

University of the Virgin Islands Graduate Program

The Use of the Internet in a Junior High School in the United States Virgin Islands: A
Contribution to the Ecology of Pedagogy.

A Thesis Submitted to the Graduate Studies Council In Partial Fulfillment of the
Requirements for the Degree of Master of Arts in Education

By

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TABLE OF CONTENTS

	Page
CHAPTER ONE: INTRODUCTION	1
Statement of the Problem	4
Purpose of the Study	4
Research Questions	5
Definition of the Terms	5
Delimitation/Limitations of the Study	6
Significance of the Study	6
CHAPTER TWO: REVIEW OF THE LITERATURE	7
Ecology	7
Pedagogy and Ecology	9
Interactive Internet	10
Pedagogy	15
CHAPTER THREE: METHOD	17
Design of Study	17
Observations Tools	18
The Observation Experience	18
The Three Environments	19
Data Analysis	20
CHAPTER FOUR: RESULTS	22
Findings	22
The Science Lab	22
Outcome: Science Lab	23
The Mac Lab	24
Lesson 1	25
Lesson 2	25
Lesson 3	25
Lesson 4	26
Outcome: Mac Lab	26
The PC Lab	27

Lesson 1	28
Lessons 2 and 3	29
Computer Lunch Program	31
Outcome: PC Lab	32
Aggregate	33
Responses to Research Questions	33
Research Question 1	33
The Science Lab	33
The Mac Lab	34
The PC Lab	34
Aggregate	35
Research Question 2	35
The Science Lab	35
The Mac Lab	35
The PC Lab	35
Aggregate	35
Research Question 3	36
The Mac Lab	36
The PC Lab	37
Aggregate	38
Research Question 4	38
The Mac Lab	38
The PC Lab	39
Aggregate	39
Research Question 5	40
The Mac Lab	40
The PC Lab	40
Aggregate	41
CHAPTER V: CONCLUSION	42
Discussion: The Ecological Nature of Pedagogy	42
Important Findings	45

Recommendations	46
Final Conclusion	47
REFERENCES	49
APPENDICES	53
Appendix A	54
Computer Lab Environment	
Appendix B	56
Computer Lab Activities	
Appendix C	58
Table	
Appendix D	60
Letters to Appropriate Authorities And Teachers	
Appendix E	65
Research Application	
Research Proposal	
Statement of Confidentiality and Safety	
Statement of Non-disclosure of Release of Education Record	
Signature Approval Sheet	

CHAPTER I: INTRODUCTION

Ecology as a science is now providing structural and operational models for the interactive nature of knowledge disciplines. By its definition (Webster, 1986, p. 720), ecology demonstrates an understanding of the natural interactive qualities that combine to shape the environment in which humans live. The definition also represents a structure that shapes the operations of living and non-living systems. These operations can be exemplified from a system such as the hydrological (water) cycle to a system in the study of sociology. The concept of an ecological sociology develops the “idea that human and non-human nature is necessarily connected and hence interdependent” (Murdoch, 2001, p. 2). According to Murdoch “this core belief ostensibly requires a rejection of the allocation of natural and social entities into two distinct ontological categories and therefore seemingly constitutes a fundamental challenge to any modes of thought that are predicated on just such distinction” (p. 2).

Pedagogy as a science has incorporated methods of integrated curriculum. A provision of integrated curriculum is interdisciplinary study that reflects the interdependence of disciplines. Lake (1994) refers to integrated curriculum as a process by which “teachers...link subject areas and provide meaningful learning experiences that develop skills and knowledge, while leading to an understanding of conceptual relationships” (p. 1).

According to sources quoted by Lake (1994), one particular insight of interdisciplinary curriculum focuses on “the view and curricular approach that consciously applies methodology and language from more than one discipline to examine

a central theme, issue, problem, topic or experience” (p. 2). Lake goes on to say, this view “combines several subjects into one active project, since that is how children encounter subjects in the real world – combined in one activity” (p. 2).

McBee (2000) indicates that interdisciplinary curriculum has added to the goals of pedagogy. It enables “teaching the content and skills children will need to solve problems that occur in real life and the interconnectedness of these occurrences” (p. 254).

The interactive internet is providing an electronic media in which students and the environment that is responsible for their education and nurture can interact with each other, as well as with the volumes of information and learning resources available online. As stated by Schnorr, Bracken, and Hazari (1999), “the goal is not to use the internet as a static tool, but instead to use the internet to enhance interactivity and learning” (p. 2). From this, the researcher wonders, is it necessary to the pedagogical and learning experience for the interactive internet to support interdisciplinary search activities? Can the interactive internet support interdisciplinary curriculum search activities through the availability of volumes of information databases and interactive web sites that provide knowledge resources in the areas of business, education, government, and other general research?

