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ABSTRACT

This paper presents a qualitative description of one of Hawaii's educational reform projects: the Electronic School Pilot Project, an innovative method of integrating advanced telecommunications technology into the classroom as a proposed cure for statewide inadequate or low performance on national standard exams (e.g., ACT and SAT). The telecommunication evolution and the technology processes involved with the project are explored. This presentation triangulates education, technology, and policy to introduce an integrated view of the pilot program. A brief literature review conveys support and opposition related to the subject of telecommunications technology in the classroom. Conclusions and recommendations reveal the structure, definition, technological procedures, and concerns of the Electronic School Pilot Project. (Contains 20 endnotes and approximately 15 references.) (AEF)

HAWAII'S ELECTRONIC SCHOOL PROJECT: A CURE OR ANOTHER CREATION OF THE GOD OF TECHNOLOGY?

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Hawaii's Department of Education has been plagued with a common but curable disease of inadequate or "low performance" on national standard exams (e.g., ACT and SAT). Evidence of this disorder appears on the front page of the Honolulu Advertiser (12/11/96). The main headline reads, "Student Achievement Score Falls." The article stresses that Hawaii's general reading and math scores have declined. This type of declivity is an epidemic that has spread throughout many of America's public schools. The state of Hawaii is not benign to this national cancer. This presentation is a qualitative description of one of Hawaii's educational reform projects: The Electronic School Pilot program. This case study identifies Hawaii's innovative method of integrating advanced telecommunications technology into the classroom as a proposed cure.

The purpose of this paper is to explore the telecommunication evolution and the technology processes involved with Hawaii's Electronic School Pilot Project. This presentation triangulates education, technology and policy to introduce an integrated view of the pilot program. A brief literature review conveys support and opposition related to the subject of telecommunication's technology in the classroom; conclusion and recommendations reveal the structure, definition, technological procedures and concerns of the Electronic School pilot project.

INTRODUCTION

"Too much apparatus, like too much bureaucracy, only inhibits the natural flow [of teaching and learning]." - Theodore Roszak[1]

"I am not arguing against using computers in school. I am arguing against our sleepwalking attitudes toward it, against allowing it to distract us from more important things, against making a god of it." - Neil Postman[2]

The state of Hawaii is currently under an educational restructuring program focusing on decentralization. Over the past decade there has been a perpetual shortage of secondary school teachers in Hawaii. The (DOE) Department of Education points the blame towards the University of Hawaii, stating that University's College of Education is not producing well-educated and qualified teachers. The university claims that Hawaii's secondary students enter the university system ill-prepared.

Despite the answer to this debate, it is obvious that a change is in order. Like many other public school districts across the nation, Hawaii is realizing that education is a life-long process. Education is not a set time or place and all educational project designs and curricular development must place the student at the center and not the peripheral. Hawaii's Office of Information and Telecommunication Services, (OITS) has adopted Howard Gardner's concept of "Multiple Intelligence". In a federal grant proposal prepared by OITS the writers state that teachers must pay attention to the varying learning styles and the multiple intelligence manifest in the students they are teaching. Schools throughout the country have developed plans and projects to help cure their educational ailments. Some school systems have used such methods as involving corporations in their overall operations. Others have turned the educational reform over to community-based management (e.g., local businesses, volunteers and support groups). And some have even taken their

concerns to the federal government.[3] Regardless of the various methods for improvement by different school districts the one remedy most have in common is incorporating information and telecommunication into the classroom; this equates to an antibiotic injection of technology.

The Challenge Grant proposal developed by OITS, suggests that the world is rapidly changing, and the only constant that we as citizens of the world can count on is change itself. As the world changes, so do people and the needs of people. Perhaps Ôchange' is a cause and effect which contributes to the learning deficit of today's youth.

Diane Ravitch (1992), Assistant Secretary for Educational Research and Improvement and Counselor to the Secretary of the U.S. Department of Education states, "Our kids usually perform at a level somewhere between the middle and the bottom on international assessments." Ratvich contends that our society needs a new generation of schools to help the new generation of students reach higher learning standards.

