorks**

---

Theses Digitization Project

John M. Pfau Library

---

1997

## Curriculum, communication and the internet: A project involving gifted special needs children creating curriculum for special needs children with autism

James Paul Roller

Follow this and additional works at: <https://scholarworks.lib.csusb.edu/etd-project>



Part of the [Special Education and Teaching Commons](#)

---

### Recommended Citation

Roller, James Paul, "Curriculum, communication and the internet: A project involving gifted special needs children creating curriculum for special needs children with autism" (1997). *Theses Digitization Project*. 1365.

<https://scholarworks.lib.csusb.edu/etd-project/1365>

This Project is brought to you for free and open access by the John M. Pfau Library at CSUSB ScholarWorks. It has been accepted for inclusion in Theses Digitization Project by an authorized administrator of CSUSB ScholarWorks. For more information, please contact [scholarworks@csusb.edu](mailto:scholarworks@csusb.edu).

**CURRICULUM, COMMUNICATION AND THE INTERNET: A PROJECT  
INVOLVING GIFTED SPECIAL NEEDS CHILDREN CREATING CURRICULUM  
FOR SPECIAL NEEDS CHILDREN WITH AUTISM**

---

**A Project  
Presented to the  
Faculty of  
California State University,  
San Bernardino**

---

**In Partial Fulfillment  
of the Requirements for the Degree  
Master of Arts  
in  
Education: Special Education**

---

**by  
James Paul Roller**

**June 1997**

CURRICULUM, COMMUNICATION AND THE INTERNET: A PROJECT  
INVOLVING GIFTED SPECIAL NEEDS CHILDREN CREATING CURRICULUM  
FOR SPECIAL NEEDS CHILDREN WITH AUTISM

---


A Project  
Presented to the  
Faculty of  
California State University,  
San Bernardino

---

by  
James Paul Roller


June 1997

Approved by:



Dr. Jeff McNair, First Reader

6/17/97  
Date



Dr. Richard Ashcroft, Second Reader

**Copyright**

**James Paul Roller, 1997**

All rights reserved  
**ABSTRACT**

Education typically follows the social models developed by society. During the last hundred years, children have been educated in an environment reflecting the industrialized society they live in. The teacher has been the primary source of information. The student's primary role has been to sit, listen, and complete assignments. Schools have produced students that have been trained to function in an industrialized work environment. However, society and the business community has evolved into the information age, jobs dependent upon the ability to work in collaborative teams to gather, synthesis, and assimilate information to produce a product. The educational community must go through a meaningful systemic change; administrators, teachers and students need to learn new ways to enhance educational programs, taking advantage of technological advances.

This project explores the effectiveness of gifted and talented students working collaboratively to produce useful curriculum-driven electronic books for students with special needs, specifically autism. We live in a diverse society with students learning on many academic levels. Through the use of telecommunications, students can have access to the same information and can communicate without any discriminating social, cultural, or educational influences.

This project is designed to facilitate a learning environment that allows for individual growth as well as collaborative group interaction. Each child is important and needs the opportunity to learn and experience the real world within the educational environment. Telecommunication provides the tools by which we can systemically change the educational environment and enter the "information age."

## TABLE OF CONTENTS

ABSTRACT.....	iii
CHAPTER ONE	
Computer Technology: A Functionalistic View .....	1
CHAPTER TWO	
A Paradigm Shift in Education: The Way Teachers Teach and Students Learn .....	8
CHAPTER THREE	
Staff Development in the Area of Technology .....	11
CHAPTER FOUR	
The Project: Gifted Special Needs Children Creating Curriculum for Special Needs Children with Autism .....	14
CHAPTER FIVE	
Effectiveness of Project: Sample .....	20
APPENDIX A: TRANSPARENCIES .....	24
APPENDIX B: WEB SITES .....	34
APPENDIX C: DISKETTES .....	35
BIBLIOGRAPHY .....	36

## **CHAPTER ONE:**

### **Computer Technology: A Functionalistic View**

As the bell rings, Ms. Smith reminds her students to log-in and to check their e-mail messages. Their on-line projects of creating electronic books with their “friends” in Tokyo will be added to their World Wide Web server later in the day. She also checks her own e-mail and responds to the fifteen or so messages she received since the night before. Roll is automatically taken by the main file server in the media center as students check their mail. All average daily attendance (ADA) information is updated in the central district office. During the day, students working in collaborative groups will gather data via the Internet for their westward movement project that will be presented in a multimedia format at the monthly Parent-Teacher Association meeting. One group is thrilled by the weekly on-line correspondence they are having with the author of the novel they are reading in class. Another group downloads images taken the night before from Mount Wilson for their Solar System project. Yet another group anxiously awaits their one-hour “log-in” to the Goldstone-Apple Valley Radio Telescope to gather current data on Jupiter’s radiation belt to be published with other classes around the nation. This is a fifth grade classroom. The year is 1997.

Humans’ curiosity with the world around them has stimulated exploration and technological advancement throughout history. During the last century, technology has advanced from horse to automobile; adding machine to calculator to computer; foot to flight; written letter to telegraph to phone to e-mail; family storytelling to radio to television; books to CD-ROM to Internet. Technological advances seem to originate with an idea of improving or changing a particular aspect of life. The improvement or change might be motivated by curiosity, such as the development of the manned hot air balloon by the Montgolfier Brothers or motivated by political and/or economic

advancement such as in the “space race” of the 1950’s. In either case, technological advances have been made and have changed how people live, work and learn.

As technological discoveries are made, business entrepreneurs profit from further development, thus making the new technology competitive. Digital calculators were first used in the space program. Business saw a profit opportunity and began marketing the calculator for business usage. Education followed and eventually teachers began teaching calculator skills in the classroom. A pattern seems to be evident during the last century regarding the sequence of developmental technological advances.

Scientific research by individuals or within government programs precedes business involvement, followed by the educational sector. There appears to be a fundamental “lag time” between the developmental stage of technology and the implementation of technology in schools.