Ravitz (1999) suggests that in schools with a high internet activity environment “it is necessary to focus attention on providing a supportive environment for class related use with students, as opposed to developing teacher attitudes and skills independent of broader curricular and school-level issues” (¶ 4). The results of his study indicated that a

more interconnecting, interactive, interdisciplinary environment is needed to make internet use valid and productive.

Multiple intelligence theory researched by and designed by Howard Gardner defines the human as multi-intelligent. An intelligence has several criteria to satisfy and by which it is defined and formed. Some of these criteria are biological, cultural, cognitive, and psychological. Intelligence also responds to information by which it is internally and externally stimulated. Further, an intelligence is susceptible to “a culturally contrived symbol system” (Gardner, 1993, p. 16) that is necessary for human survival and productivity. However, Gardner adds, intelligences do not operate in isolation. When one reaches adulthood, “intelligences always work together in concert, and any sophisticated adult role will involve a melding of them” (p. 17). As a result of human development, are there interacting intelligences defining the human? If the answer to this question is affirmative, can human development be modeled as ecological?

In his theory on the ecology of human development, Urie Bronferbrenner focuses upon the changes in psychological content as a person is exposed to and interacts with the environment. He defines psychological content as “what is perceived, desired, feared, thought about or acquired as knowledge” (Bronferbrenner, 1979, p. 9). He defines “development as the person’s evolving conception of the ecological environment, and his relationship to it as well as a person’s growing capacity to discover, sustain or alter its properties” (p. 9).

If the pedagogical community is to relate to the outcomes of the human interdependent experience with the natural environment and the interactive nature of the intelligences that define the adult human, is it necessary to ecologise pedagogy as is

being suggested in the discipline of sociology (Murdoch, 2001)? Akmal (2002) proposes “all academic work, including reading and reporting on books, must be set in an ecological orientation: a learning that attends to the cognitive, personal and social needs of the learner” (p. 1).

Statement of the Problem

To what extent and in what ways was the interactive internet incorporated into single-discipline and multidisciplinary lessons of 7th and 8th graders in the environment of the computer lab at one of the junior high schools on St. Croix?

What was needed to ecologize pedagogy? Can pragmatic application of the interactive internet, and interdisciplinary curriculum variables as they are available and accepted in the education system, contribute to this operation? If they can, to what extent and in what ways were pedagogues involved in their use and application? Can interactive internet technology such as virtual exploration, chat room and email communications, and web page creation, serve multiple intelligences by promoting diversity, interconnectivity, and multiple choices that are provided on the world wide web?

Purpose of the Study

The purpose of the study was to observe pedagogy in a computer laboratory environment, to observe the ways pedagogues are using interactive computer technology, and to observe if they were using this technology for interdisciplinary activities.

Research Questions

1. How often were pedagogues of 7th and 8th graders using the computer lab in a fifteen-day period?
2. How often were pedagogues of 7th and 8th graders using the computer lab as an online, interactive experience in a fifteen-day period?
3. In what ways were pedagogues incorporating the online experience into the learning experience?
4. How often were pedagogues involving interdisciplinary studies in the computer lab using on-line, interactive activities?
5. In what ways were pedagogues using the interactive internet and interdisciplinary curriculum synchronously?

Definition of Terms

Ecology: The branch of knowledge concerned with interrelationships of organisms and their environment especially as manifested by natural cycles and rhythms, community development and structure, interaction between different kinds of organisms, geographic distributions and population alterations.

Interactive internet: Websites, web quests, email, chat rooms, etc. by which pedagogues and students can experience distance learning, virtual and other interactive programs.

Online: Pedagogues and students, actively using a computer system, especially the internet.

Pedagogues: Teachers, instructors, facilitators.

Pedagogy: Instruction; the art and science of instruction.

Delimitations/Limitations

The study was limited to a single junior high school in the Virgin Islands. It did not generalize to other schools in the Virgin Islands or the United States of America. The setting was limited to fifteen school days. A year long observation might show something different. Online activity by pedagogues and students outside of the computer lab environment was not observed for the record.

Significance of the Study

The results are available for Virgin Islands' pedagogues to show them the types of learning experiences taking place in the on-line computer laboratory. The results are available for administrators to form policy for the use of the computer lab by pedagogues and students. The results are available to the education community at large as an indication of usage and needs for on-line technology.