> "Agriculture is no longer the primary occupation; most mothers are in the work force rather than at home during the day; students now learn in very different ways,, such as through television, computers and other visual media; society is facing numerous challenges unknown a generation ago; and everybody needs a good education today, not just the 50 or 60 percent of students who are college-bound or headed for skilled jobs."(17).[4]

It is obvious that today's youngsters do not learn at the same pace or in the same manner as did their parents or grandparents. The mere development, of advanced electronic technology has defined the students of the 20th century as technologically unique. Kristine Woodall labels today's youth as the "Sesame Street Generation." Woodall contends that the introduction of[5] television to children of this era has fostered their desire to be entertained rather than educated. Is it the creation of Sesame Street and similar programming that has demanded that teachers resort to "Edu-tainment" rather than traditional lectures? Or can it be that the evolution of man's learning style has dictated the creation of Sesame Street-like programming?

Regardless of the answer to the previous questions, the fact of the matter is our educational dilemma demands that new models of teaching and learning be developed. This means a shift and an expansion in the educational delivery systems. Neil Postman (1996), suggests that society no longer has sufficient narratives to support our traditional educational models. He believes that we have moved far beyond the paradigm that held schools to be places where we trained students to become citizens for an American democracy.

Groennings (1992), asserts that corporations have the biggest stake in the success or failure of education in the United States. He reasons that we need educated people to both produce and consume our products. "Corporations like American Express Company do not earn any money from poor or uneducated people, nor do thousands of other U.S.-based corporations" (15).

In the Conference Board's Eighth Annual Business/Education Conference Report (1992), it was determined that corporate America pays approximately $20 billion per year for insufficiently educated workers. The report shows that a large portion of this money is for bilingual training, but a substantial amount goes for remedial education. Sven Groennings says, "In other words, learning that should have occurred elsewhere" (15).

Speakers from many sectors - business, education and government agreed that corporate involvement is crucial to the success of school reform in the United States. The report confirms that such involvement carries expense, however, the cost of a poorly educated society is higher still.[6]

LITERATURE REVIEW

Americans have traditionally placed great faith in the power of technology to solve the myriad of social, economic, and political problems which have faced us. Often in our enthusiasm for technological benefits, however, we failed to anticipate the social and environmental side effects of technological innovation. - Joe Kincheloe[7]

Hawaii has clearly defined its basic needs for educational reform. These needs include accommodating students' cognitive learning styles. The need to educate all students including those who are under challenged and at-risk. The need to conform to the recent budget cuts and resource shortfall (e.g., facilities, teachers, and programs). The DOE must maximize outcomes, ensure timely and effective delivery of curricula and meet the needs of all learners -- all ages, geographic settings, subcultures and those academically at risk.

The Electronic School proposes to support this educational reform in Hawaii by increasing access to learning technologies that enhance educational opportunities for students and parents at more convenient times and more accessible places. The bottom line is this initiative hopes to provide greater economic opportunity.

Neil Postman asserts in his book, The End of Education (1995), "There was a time when educators became famous for providing reasons for learning; now they become famous for inventing a method." Perhaps Postman's accusation warrants some merit, however the introduction of the Internet into the classroom as a mode of learning must at least be tried and tested before condemned for being a method rather than reason. It must also prove itself worthy before being praised and uplifted to Ôgod-like' status.

Postman compares the technology god (he uses a small g) to religion or as he labels it narratives. He believes that in order for a student to learn, he/she must have a reason or a purpose to learn. Much like a reason or a purpose that a religion and its deity gives to a person's life. In summary, he contends that for some people to live without a religion or narratives, life has no meaning. In comparing education to narratives, Postman cautions that without meaning, learning has no purpose and schools are houses of detention rather than attention. It is safe to assume that all religions have a belief system. Those associated particular religions are known as "believers of that system.

Postman (1995) declares that important distinctions are made among the different meanings of "belief": but at some point it becomes far from asinine to speak of the god of technology - in the sense that people believe technology works, that they rely on it, that it makes promises, that they are bereft when denied access to it, that they are delighted when they are in its presence, that for most people it works in mysterious ways, that they condemn people who speak against it, that they stand in awe of it, and that in the born-again mode, they will alter their lifestyles, their schedules, their habits and their relationships to accommodate it. If this be not a form of religious belief, what is? (38).