The functionalist believes that there is a consensus and cohesion in society that social institutions function to maintain that consensus and cohesion. The role of the educational system is to reinforce the common values of society, by passing them on to the next generation so they can fit into the society (Gutierrez, 10/17/95). As technology becomes integrated into our society, basic views of how, when and why will begin to emerge in our educational institutions.

Computers were introduced to the classroom in the early 1980’s. The manifest function was to have students and teachers become computer literate. “Manifest function: are those objectives consequences contributing to the adjustment or adaptation of the system which are intended and recognized by participants in the system” (Merton 1968 : 105) Teachers were expected to teach computer literacy while preserving, maintaining and protecting the current level of instruction in all areas of curriculum. It was believed that computers would change the way teachers teach and students learn.



During the 1980's and into the 1990's, as a latent function of integrating computer literacy into the schools, billions of dollars were spent for computer hardware and software throughout the educational system in America. However, an inproportionate amount was allocated for staff development, training and technical support. Teachers were expected to integrate computer literacy into their curriculum without proper training for themselves. Some schools committed to having one computer in every classroom where the machines became a "computer assisted instructional" tool. "The computer now acts as a tutor in the learning environment" (Johnson, 1994). Many schools did not have the funding for expensive computers and were unable to develop computer literacy programs. Establishing a computer lab was another way of integrating computers into a school but was expensive as well.

The adaptation of computer literacy in the American educational system had several dysfunctions. Generally, teachers viewed computer literacy as another subject to teach without having the proper training. Many teachers chose to ignore computer literacy altogether, allowing the few computers to become "dust catchers". Teachers that did attempt to implement computer literacy, many times organized computer times so all students would get equal time as users. This resulted in students receiving inconsistent computer time (i.e.. each student would receive five minutes, once a week, etc.). The computer also became a reward system for good behavior.

One major dysfunction was that the computer itself had limited use due to technological development. "A lot of people are cynical about educational technology because it has been over hyped and has failed to deliver on its promises. Many of the PCs in schools today are not powerful enough to be easy to use, and they don't have the storage capacity or network connections to permit them to respond to a child's curiosity with much information" (Gates, p.66). The Apple II and early PCs were extremely slow and had limited use.

Currently most schools have computers on campus and some have a computer in each classroom. For the last twelve years, the computer has primarily been a “drill and practice” tool. Students get computer time once or twice a week in the classroom to practice math, reading, language, and keyboarding skills. Some schools have a computer lab where students go as a class to, once again, practice math, reading, language, and keyboarding skills. A significant percentage of teachers feel uncomfortable with technology. Thus, many computers sit idle in classrooms.

A new concept in the technology equation was “quietly” introduced forty years ago. During the 1950’s, the United States government began “sharing” information between military bases and research facilities using computers. They used a system of “packaging” the data in a way that kept the information secure. The information was then “mailed” through the phone lines from one computer to another. In 1969 the Department of Defense (DOD) publicly introduced the Advanced Research Projects Agency’s ARPAnet. The Internet was born. In 1986 the government established the National Science Foundation (NSF) and provided financial support to major universities throughout the world. The Internet grew.

In 1992 the computer entered a new era as the Internet became more easily accessible for the average computer user. In the last four years, the business and education sectors have joined the “information age.” Until recently, the “appearance” and accessibility of information on the Internet has been difficult. Basic communication through e-mail, as well as simple downloading of information files, demanded using baseline commands and complicated keystroke commands. The potential for gathering information was great but much too difficult for the average computer user. America On-Line, CompuServe, and Prodigy have commercially developed a “front-end” or program that makes it easier to gather data. These are powerful tools but expensive for educators in the classroom. In 1994 a program called Netscape became available that

allowed easy access for adults as well as children and was relatively inexpensive.

“Students can do research as well as collaborative projects with other students on the network, becoming both consumers as well as providers of information (Black, 1995).

The Internet explodes!

Another phase of a manifest function emerges as the computer enters a new era with the World Wide Web and graphic interfacing. Several aspects of computer technology have come together at a time where the demand for accurate transfer of communication interfaces with the computer’s ability to perform the needed tasks with speed and efficiency. As the computer becomes a communication tool rather than a drill and practice machine, a paradigm shift will take place in the classroom as students and teachers begin to explore and assimilate information in a new way. Once again it is believed that computers will change the way teachers teach and students learn.

As a latent function of integrating computer literacy into the schools, billions of dollars will be spent for computer hardware and software throughout the educational system in America. This time, however, districts are spending equal amounts on teacher training and technical support. “Teachers have to be trained to use it. Only then can the innovation become a part of their teaching repertoire, and not just a reward for students when they finish their work” (Siegel, 1995). For example, San Bernardino County Superintendent of Schools in partnership with the Community Coalition has developed an Instructional Technology Development Consortium (ITDC) which supports not only Internet connection, but teacher training. The cost to each district becoming a member is \$.90 per Average Daily Attendance (ADA). The county provides Internet access software as well as an e-mail package. Teachers (one teacher per school site or 1 to 30 ratio) as well as their administrators attend six training modules, dealing with hardware/software usage as well as curriculum design for use with Internet implementation. Teachers learn new ways to enhance existing educational programs as well as develop new collaborative

projects involving other teachers and students. Educators and students learn that computers are tools to be used in all areas of education. The computer is no longer a concept to be learned, but a tool to be used to enhance learning.

Dysfunctions derived from this new approach to using computers in schools are yet to be realized. As with any other change in the status quo, one can expect dysfunction to occur. Money will always be a problem. New concepts in computer technology will allow for a drastic decrease in price of the new “communication devices”. Late in November, 1995 new computers were introduced that perform as an Internet connection device as well as for sending and receiving e-mail for around \$500. Bill Gates, CEO of Microsoft, Inc. foresees a

“...wallet PC” that will contain “identification, money, watch, credit cards, check-book, traveler’s checks, an address book, an appointment book, a notepad, reading material, a camera, a pocket tape recorder, a cellular phone, a pager, concert tickets, a map, a compass, a calculator, an electronic entry card, photographs, ... and will be able to carry it in your pocket or purse” (Gates, 1995).