CHAPTER II: REVIEW OF THE LITERATURE

Ecology

What to do with knowledge? This question, although not specifically asked by John Dewey in *Democracy and Education*, is the goal of his efforts to propose a pedagogy that can be “organized into the existing experience of the learner” (Dewey, 1916, p. 188). Dewey says that knowledge is motivated by the response of what is communicated. So, nothing exists without rational knowing or science. Through science we hold ourselves accountable to teaching and learning knowledge. Science is basically the study, understanding, and interaction with those systems and environments of human experience.

Referencing Plato’s *Republic*, Dewey (1916) analyzes the goal of the Republic as “right knowledge” (p. 278). Right knowledge of man and society depend upon knowledge of the essential features of nature. According to Dewey, Plato’s chief treatise is at once a treatise on morals, social organization, and on metaphysics and science of nature. The nature of knowledge is ultimately sought in the essential good or end in nature. “To attempt to determine the end of man apart from a knowledge of the ruling end of which gives law to and unity to nature is impossible” (p. 278).

What is the separation that turned Western Civilization away from this ideal of human learning and nature? According to Dewey (1916) “Greek achievement in civilization was native; the civilization of the Alexandrians and Romans were inherited from alien sources. Consequently, it looked back to the records upon which it drew, instead of looking out directly upon nature and society for material and inspirations” (p.

279). Thus human – in the Western tradition came to “study literature rather than nature” (p. 279). Dewey (1916) concludes of this historical experience that the learning of knowledge by the Romans was not “directed to the conquest and control of nature but to the conquest and control of men” (p. 279).

Barbarian Europe continued in this tradition, as did the Church and Scholasticism (Dewey, 1916). “Where literature rather than contemporary nature and society furnishes material of study, methods must be adapted to defining, expounding, and interpreting the received material, rather than to inquiry, discovery and invention... instruction is taken ready made, rather than something which students can find out for themselves” (p. 280). Thus the cue for the application of ecological theory of pedagogy, and its multi-disciplinary goals along with the entourage of multi-intelligence theory that headlined some of the 20th century pedagogical and learning studies (Meyer, 1997).

According to Humphrey (2000), Twenty-first Century environmental concerns have given birth to ecologism. Ecologism or ecological political thought is the “positing of a direct concern about the human-nature relationship as a central theme” (p. 1). Basically, the political movement of ecologism is a structure that does interact with pedagogical goals because of the terminologies applied and the need to understand their differences. Such terms as ecocentrists and ecological humanists (Humphrey, 2000) are placed on our plates for consumption and digestion in the realms of philosophy and sociology and other disciplines that can be incorporated into the goals of pedagogy and learning. What we must determine and prepare for is the influence of political ecology on the ecology of pedagogy. “Articulating reasons for preserving nature forms an

important part of the central concern, as these reasons legitimate the idea that society should be interested in devoting resources to that end” (p. 1).

Pedagogy and Ecology

In 1977, fields of inquiry represented by scholarship and scholarly inquiry who met to develop the ecological theory of teaching, included sociology, cognitive anthropology, human ethnology, environmental, social psychology, communications theory, human ecology, and educational psychology (Babb, 1978). Adams and Coulibaly (1985) propose articulating and structuring pedagogy and learning as an experience of “activities organized freely in natural environments [that] can serve as a basis for reflection on improving and broadening current educational theory” (p. 276). Within Brofenbrenner’s (1979) theory of the ecology of human development the system of teaching and learning, and the system of natural environments are naturally stimulated by the structures and systems of the ecological environment in which human development takes place.

Human development is the process through which the growing person acquires more extended differentiated, and valid conception of the ecological environment, and becomes motivated and able to engage in activities that reveal the properties of, sustain or restructure that environment at levels of similar or greater complexity in form and content. (p. 27)

According to McHarg (1997), humans have excluded or inadequately incorporated natural factors in ecological planning. In the human community, a multidisciplinary approach was the traditional environment of learning and knowledge.

Pedagogy and ecology compliment each other as the former is the science of teaching and the latter is the structure governing the activity of that science as teaching becomes holistic and inseparable from learning. "Beginning in 1977, an effort was made by the Far West Laboratory for Educational Research, funded by the National Institute of Education, to develop an ecological theory of teaching" (Babb, 1978, p. 3).