He continues this thought by stating that in all strands of American cultural life, one can find many examples of technological adoration. Postman suggests that one cannot find more enthusiasm for the god of technology than among educators. "In fact," he states, "There are those, like Lewis Perelman, who argue (for example, in his book School's Out) that modern information technologies have rendered schools entirely irrelevant, since there is now much more information available outside the classroom than inside" (38).

Dr. Diane Ravitch, former Assistant U.S. Secretary of Education, envisions, the challenge that technology presents to the tradition that "children" (and adults) should be educated in a specific place, for a certain number of hours, and a certain number of days during the week and year. In other words, that children should be educated in school. Imagining the possibilities of an information superhighway offering perhaps a thousand channels, Dr. Ravitch assures us that: In the new world of pedagogical plenty, children and adults will be able to dial up a program on their home television to learn whatever they want to know, at their own convenience. If Little Eva cannot sleep, she can learn algebra instead. At her home-learning station, she will tune into a series of interesting problems that are presented in an medium, much like video games... Young John may decide that he wants to learn the history of modern Japan, which he can do by dialing up the greatest authorities and teachers on the subject, who will not only use dazzling graphs and illustrations, but will narrate a historical video that excites his curiosity and imagination.[8]

Postman insists that Ravitch's point of view is a bit unrealistic. He proclaims that her future

narrative of Little Eva doing algebra instead of going to the movies because she can't sleep is all bit ridiculous. He argues, ". . . what Ravitch is talking about is not new technology but a new species of child" (39). He agrees that new technologies do make new kinds of people, but a 20th century child will more than likely play a video game, watch a movie or phone a friend if he/she is bored or insomniac.

Envisioning the imagined or futuristic world one may ponder its determinism. The technology is here or will be: we must use it because t is there; we will become the kind of people the technology requires us to be; and, whether we like it or not, we will remake our institutions to accommodate the technology. "All of this must happen because it is good for us, but in any case, we have no choice," Postman proclaims (40). He claims that this point of view is present in nearly every statement about the future relation of learning to technology. ". as in Ravitch's scenario, there is always a cheery, gee-whiz tone to the prophecies," he warns. In reference to cheerleading for technology in learning the following is a prophecy produced by the National Academy of Sciences, written by Hugh McIntosh.

School for children of the Information Age will be vastly different than it was for Mom and Dad.

- Interested in biology? Design your own life forms with computer simulation.
- Having trouble with a science project? Teleconference about it with a research scientist.
- Bored with the real world? Go into a virtual physics lab and rewrite the laws of gravity.
- These are the kinds of hands-on learning experiences schools could be providing right now. The technologies that make them possible are already here, and today's youngsters, regardless of economic status, know how to use them. They spend hours with them every week- not in the classroom, but in their own homes and in video game centers at every shopping mall.[9]

Apparently, Mr. McIntosh has not read Arnold Gibbons' book, Information, Ideology and Communication (1985). Gibbons contends that not everyone is privy to advanced technology. He would disagree with McIntosh's statement that regardless of economic status, all youngsters today know how to use the technology that is available today. Gibbons' book is centered around an international philosophy regarding policy, but can be applied to the disparity in our country on a local and national level. Gibbons characterizes the use of computers in this manner: "But what can be said about the computer? While it has simplified things at one level, it has complicated them at another. Advanced computer technology now is the sacred preserve of rich countries [and rich people within those countries] and reflects the disturbing gap in riches, technology and information resources at all levels" (10). He believes that while rapid achievements information technology takes place, discontent grows between the rich and the poor. This increases the animosity and inequity among the "haves" and "have nots".

Postman would possibly concur with Gibbons in rejecting the ideas presented in the previous scenarios. Postman believes that Ravitch and McIntosh present examples of a technological solutions to psychological problem. Alan Kay of Apple Computer, insists that any problems the schools cannot solve without computers, they cannot solve with them. Although an activist for computer technology in schools, Kay, like Gibbons (1985) and Postman (1995) believes that the god of Technology may be a mixed blessing. "It is often asserted that new technologies will equalize learning opportunities for the rich and poor. It is devoutly to be wished, but I doubt it. In the first place, it is generally understood by those who have studied the history of technology that technological changes always produce winners and losers -- which is to say, the benefits of new technologies are not distributed equally among the population. There are many reasons for this, among them economic differences" (47). Postman declares that it would be astonishing if computer technology equalized all learning opportunities. Whether technology will become the great socio-economic and cultural equalizer or not, it is still not the most essential element for healing all educational afflictions.