The software exists for all these tasks now. Most of the tasks mentioned above can be executed with the \$500 communication device as well as full Internet connectivity. Many of the major reasons the computer failed in the classroom in the last 15 years (lack of speed, reliability, usefulness) have been addressed. As the cost comes down and teachers become trained, the computer will finally become a viable tool in the classroom.

Even if cost is not an issue, how will implementing technology have an impact on teachers’ programs? Will they have to “change” the way they teach? Will this new technology improve or change their lives? To educate students in this new technology, teachers will have to begin with technical training and support. States are currently realigning funding for technology. the State of California has recently chosen to fund regionally instead of concentrating on State projects. More money has been made available at the County level which makes it easier to allocate to local areas (i.e.. ITDC, CTAP, etc.)

Another source of money is to establish partnerships with local businesses and government agencies through grants as well as direct involvement. For example, the Science and Technology Center in Apple Valley has established a partnership with NASA/JPL, resulting in a seventeen million dollar Goldstone-Apple Valley Radio Telescope Project (GAVRT). New partnerships must be established between local businesses as well. The Science and Technology Center has established several “Business Partnerships” in the High Desert area. One such partnership between three mining companies and the Science And technology Center yielded the computer hardware needed to pilot the Telescopes in Education Project developed by the Jet Propulsion Laboratory and the Mount Wilson Observatory. Students control a sixteen inch Celestron telescope at Mount Wilson from the Science and Technology Center for space research. Technological advancement can be addressed in our schools today. Educators need to be as creative in finding funding sources as they are in the classroom.

As technology becomes integrated into our society, we as educators must continue to assume the responsibility of reinforcing the common values of society while preparing our students for the future. All students have a right to a quality education. Technology can help equalize the educational system or further the separation of the “haves” and “have nots”.

## **CHAPTER TWO:**

### **A Paradigm Shift in Education:**

#### **The Way Teachers Teach and Students Learn**

Public schools have supported traditional models of teaching for over one hundred years. Basic concepts of teacher-student roles have also remained unchanged. A paradigm shift in the way teachers teach and students learn is beginning to take place, fueled by advancements in technology. In the next ten years, public schools will go through a metamorphosis.

Traditional teaching models of the past have been consistent. The teacher has been the primary source of information, delivering information from the front of the class, with students sitting in neat rows (very useful in an industrialization society). The student's primary role has been to sit, listen, and complete assignments. Most information is delivered and consumed in a one-to-thirty-five ratio. Although this model is over one hundred years old, it is still in existence today with few exceptions. Judy Cray (1995) states that "traditional schools are industrial-model schools, where everybody sits together and learns the same thing, because that's what an industry needs. But our economy is no longer industrial based." With the exception of United States and State Government models, this traditional model of teaching does not resemble any aspect of business or the real world in how it is organized today. Teachers in the traditional model appear like congressmen, convincing their charges of how they need to understand the valuable information they are presenting.

The open classroom concept in the early 1970's was a change from the traditional teaching delivery model. Although not a true paradigm shift in the way teachers teach and students learn, some important changes were being made. Teachers were still the primary source of information, but students had the freedom to choose when they wanted

to learn specific subjects. In this model, students learned how to learn, were able to choose learning styles that matched their learning modality, and worked together in small groups. Teachers began to manage their classroom like restaurant managers ran a restaurant. Managers, who were responsible for producing a product, directed personnel to complete tasks. The traditional teacher, like the open classroom teacher, took full responsibility for student outcomes. The open classroom teacher, however, passed some of the responsibility on to the students. Although the open classroom method was phased out after four years by the State Department of Education because of falling standardized scores, a few teachers continued the model and, after six years, began to show definite improvement in standardized scores. By this time, however, the public school system was back to the traditional model.

Today we are beginning to see a paradigm shift in the way teachers teach and students learn. Integrating the Internet into the classroom will change the way teachers and students gather, synthesize, and deliver information. In the traditional teaching model, teachers were the primary source of information in the classroom. As the paradigm shift takes place, teachers will no longer be the primary source of information. They will facilitate students' learning by directing them to sources of information and encouraging them to access, assimilate, and present their findings in original, non-traditional ways. As more technology is integrated, classrooms will become 'paperless' as they use computers to present findings in a multimedia format.

The introduction of the Internet into the classroom opens a new door to teaching and learning. Teachers develop thematic units across the curriculum, incorporating distant learning and collaboration with teachers and students from around the world. Information becomes immediate and current. Downloading day-old images taken by the Hubble Telescope for a science project becomes as simple as pointing and clicking. The

classroom is more like an innovative small business. Two or three students work together to produce an electronic interactive book to be published on-line for recognition, just as a group of two or three software designers work together to produce an electronic interactive book to be published on CD-ROM for profit. Teachers facilitate students' needs, while preparing them for the real world.

Our world is changing. Successful businesses have begun their own paradigm shift from traditional models developed during the industrial revolution, to smaller, collaborative models. The classroom will shift as well from the traditional models of the past to a technologically-based model, changing the way information is processed. The use of technology affects government and business; it will affect our schools as well.



## CHAPTER THREE:

### Staff Development in the Area of Technology

When was the last time you attended a staff development inservice on technology? Was it last week, last month, or last year: According to a national survey conducted by *Electronic Learning* (EL), only 33% of educators responding to the survey were offered technology training in the last year (Siegel, 1995). If educators are expected to integrate technology into their classrooms, how will they be trained? When will they be trained? Who will train them? How extensive will the basic changes need to be in order to accommodate the implementation of technology in the classroom? Will the teacher have to learn a whole new way to teach, developing new curricula and methods that use technology? These are valid questions that face educators today.

Technology will affect how teachers learn and teach as we approach the twenty-first century. “We’re spending hundreds of thousands of dollars on refitting buildings. What about refitting teachers?” (Siegel, 1995). Technology is a “scary” word for thousands of educators not familiar with using computers. Although computers have been available to educators for over fifteen years, many teachers and administrators have avoided implementing technology into daily use. One important reason is the lack of effective staff development. “Teachers have to be trained to use it. Only then can the innovation become a part of their teaching repertoire, and not just a reward for students when they finish their work” (Siegel, 1995).

So often in the past, teacher training on the computer consisted of a one-time session in learning a particular software program such as Microsoft Word. Follow-up sessions were seldom offered and technical support was not provided. According to Siegel, a typical technology training consisted of primarily training on individual software titles or specific hardware. “Only twenty-one percent of the courses focused on curriculum” (Siegel, 1995). Successful models of staff development in the area of

technology have been observed in school districts around the country.

One such example is stated in the May/June Electronic Learning article. In Newport, R.I., Jean MacMillan uses a three-level training program. Level I training consists of how to use basic hardware and software, level II involves learning how to evaluate particular software for classroom use, and Level III involves integrating software into curriculum design and changing how technology is used in the classroom. Teachers and administrators, who do not have experience in technology, need a training program that is geared to their level of understanding and interest. Macmillan's model serves as an example of facilitating the individual needs and learning styles of educators.

Another method of staff development used in the past has been to bring in the "expert" for a one-time inservice. This method has been shown to be more frustrating than useful. Without follow-up and tech support, one-time technology programs generally fail. An alternative to this method is using teachers and students as trainers. Many schools have a "technology expert" on staff who can conduct training sessions. He or she can train on-site "champion" teachers and students who become trainers at their own schools. The on-site trainers also provide tech support and continued training throughout the school year.

One situation has plagued staff development for years. Teachers have been required to attend training at the end of a school day. For most teachers, added hours for inservice is not productive, quality time. If staff development in the area of technology is important, it should become part of the regular school day. One solution is to schedule a minimum day once a week for staff development. Teachers would have time to develop curriculum, receive training in new software applications, develop techniques for using the Internet in the classroom, and spend time on other technology-related topics. Follow-up training would be conducted by an on-site trainer.

Educators need easy access to computers. Some districts have begun lending or

checking out computers to teachers and administrators overnight and on weekends. Bill Tally of the Center for Children and Technology/Educational Development Center states, "In order to achieve ownership of technology as a tool for real work, teachers must have equipment available to them at night, on the weekends, and in their classrooms. No teacher has enough time to appropriate these new media during the school day only" (Siegel, 1995). Desert Sands Unified School District near Palm Springs, California, has initiated a program where teachers attend a training at their school site. During the training, each teacher receives and assembles a computer. Teachers learn the basic set-up of the hardware and software, then have unlimited use of "their" computer. It becomes a tool for personal and classroom use. Teachers also have access to lap top computers for check-out, making it easier to work at home.

Technology will affect how teachers learn and teach as we approach the twenty-first century. As we face questions of integrating technology into our classrooms, we need to look for new methods of staff and student development. How, when, and where will teachers, administrators, and students be trained? There is a wealth of knowledge within our own districts. On-site teachers and students can provide the staff development and tech support needed in the area of technology, allowing teachers and administrators to integrate technology into their classrooms as well as their daily lives.

## **CHAPTER FOUR:**

### **The Project: Gifted Special Needs Children Creating Curriculum for Special Needs Children with Autism**

#### **I. Introduction**

Have you taken a class in the last couple of years and found yourself working in a collaborative group, developing a project or product reflecting the concepts you are learning? All over the world, businesses and educators are realizing the power of cooperative groups and collaborative teamwork. How can we as teachers better facilitate our students in learning these powerful skills as well as the academic goals and objectives we are to teach?

In this project, students will work in collaborative groups, using multimedia to develop HyperStudio “Stacks” or programs. They will use information gathered from CD-ROM and on-line telecommunications sources such as Netscape, America On Line, Scholastic Network, and e-mail to develop their electronic books (stacks). Initially they will use e-mail for the purpose of sending their stacks to other children around the country. Eventually their electronic books will be posted on a Web site, accessible to anyone with Internet access.

Although this project was field tested with Gifted and Talented Education (GATE) students that attended class for three and one half hours, once a week, three weeks a month, it could be implemented in a regular or special education class at any grade level. Student lessons are created on HyperStudio stacks for the use of other students. The subjects of the stacks vary but reflect the themes from the California State Framework. Students are currently using Laser disk information from the State adopted Scott Foresman Science Series “Discover the Wonder” as well as math and language arts from State adopted series. Bringing telecommunications into the classroom opens the door to a

new way of teaching and learning for teachers as well as students. There is power in knowing how to access information and working with a partner or collaborative group to develop a project. Using telecommunications as a tool for communication, research and inquiry becomes an exciting and valuable means by which one can develop alternative methods for learning. Students and teachers experience new ways to communicate, removing them from the isolation of the traditional classroom, thus creating a new atmosphere of excitement in education.

We live in a diverse society with students learning on many academic levels. Through the use of telecommunications, students can have access to the same information and can communicate without any discriminating social, cultural, or educational influences. Telecommunication allows for individuals or groups with similar interests to collaborate in research and project development as well as personal information sharing.

This project is designed to facilitate a learning environment that allows for individual growth as well as collaborative group interaction. Each child is important and needs the opportunity to learn and experience the real world within the educational environment. Telecommunication provides not only a way for students to reach out to the world but to also get a reply.

Computers (and teachers) in the past have been a one-way information tool. Telecommunication provides the platform by which we leave the isolation of one-way communication and truly enter the “information age.”