Peter Krass suggests in an Information Week (October 21, 1996) article titled, Internet? How About A Pencil?, that President Bill Clinton and Vice President Al Gore have not made the grade with public schools despite their good intentions.

Krass asserts that Clinton's reelection platform featured grand goals of wiring every public school in the nation to the Internet. This can be proven a factual assertion, when one investigates the NetDay96 proclamation created by the President and Vice President Gore.[10] Krass claims that Clinton's rhetoric made for a great political sound bite, but there are deep rooted reasons why getting an Internet connection is not the top priority for many of the nation's schools. He uses the example of the troubled public schools in Brooklyn, N.Y. According to a just-released survey of 215 principals in the borough, they've got more immediate needs on their minds:

- Plumbing that is poor or failing, reported by nearly one-third of the principals.
- Windows in poor condition, cited by more than half the schools. At one school, the panes are falling out.
- Playgrounds that are unacceptable, reported by nearly two-thirds of the schools. One reported a large hole with a barricade around it.
- Roofs that need repair, cited by more than 40% lack of space: Nearly half the principals say classes are overcrowded. So what will it be for the next generation: windows or Windows?" Krass asks.

In a recent article in the Honolulu Advertiser[11], Emma Pavich expressed a different but yet another fear of this thing called advanced information technology. Pavich was amazed that the teacher in her Internet training class informed her that with internet technology, very soon students would be able to learn everything they need at home. "How would children learn to make friends and be friends? How would they learn to talk and play?" she pondered. Weeks later Pavich noticed her own students making dates and sharing intimate thoughts via the Internet. She was quite disturbed by the notion that students who had not yet met anyone they wanted to date in real life would be eager to find Mr. or Ms. Right over the computer screen. This social issue and others are what have some parents concerned about internet technology in the classroom. Pavich claims that children are becoming lost in this "Electronic Community" and false world where friendship and intimacy are built on anonymity. Pavich urges parents to disconnect their children's link to cyberspace before their children become disconnected with the real world. She believes that despite the wonderful advantages the Internet offers us, parents and teachers must remember the greatest present we can give a child is our presence in their space, including their "cyberspace".

Steven Miller (1996) views the Internet as an advantage for parents and children of single parent homes. He contends that most single parents work outside the home. He believes the use of email, bulletin boards and on-line conferences will allow people to participate in public life at times and locations that fit within their schedule (329). Ideally, this will allow the parent to spend more quality time with the child, whether it be cooking, playing, talking or doing homework assignments together via the net.

As I surfed the WEB for research material I came across a website called Exploring Technology and School Reform (1996), the article entitled "Trends in Education" written by Andy Carvin gave a positive analysis for the use of computers in the classroom.[12] Carvin writes that technology plays a major role in the reformation of schools. Technology reduces professional pressures on teachers and increases the efficiency of student comprehension. Carvin insists that from a structural viewpoint computer networking is creating a professional bond between teachers as well as administrators never seen before in the history of education: Traditionally, every classroom is an island unto itself, with the teacher instructing, assessing and remediating children with limited contact with other teachers, even within the same school. Networking allows teachers to exchange lesson plans and advice and debate instructional methodologies with peers around the globe at the touch of a keyboard. . . . the Internet has created electronically a professional fraternity between educators (3).

Carvin contends that computers are an invaluable tool for providing active collaborative learning and assessment. He claims that word-processing programs allow students to become independent publishers of their own ideas and opinions and email provides opportunities for "peer review" and group editing. He suggests that multimedia packages offer true inquiry-based learning, where students must construct

and demonstrate solutions to a variety of in-class projects. "This is not to suggest that computers are used in reform to replace the role of the teacher, realistically that would be both undesirable and impractical," Carvin insists. Instead he says the computer must be recognized as an effective teaching tool which assists the educator (3). Despite the criticism of some of the literature presented, Hawaii has proposed its own technological solution to school reform. The Office of Information and Telecommunication Services, (OITS) within the Department of Education, has spear-headed a plan that garnished them a $4.7 million Challenge Grant from the federal government.