## II. Student Outcomes

By the end of this project, students will:

1. in a cooperative group, develop a HyperStudio stack using California Science, Math and Reading Frameworks as well as on-line sources for references

2. become aware of the special needs of other students through on-line communication
3. develop a multimedia stack for an individual special needs student
4. go on-line and send/receive e-mail
5. be able to attach a file to an e-mail message for sending over the Internet to a remote location
6. be able to download a file received by e-mail from a remote location
7. become familiar with several network systems i.e., Netscape, AOL, OpenMail
8. find other individuals with similar interests on the network using newsgroups and mail lists
9. get an answer to a question from an “expert” by posting a question on the Internet in a newsgroup
10. keep an electronic (portfolio) folder of all work, to be reviewed with the teacher

### III. Activities

1. What Is Multimedia?*(three week activity)* Students will learn to use HyperStudio, a multimedia program, and begin to publish their own “stacks” using original art, clip art graphics, original and disk library sounds, partial and full animation. Students will work in groups of two or three and follow a preformatted sequenced plan of activities.

2. Tele-What?!*(five day integrated, thematic activity)* Teacher will lead class discussion on basic human cultures developing distance communication technologies prior to the electronic era (drums, fire, smoke signals, mirrors, flags, etc.). Students will be divided into teams (three to four each). Each team will develop a communication

technology capable of sending understandable messages across the playground at a distance of approximately 200 yards. They must send several different kinds of messages. Students need to consider speed, accuracy, noise, and efficiency. After testing their system, students will assess the efficiency and success of their system. They will discuss with other teams in the class how they developed their ideas and how they would modify and improve their system. Students will compare and contrast their telecommunications system with today's technology. Each team will develop a HyperStudio stack or card representing the results of their findings.

3. What Is E-Mail?( *one day lesson*) Students will learn the basics of electronic mail, how information is transferred over phone lines, how information is changed from digital to analog and back to digital, how computers are used to send and retrieve information over distances and how to attach files to an e-mail message.

4. Snail-Mail Vs. E-Mail(*three-day in-class activity—over approximately one and one half weeks*) Begin with a class discussion of definitions of snail-mail and e-mail. (Snail- mail may be defined as traditional letters sent through the postal system.) E- mail may be defined as electronic mail sent from computer to computer. In this activity students and teacher write and send snail-mail letters to a friend, relative or another student. Students and teacher will also e-mail a letter to a friend, relative or another student or teacher who has an e-mail account. Class will discuss in small groups the difference in speed and accuracy of response. Other concepts will be discussed such as: How do you prefer receiving mail? Does one way seem more or less personal? Do you always need the speed of e-mail? What are the advantages of both? Disadvantages?

5. Learning How To “Log-on” (*two day activity*) Students will receive a personal e-mail account. In small groups, students will learn how to log on, open their mailbox, learn the commands in the index, establish a formal address within their e-mail, and change their passwords. They will write and send a message to another student in the class.

6. Newsgroups(*ongoing*) Students will learn to post questions, information, interests, etc. in a “newsgroup”. They will post their profile on the local network. Each student then searches the newsgroup and responds to someone with similar interests. Seeking out other students developing multimedia projects and using HyperStudio will be a priority.

7. Telecommunications Groups(*ongoing*) Teacher will contact other teachers of special needs students, then discuss specific needs of the target students with “telecommunication groups”. Telecommunication groups will brainstorm ways to present concepts to special needs students through HyperStudio stacks. Students work in collaborative groups, preparing personalized multimedia stacks aimed at individual students. Stacks will be developed reflecting particular needs such as color, shape, size recognition as well as grade-level projects in areas of science, math, reading, social studies, and art.

8. Posting electronic books on a Web site (*ongoing*) Students will learn how to post their project on their Web site, giving their stack the appropriate name to make it downloadable via the Internet using Netscape. All student-developed stacks will be made available on the Internet at the following site: <http://www.avstc.org> (click on the multimedia button).



#### IV. Assessment

In assessing a thematic project, one needs to be aware of growth in a variety of areas. How students worked in cooperative learning groups, how their enthusiasm for the curricular areas was enhanced through the use of technology, whether other teachers and parents became more aware of improved learning through lesson strategies, are side benefits, not necessarily formally evaluated but noted as observable outcomes.

Stated student outcomes will be assessed using the following methods: Students' progress in multimedia will be assessed using electronic portfolios, reflecting the successful development of HyperStudio stacks. Multimedia projects will also reflect understanding of academic subject areas. The use of telecommunications through on-line activity, reflecting students' use of e-mail accounts, data acquisition, etc., will be monitored by the systems operator and assessed by the teacher. Projects will also reflect "current" information procured through telecommunications as well as information learned from textbooks.

## **CHAPTER FIVE:**

### **Effectiveness of Project: Sample**

Creative writing has always been an important activity in the classroom. Students traditionally have been asked to write essays about various topics. After completing a writing assignment, students turned in their stories for the teacher to read and grade. Occasionally, some stories were published, but students' audiences were primarily their teacher.

Recently, multimedia software programs have been developed that allow individuals to communicate in new ways. Multimedia refers to using a combination of various media, such as a computer, VCR, CD-ROM, laser disk, and video camera to communicate an idea or concept. With this technology, students can create electronic books, publishing their work for their teacher, as well as audiences around the world. To create a multimedia electronic book, one must have a computer and a multimedia software program.

During the development and implementation of this project, many individual lives were changed in a positive way through the use of multimedia. While teaching the Gifted and Talented Education (GATE) program, which involved special needs children (GATE) working with other special needs children (autistic), the author of this paper observed unique situations that began to happen. Following is an explanation of one such situation.

Sean is an active, four year old living in Pennsylvania. He loves working on the computer. One can usually find Sean sitting for hours at the computer, playing games. According to his mother, Sean has never interacted with another child, never played with another person, and has never hugged his parents. Sean is diagnosed as having autism which, by definition, is characterized by an inability to relate socially to other people.

On the other hand, Cindy is an active, eleven year old living in California. One

can usually find Cindy at the computer when she is not reading a book or writing stories. Cindy interacts with her peers occasionally, but usually gets angry when her friends do not do what she wants. She likes to work alone and lets everyone around her know she has the correct way to do things. Cindy is in the GATE program.

Recently, this author had the opportunity to communicate and plan with another teacher in Pennsylvania. Both teachers communicated using their computers, writing each other letters and sending them from one computer to the other. Both teachers also wanted to have their students communicate. Because of the limitations in the students in Pennsylvania, it was decided that the GATE students would create personalized electronic books for the students in Pennsylvania, using a Macintosh computer and a multimedia program called HyperStudio.

The Macintosh computer is well suited to students' use. By using a mouse, or input device, the student can point and click to objects on the screen, creating art pictures, adding sounds and graphics to their picture, and creating interactive buttons, or hot spots, on the screen. When a book is finished, a student can actually touch the button the screen, initiating a sound or action to take place on a particular page in a book.

To create an electronic book, students followed several steps. Step one involved creating a theme for the book. Sean's teacher previously sent Individual Education Program (IEP) objectives that would help in Sean's developmental program. He also sent behavior modification goals. A team of three GATE students volunteered to create a personalized book for Sean. Cindy was in this group.

Step two involved discussing the basic format for the book. The team planned how the book should look and what types of sounds, graphics, animation, and original art would be appropriate for a four-year-old. This step became the brain storming session; all aspects of the book were discussed and analyzed.

Cindy's team then began creating the pages for the book. After starting up the

program HyperStudio, they clicked and opened the edit menu, then clicked on the words "Add a page". This step was repeated for adding the number of pages the team decided was appropriate. On each individual page, the team painted a background, drew an art picture, loaded a picture downloaded from an Internet site, or loaded a pre-drawn background from a CD that contained graphics. Adding a graphic from a CD was similar to adding a new page. Under the File menu, a student clicked on "Add a graphic". The new graphic was added to the page.

After the backgrounds were completed, the team began adding the text and interactive sounds. For example, the alphabet/number page consisted of a plain, blue background with the letters of the alphabet and the numbers one through ten typed in white. The letters and numbers were approximately three-fourths of an inch in height. An invisible button was added that had the voice of Cindy saying, "Hi, Sean. Please touch one of the letters or numbers." Then the team created an invisible button for each letter and number, recording their voices in a manner that related to a particular letter. If Sean touched the letter "N", Cindy's voice would sing, "N is for neighbor. Won't you be my neighbor?" The team created pages identifying four basic colors as well as pages for animal identification. All pages had buttons with positive verbal responses for Sean to touch.

One special page was created to modify Sean's behavior. On this page, the team drew a colorful picture of a house, tree, mailbox, and a bright sun in the sky. Invisible buttons were created and placed on each object. The button on the mailbox elicited a behavioral response from Sean. When Sean touched the mailbox, it said, "Special delivery for Sean! Dear Sean, I hope you have a nice day. Give me a big hug when you get home. Love, Mom." Sean loved the computer, so an attempt was being made to use the computer to elicit a positive human contact behavior.

The final step in the process involved the children in Pennsylvania responding to Cindy and the other teams. The teacher videotaped each student reading his or her personalized electronic book. Sean was so excited? He grabbed a fellow student and pointed to his computer. He then showed his new friend how the buttons worked. This was the first time Sean was observed interacting with another child! He also made eye contact with his teacher and smiled, which was “another first”. We do not know if he has hugged his mother, but we believe the potential for meaningful changes in behavior are possible through the use of multimedia.

Cindy has also gone through a change in behavior. Her former dominating behavior has been redirected into a positive leadership role. Cindy has seen how powerful it is to work with peers for a common goal. After watching the changes in Sean, Cindy realized she helped create a life-changing situation for another person. What she does has an effect on other people.

Simply writing a story to complete an assignment seems limiting when compared to creating a multimedia electronic book. Through multimedia, a group of special needs children from across the country have become closer, sharing ideas that have changed the way they look at the world around them. Writing can be much more than completing a project for a teacher. Using multimedia, students can creatively express themselves in new ways, for new audiences. Technology is truly changing the way we learn, communicate, and solve problems as we shift from an industrialization society to an information society.

## **APPENDIX A: TRANSPARENCIES**

The following pages contain a printed outline and transparencies to be used in conjunction with Chapter I on Computer Technology: A Functionalistic View. For systemic change to take place, administrators and teachers need to see where we have been, where we are, and where we are going. These may be useful in a staff presentation as well as school board presentation.

# 1 **Computer Technology** **A Functionalistic View**

by  
Jim Roller

## 2 **Manifest Function**

- ◆ 1981 —Apple gives every school a computer
- ◆ Teachers are expected to “Teach” computer literacy
- ◆ All students will become “computer literate”
- ◆ Computers will change the way teachers teach and students learn

## 3 **Latent Function**

- ◆ Money was spent for hardware and software, but not for staff development
- ◆ Teachers were expected to integrate computer literacy into their curriculum
- ◆ Computers became a “Computer Assisted Instructional” tool.
- ◆ The computer lab was developed for “drill and practice”

## 4 **Dysfunction**

- ◆ Generally, teachers viewed computer literacy as another “subject” to teach — without having the proper training
- ◆ Students received inconsistent computer time for good behavior, etc..
- ◆ Many computers became “dust catchers”
- ◆ The computer, itself, had limited use due to technological development

## 5 **Manifest Function**

- ◆ 1992 — The Computer enters a new era with the World Wide Web and graphic interfacing
- ◆ Computers become a communication tool
- ◆ A paradigm shift will take place in the classroom as students and teachers begin to explore and assimilate information in a new way.
- ◆ Computers will change the way teachers teach and students learn

## 6 ☐ **Latent Function**

- ◆ Money is being spent for hardware and software, as well as for staff development
- ◆ Computers are viewed as a tool to be used in all areas of education
- ◆ The computer is no longer a concept to be learned, but a tool to be used to enhance learning