CASE STUDY

> Hawaii wants its students to become Hi-Tech, so that the world will look to Hawaii as center for technology in the Pacific, rather than just a recreational resource. - Marsha Mooradian

The five-year Electronic School program was designed to meet the challenges and changes inherent in the necessary reform in our educational system. In a personal interview with Marsha Mooradian,[13] I was introduced to the multi-dimensional program of the Electronic School. "Our goal is not to try to eliminate the traditional model of education. We are proposing a third dimension to an existing two dimensional curricula" declares Mooradian, CO-chair of Tech Corps Hawaii.[14] "The existing classroom contains a text book and a teacher. the Electronic School will add another element by introducing the internet and other communication systems." Mrs. Mooradian believes that this new electronic model will transform the traditional school model into a virtual learning center. It will require that the students become more independent learners. "Instead of giving them the information via traditional textbooks, they will have to go and get it for themselves," Mooradian emphasizes.[15]

Hawaii is one of 24 school districts in 16 states receiving "Challenge Grants for Technology in Education" from the U. S. Department of Education. Marsha Mooradian, who has a background in education was one of twelve writers of the grant proposal. Mooradian says that Hawaii was at an advantage because they saw the original announcement about the grant early, via the Internet. Mooradian had the assistance of her husband, Vice President of SETS and his company, to assist with the technical writing and the design of the logo for the proposal. The proposal was strengthened by letters of financial support and commitment from local businesses and community organizations like MHPCC, GTE Hawaiian Tel, Oceanic Cable, the HERN project and the University of Hawaii. The award winning proposal was drafted, revised and completed within six months. Mooradian believes this could not have been accomplished without the dedication and collaboration of all of the partners of the project.

The major partners and contributors are (MHPCC), Maui High Performance Computing Center and Tech Corps Hawaii, the Department of Education, a 155 member consortium of educators, business people and legislators, notably Senator Carol Fukunaga's office.
The Technical Set-up:

Comprehensive connectivity is the key to much of the success of the Electronic School. Oceanic Cable in Hawaii is committed to contributing network connectivity for approximately 100 schools. This translates to a contribution of over $6.7 million over the five year period. GTE Hawaiian Telephone Company is offering a $2,000 credit to each school that connects to the Internet via their 56K lines. Maui High Performance Computing Center (MHPCC) is providing Internet connectivity for all Hawaii's State Department of Education Schools. There is no need for an outside Internet service such as, LavaNet, AlohaNet, CompuServe or AOL. This equates to a savings of more than $2 million over five years. This collaboration of local business and local school districts is the epitome of successful educational reform tactics.

The Electronic School has also developed partnerships with a number of software, hardware and multimedia developers who will assist in creating marketable products. One of the software products that Allen Cole, Advance Technology Research (ATR)[16] director and CO-creator of on-line courses for the program, boasts about is Tango. Tango is a FileMaker program that runs on the Macintosh systems. It is known as a common-gateway interface. Tango for FileMaker is a rapid application development tool that allows Web developers to easily integrate

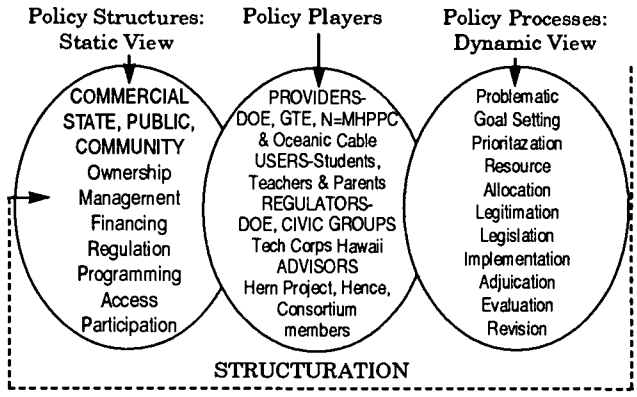
FileMaker Pro databases to the Web. The product was chosen by Cole because all of the schools involved in the pilot program use Macintosh hardware. When asked why Macintosh has a monopoly on Hawaii's DOE; Cole responded by saying that Macintosh is "user friendly hardware". "Mac's excel in innovation, most schools across the nation use them and I believe we get a great deal on the price," Cole laughed. One of Cole's many jobs is to maintain the Web server for the program. That server is a Web Star system which gets about 850 hits per day and ironically is a IBM. Other technical support members are Electronic Image Inc., Rising Wave, SeaSeer, EKV Productions, Inc. and KITV Channel 4 Television. These supports will assist the pilot project in development and packaging.