## 7 ☐ **Disfunction**

- ◆ To be Determined



# Computer Technology

## A Functionalistic View

by  
Jim Roller

# Manifest Function

*“are those objectives consequences contributing to the adjustment or adaptation of the system which are intended and recognized by participants in the system.” (Merton 1968:105)*

28

- ◆ 1981 —Apple gives every school a computer
- ◆ Teachers are expected to “Teach” computer literacy
- ◆ All students will become “computer literate”
- ◆ Computers will change the way teachers teach and students learn

# Latent Function

*“Correlatively, being those which are neither intended nor recognized.” (Merton 1968:105)*

- ◆ Money was spent for hardware and software, but not for staff development
- ◆ Teachers were expected to integrate computer literacy into their curriculum
- ◆ Computers became a “Computer Assisted Instructional” tool.
- ◆ The computer lab was developed for “drill and practice”

# Dysfunction

*Dysfunctions are social behaviors that lesson the adaptation or adjustment of the system.*

- ◆ Generally, teachers viewed computer literacy as another “subject” to teach — without having the proper training
- ◆ Students received inconsistent computer time for good behavior, etc..
- ◆ Many computers became “dust catchers”
- ◆ The computer, itself, had limited use due to technological development

# Manifest Function

- ◆ 1992 — The Computer enters a new era with the World Wide Web and graphic interfacing
- ◆ Computers become a communication tool
- ◆ A paradigm shift will take place in the classroom as students and teachers begin to explore and assimilate information in a new way.
- ◆ Computers will change the way teachers teach and students learn

# Latent Function

- ◆ Money is being spent for hardware and software, as well as for staff development
- ◆ Computers are viewed as a tool to be used in all areas of education
- ◆ The computer is no longer a concept to be learned, but a tool to be used to enhance learning

# Disfunction

◆ To be Determined

## APPENDIX B: WEB SITES

The following is a list of Internet World Wide Web sites relating to this project. The first Web site listed is the Science & Technology Center in Apple Valley, CA. All electronic books developed for this project by the GATE students in the Elementary GATE program in Apple Valley Unified School District are located at this site. Click on the “Multimedia” button below the picture of the Science Center. All electronic books were written on Macintosh computers using HyperStudio© version 2.096.

<http://www.avstc.org> “Science & Technology Center”

<http://www.theramp.net:80/julian/hyperprogram.html>

[http://www.kusd.edu:80/s\\_projects/rainforest.html](http://www.kusd.edu:80/s_projects/rainforest.html)

<http://www.hyperstudio.com:80/download/indbod.html>

[http://www.coe.uh.edu:80/courses/cuin6397\\_tmm/class6.html](http://www.coe.uh.edu:80/courses/cuin6397_tmm/class6.html)

<http://www.usca.sc.edu:80/stacks/stacks.html>

<http://www.hyperstudio.com:80/hyper/indbod.html>

<http://volcano.und.nodak.edu:80/downloads/stack.html>

[http://snow-white.gac.peachnet.edu:80/gather/software/HyperStudio/3-D\\_Brain.hstu](http://snow-white.gac.peachnet.edu:80/gather/software/HyperStudio/3-D_Brain.hstu)

<http://arachne.cofc.edu:80/stacks.html>

<http://h-net2.msu.edu:80/~edweb/archives/feb96/0396.html>

<http://h-net2.msu.edu:80/~edweb/archives/jan96/0029.html>

<http://hyperstudio.wspout.com:80/gallery/index.html>

[http://www.ladue.k12.mo.us:80/student\\_creations.html](http://www.ladue.k12.mo.us:80/student_creations.html)

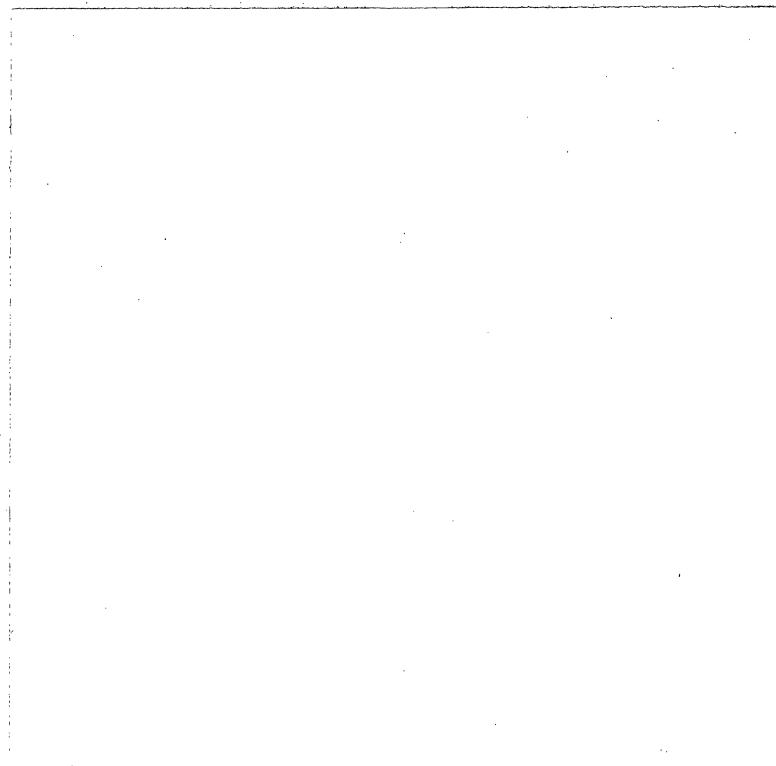
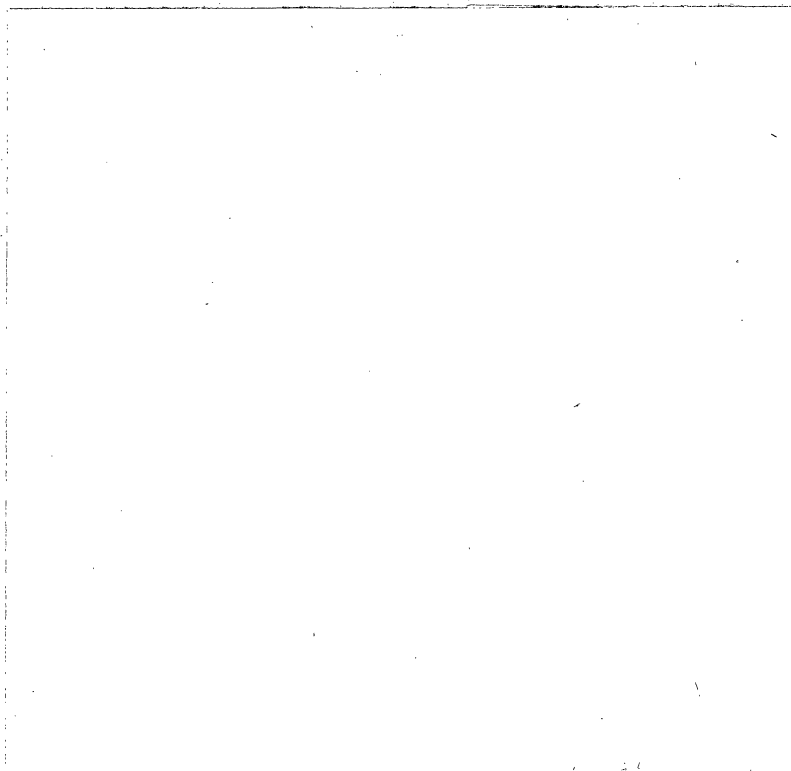
<http://www-tep.ucsd.edu:80/people/Perry-Minamide/webpage1.html>