Marsha Mooradian insists that this program will be a success because of the strong supportive physical as well as people infrastructure in place.

In the area of curriculum development several groups have and will continue to provide guidance and expertise. Throughout the project, Electronic courses will be available to Hawaii public school students as well as students in the Chicago Systemic Initiative, which will serve as a field site for eschool curriculum. The Western Association of Schools and Colleges (WASC) will assist in developing criteria for accreditation by the International Council of School Accreditation Commissions (ICSAC). The Center for Excellence in Education will also help with developing this criteria as well as collaborate with the Electronic School on quality course content and dissemination of courses across the Nation and internationally.

The diagram presented on page 11 has been modified from lecture materials of Dr. Majid Tehranian (1992), Communication professor at the University of Hawaii. The overlapping of the circles indicates an intertwining of relationships involving the key players in the process of this telecommunication policy discourse. The static view of the policy structure is positively affected by the policy processes of the dynamic view. The continuous discourse among the policy players within this structuration has produced the infrastructure of the Electronic School pilot project. This was achieved by much communication and negotiation regarding all of the items within the "Dynamic View" circle, for example, problematization, goal setting, legislation, implementation and so on. The overlapping has occurred in this project because the policy players are diverse members of many of the groups mentioned in the "Static View", for example the DOE-state, MHPCC-commercial, Tech Corps Hawaii-community, Consortium members-public and so on. For the purpose of this paper the definition of Dynamic pertains to energetic: relating to physical force producing motion. The dynamic portion of this policy diagram permeates the structure and generates change and advancement. The definition of Static means acting by mere weight without motion:relating to bodies or forces at rest or in equilibrium;not moving not acting. Needless to say, the Electronic School would not be in progress if the key players adapted only the static view. Following are the results of effective community and commercial collaboration.

FIGURE 1
Hawaii's Electronic School



Pilot Project Policy Formation

The current courses available on-line are:

Shakespeare On-Line -1/2 credit, Language Arts Elective. This course is designed to offer a survey of the dramatic works of William Shakespeare, including discussion about the background of the time period, the dramatic form, the theatrics tradition, and the significant themes covered. This course is taught by Aaron Mersberg, whom I had the pleasure to meet. His interactive teaching style has made this one of the more popular courses in the program. Cole took a view of the class grade sheet and surmised that all of Aaron's students are highly motivated and participate quite actively in the class. However, the same

cannot be stated for the next class offered. Advanced Placement United States History, -1/2 credit elective. This course is designed for students to earn high school and college credits simultaneously, using the convenience of computer technology. College credit will be awarded upon successful completion of the Advanced Placement Exam for AP US History. Debbie Anderson is the instructor of this course and for reasons unknown, the majority of her students are not doing well. As a matter of fact, on the very day that I interviewed Allen Cole, he was preparing letters to the parents' of students who were failing this course. The wonderful thing about this program being a pilot project is that there is an "out" for students who do not excel in this electronic style of learning. These students are offered the opportunity, even at late dates in the semester to drop a course with no penalties rather than scar their permanent academic record. Cole isn't sure if it is the instructor's inability to transform her traditional teaching style to one that is compatible to the Internet or if it is the subject matter that makes this class difficult to grasp. "Perhaps it is simply that some people cannot learn adequately via the Net," he asserts. Cole agrees that extensive human computer interaction research should be taking place simultaneously to the development and implementation of this pilot program. I have offered myself for that study. The other classes offered to date via the Electronic School are: Geometry B -1/2 credit, Mathematics Requirement. The prerequisites are a C in Algebra IB and Geometry A or the consent of an instructor and pre-screening interview and testing. Other courses are Global Studies -1/2 credit Advanced Guidance -1/2 credit elective and Entrepreneurship -1/2 credit elective. This course sounds fun. It is an introduction to entrepreneurship with a unique look at the relationship to the Hawaiian culture and values. Students will have an opportunity to take "electronic field trips" to local businesses, meet entrepreneurs from the community and learn first-hand about marketing strategies, market research, competition in the marketplace, organization of a business, etc . . .

The Office of Advanced Technology Research snail mails registration forms as well as sends them via email to all of the participating schools in the districts. Students may respond via email fax or snail mail. There are requirements in order to participate in the program. Those include viewing course during air time (TV with cable access required), access to computer and Internet in your study area, successful completion of course assignments and requirements, access to a phone line during broadcast times, "video release" and "parental consent" forms and finally compliance with the Acceptable Use Policy for DOE Internet Services, which is written by each school. Each school that participates in the program is required to have a School Site Coordinator (teacher). This would be the computer literate technical person that could support students with projects (Internet or creative dramatics), help students as needed (access of equipment, resources, provide encouragement to students and file permission forms. Hawaii's Education & Research Network (HERN) has agreed to train teachers and staff to be able to perform these tasks. David Lassner contends that HERN will offer moral and technical support by conducting workshops. The DOE also has initiated a program called T3: Technology & Telecommunications for Hawaii's Teachers.[17] This course is offered via the Internet. The program's goals are to prepare DOE inservice teachers for leadership technology positions in their schools, to infuse appropriate technology and training into the curriculum and to develop a network of people resources to provide assistance to schools.[18]

Technical Problems

Allen Cole admits the pilot project has its share of technology problems. The first and far most is the natural growing pains of creating and implementing a telecommunication-based learning program. He offered me an itemized list of current problems: Not all of the schools are currently wired. This takes manpower, money and strategic planning. Not everyone has the technical knowledge to use the system. Basically, Cole claims not everyone currently connected is computer literate. This creates slow "snails" pace progress. "But this is why this is a pilot program, to work these things out and train people," he professes. There are not enough teachers to create the on-line courses and some of those who do create courses cannot adapt their teaching styles for this media. Perhaps, this is one reason why the AP US History courses is doing poorly.

Many of the On Site School Coordinators do not truly understand the nature of their job. Cole believes that the concept of the Electronic School will eventually become like the ATM Card and the Versateller machines. Many people did not understand how to use the machines and were afraid to use them. Now everyone and their grandmothers have ready teller cards and access the machines frequently. So will be the case with information technology he predicts. The program has not yet purchased the equipment or software for (IRA) InterRelay Chat or real time video conferencing. This has prohibited their video conferencing via the Internet. Once the server has been purchased there is another dilemma of hiring someone with the proper skills to set it up and operate it. Other common problems that Cole projected were bandwidth, faulty or incompatible equipment at either end of the telecommunication process and the possibility of a shortage of future storage space.

A suggestion to Mr. Cole's problem regarding not enough teachers to write curricula for on-line classes is the utilization of the current on-line classes available at the University of Hawaii. A newly designed classes by Jan-Michelle Sawyer, Applied Organization Communication would be ideal for high school students to audit or to participate without risk. Another on-line discussion group that would possibly prove fruitful for the pilot project would be the Capti-l (NEH) pluralism listserve. This would be enlightening for students taking U.S. History. Cole could solicit the help of graduate students and professors to help create interactive and informative on-line courses. This would help to create a much needed bond between the DOE and higher learning institutes that David Lassner spoke about.[19]

CONCLUSION AND RECOMMENDATIONS

Although there are some information technology complications surrounding the Electronic School project they are not enough to drench the enthusiasm of the creators of this program. Marsha Mooradian wants Hawaii's students to become HI-Tech, so that the world looks to Hawaii as a center of advance information technology rather than just a recreational spot.
As a one who is intrigued by information systems and its impact on the education industry, I am encouraged, even excited about what I have seen. The program is only one semester-old and has great potential. I am eager to access the program's growth and future maturation. I have inquired about the assessment and evaluations processes currently in place. Marsha Mooradian assured me that there are some assessments in place, such as WASC and ICSAC.

Recommendations for assessments of the pilot projects are:

- A longitudinal(HCI) study to examine the cognitive learning sytles of the students involved in the project. This study could also compare cognitive learning styles and/or success rates of students not participating with those who are participating.
- An ethnographic case study or studies of particular students who are instructed in specific course in this project.
- A human computer interaction (HCI) study involving cross tabulation. The study would be designed to detect the information processing of individuals or groups of students involved in the project.. Such independent variables can be, gender, culture, age, interests.
- An exploratory human-computer interaction study to determine the relationship between "micro-computer playfulness"[20] and the End-Users Adoptiveness of Information Technology. This study would involve measuring the technology adaptability or acceptance of the Internet by the subjects (teachers and/or students) of the pilot project and the effects of the electronic format upon individuals involved.