<http://k12.cnidr.org:90/wwwedu/9501/msg00434.html>

<http://www.kpbsd.k12.ak.us:80/schools/northstar/EP.F/EP.Home.Page>



## APPENDIX C: DISKETTES



## BIBLIOGRAPHY

- Black, L., Klingenstein, K., & Songer, N. (1995). Part 2: observations from the Boulder Valley internet project. T-H-E Journal, 22, 54-57.
- Brameld, T. (1959). Imperatives for a reconstructed philosophy of education. School and Society, 87, 18-20.
- Brooks, D. (1994, September). Technology as basic to history-social science. Educational Technology, 3, 19-20.
- Cray, D. (1995, May). Plugged into technology. AS&U, 42-46.
- Carlin, P. (1994, Fall). New tools different rules. American's Agenda Schools For The 21st Century, 4 (3), 20-23.
- Filipczak, B. (1992, October). What employers teach. Training, 45-50.
- Gates, B. (1995, Nov. 27). The road ahead. Newsweek, 59-61.
- Greenwood, C.R., & Rieth H. J. (1994). Current dimensions of technology-based assessment in special education. Exceptional Children, 61 (2), 105-111.
- Gutierrez, J. (1995, Oct. 24). From lecture notes. Ed. 695.
- Hoffman, D. (1995, March). Learning for the real world. Technology & Learning, 22-29.
- Hoke, F. (1994, May 2). Scientists predict internet will revolutionize research. The Scientist, 8 (9), 1-5.
- Hunt-Berg, M., Rankin, J.L., & Beukelman, D.r. (1994). Ponder the possibilities: Computer-supported writing for struggling writers. Learning Disabilities Research and Practice, 9 (3), 169-178.
- Irvin, L.K., & Walker, H.M. (1994). Assessing children's social skills using video based microcomputer technology, Exceptional Children, 61 (2), 182-196.
- Johnson, J., Dupuis, V., Musial, D., & Hall, G. (1994). Educational theory: philosophy on action in American schools. *Foundations of American Education*. Allyn and Bacon.

- Johnson, J., Dupuis, V., Musial, D., & Hall, G. Introduction to the foundations of American education. 9th ed. Boston, MA. Allyn & Bacon, 1994.
- Siegel, J. (1995, May/June). The state of teacher training. Electronic Learning, 14, 43-53.
- Johnson, S.D. (1989, April). Making the transition to technology education, The Technology Teacher, 9-12.
- Kinnaman, D. (1995, April). Multimedia, professional development and school renewal. Technology & Learning, 62.
- Kinnaman, D. (1995, May/June). Schools need good teachers and good technology. Technology & Learning, 98.
- Laszio, A., & Castro, K. (1995). Technology and values: Interactive learning environments for future generations. Educational Technology, 7-13.
- Levinson, E., Doyle, D., & Benjamin, R. (1993, October). Technology and change. The Executive Educator, 15 (8), 20-24.
- Monahan, B. D. , & Dharm, M. (1995, Jan.-Feb.). The internet for educators: A user's guide. Educational Technology, 44-48.
- Movelli, J. (1994). How to finally get comfortable with your computer. Instructor, 104 (3), 68-72.
- Muffoletto, R. (1994). Technology and restructuring education: Constructing a context. Educational Technology, 34 (2), 24-28.
- Ocasio, L. (1995, April). Five great technology plans. Electronic Learning, 31-33.
- Orwig, A. (1994, September). Begin with teachers and watch students benefit. Technology & Learning, 74-76.
- Roffey, C. (1995). Electronic books. . . fad or future? Learning, 23 (6), 88-90.
- Scarborough, J.D. (1989, April). The changing content of technology education curricula. The Technology Teacher, 5-8.
- Siegel, J. (1995, May/June). The state of teacher training. Electronic Learning, 14, 43-53.
- Sturm, C.N. (1995). Hop on! It's easy to cruise the internet. Learning, 23 (5), 82-84.

Walker, D., & Williamson, R. (1994). Innovative computer uses for students with emotional/behavioral disorders. Beyond Behavior, 6 (1), 18-25.

Wall, T., & Siegel, J. (1994, March). All included, inclusion of special education children in regular classrooms cannot happen without technology. Electronic Learning, 13, 24-34.