These recommendations are made to suggest future research in the area of information systems and education but most importantly to help evaluate a worthy program, the Electronic School.

My final recommendation is to encourage the creators of the Electronic School project to remember that computer technology in the classroom will not solve all of education's ills in an instant. Please remember that the technology should be used as a tool to complement traditional teaching methods and not as a

weapon to destroy it. My fear is that students will not be well guided through this venture and will allow the technology to use them. Remember that the absence of the Internet in Hawaii's public schools was only part of a larger problem, therefore its presence will not be the total cure all.

ENDNOTES

1. Theodore Roszak, *The Cult of Information: The Folklore of Computers and the True Art of Thinking* (New York: Pantheon), 62-63, 1986.

2. Neil Postman, *The End of Education: Redefining the Values of School* (New YorkL Knopf), 1995.

3. The Politics of Education. (1992) P. 15 Sven Groennings, Education Adviser, American Express. School Reform: Business, Education and Government as Partners. Edited by Theresa Brothers. New York: The Conference Board.

4. The Roles of the New American Schools Development Corporation. (1992) p.17 School Reform: Business, Education and Government as Partners. Edited by Theresa Brothers. New York: The Conference Board.

5. Kristine Woodall is a Global Communication Master's Degree candidate at the University of Hawaii at Manoa. (1996)

6. This report consists of selected speeches from The Conference Board's 8th Annual Business and Education Conference, held in Chicago, Illinois, on March 19, 1992. A copy of this report may be obtained from The Conference Board, 845 Third Avenue, New York, NY 10022.

7. Joe Kincheloe, Clemson University. This quote was taken from a chapter he wrote entitled, "Exposing the Technocratic Perversion of Education: The Death of the Democratic Philosophy of schooling. Found in a the book, The Socio-Culture Foundations of Education and the Evolution of Education Policies in the United States. Edited by James Van Patten. 1991. Published by Edwin Mellen Press: New York.

8. Diane Ravitch, "When School Comes to You," The Economist, September 11, 1993, 45-46.

9. Hugh McIntosh, National Research Council News Report, Summer 1993, 2.

10. For more information contact: netday@netday 96.com

11. Emma Pavich, counselor. The Honolulu Advertiser 11/26/1996, "On Schools" column Section B, p.1.

12. Andy Carvin. 1996 EdWeb: Exploring Technology and School Reform. (http://k12.cnidr. org:90/resource.cntnts.html)

13. Marsha Eileen Mooradian, is the Public Affairs Coordinator for Maui Hi-Performance Computing Center, MHPCC, she was funded by MHPCC to create Tech Corps Hawaii.

14. Tech Corps Hawaii is a volunteer organization, who members advise and assist schools in the introduction and integration of new technologies into the educational system. Tech Corps Hawaii is a branch of the national nonprofit Tech Corps which has been organized in over 40 states.

15. Inside the Electronic School - http://www.k12. hi.us/~eschool

16. ATR's URL address is http://www.k12.hi.us/ ~atr

17. Telecommunication for Teachers Homepage: http://www.k12.hi.us/~tethree/

18. More information on these and other programs offered by the DOE can be found by accessing the Department of Education's Homepage at: http://www.k12.hi.us/

19. See David Lassner's paper, "Partnering with K12: A Statewide Approach" at http://cause-www.colorado.edu/information-resource/ir-library/abstracts/cns9616.html

20. Micro-Computer Playfulness is a research project currently in progress by Jeffrey Allen, Ph.D., in Information Systems at Georgia State University 1996.

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Theodore Roszak, *The Cult of Information: The Folklore of Computers and the True Art of Thinking* (New York: Pantheon), 62-63.

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ATR's URL address is http://www.K12.hi.us/~atr
T3: Telecommunication for Teachers Homepage: http://www.K12.hi.us/~tethree/

Department of Education's Homepage at: http://www.K12.hi.us/

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