An initial goal is the development of a conventional theory of teaching that approaches and views classroom teaching from ecological perspectives. Such perspectives build from knowledge about teaching/learning in the teacher-student learning group as sociological as well as a psychological process. An underlying assumption is that previously, only psychological perspectives have served to inform instructional theory and the training of teachers. Thus both educational psychology as well as disciplines outside it are being utilized such that a holistic, multidisciplinary approach is being used. (Green, 1979, p. 5)

Interactive Internet

The selection of appropriate technologies and instructional strategies are key to the interaction of the systems of the natural environment and pedagogy and learning (Adams & Coulibaly, 1985). In the case of the technology of the interactive internet and

the pedagogical strategy of multi-disciplinary activities, there is now available a popular, global means, of accessing and experiencing environments that are cross-cultural as well. Cross-cultural or multi-cultural systems of environments can relate to the multi-intelligence theory as the cultures witness diverse manifestations and responses to their ecological systems with which they interact (Meyer, 1997). Cross-cultural can be so indistinct as to refer to the difference in student intelligence when located, for example, in an urban or a rural environment. What if the “eighth intelligence” of a student, as Meyer references Howard Gardener’s multiple intelligences theory, is more naturalist. How do you accommodate the student who learns distinctly by way of his/her natural environment – through learning experiences with plants, soil and other elements of the biological environment while living in an urban environment? By accommodating that eighth intelligence says Meyers.

Ismail’s study (2001) on the effectiveness of using internet telecommunication concludes that “with proper support, guidance and training, educators and students can benefit from using computer technology to explore the richness of global knowledge and new experiences that will broaden their horizons across the global society” (p. 1). Mingle (1999) says, “using technology effectively in instructional settings extends and promotes the process of the student directed learning by allowing students greater access to information and ways to process, synthesize, apply and present it” (p. 2).

In the Twenty-first Century, pedagogy and the technology of the interactive internet are interacting as systems (Wood, 1999). In 1977, the Far West Lab for Educational Research and Development organized a group of scholars and researchers for “data collection and analysis strategies” (Babb, 1978, p. 1). According to Babb (1978),

three ecological perspectives were developed “activity structures, student participation style, and social, cognitive development” (p.1). As a result of the advent and integration of computer technology in pedagogy activities, specifically the interactive internet, 20th century ecological theory of teaching as a system is being transformed into a technology supported environment. Grope (2000) asserts this observation.

“To insure cultural preservation, cultural equity, and effective intercultural distance education, both European and indigenous cultures are taking responsibility for structuring appropriate delivery technology and curriculum content and development .

...Since discovering that technology is essentially apolitical and acultural in nature, many Aboriginal students have readily embraced the computer and the internet. (p. 42)

The interactive internet technology performs as a system in transformation while it provides the interactive and interconnecting tools of information and knowledge that naturally encourage pedagogy and learning as is indicated by Brown (2000).

“As the Tonasket Fifth grade Orchard Project has taken shape, more and more teachers in the district have asked to be involved....As part of the grant, Tonasket will document the orchard curriculum and place it online in a effort to expand the program and share resources statewide. (p. 40)

Transformation is an idea of Piaget’s (1970) operational structuralism.

Operational because, as is characteristic of structures “the notion of wholeness itself can be narrowed down to systems of transformations rather than static forms” (p. 10).

According to Schnorr, Bracken, and Hazari (1999) the interactive internet is the operation of transforming information in the communication and interaction of images, sounds, and graphics by and with the pedagogue and the learner. The experience of the interactive internet can be manipulated and diversely experienced by the pedagogue and the learner.

According to Bussa (1999):

Various tools are embedded to meet the needs of both instructors and students. In asynchronous mode the interactive tools like On-line Message Boards, On-line Quizzes, Online Exams, Online Course Registration, Online Grades Tool, Assignments, and Course Notes provide education effectively even when the instructors and the students do not participate at the same time. In synchronous mode, interaction tools like On-line Discussion Groups, Online Students Feedback Tool, and Microsoft Networking provide education effectively when both the students and the instructors participate simultaneously. (p. 1).

(Capitilization theirs)

Distance learning is an operation of the interactive internet manipulative and diverse quality. Web page usage becomes interactive with most of the formats of distance learning. One of which is web conferencing, whereby “participants can post, reply and also include professionals in the field within the web conferences and therefore create a community of the classroom” (Schnorr, Bracken, and Hazari, 1999, p. 4).

The chat room as another operation of the interactive internet, is claimed to be able to extend the school model into “on-line technology based models” (Sapone and

Singh, 2001, p. 5). Sapone and Singh continue to say that these models are fast becoming “virtual” wired centers of learning, able to tap information anywhere in the world. Chat room strategies are an effective tool where technology is integrated into the curriculum (Sapone & Singh, 2001).

Web portals and virtual field trips can be designed and incorporated to enhance the students’ interactive experience with the internet (Risinger, 1999). These internet access and interactive strategies provide students, pedagogues, and parents with web sites, various and organized internet resources, and secure, purposeful, on-line, learning environments (Sistek-Chandler, 2000). Stinson’s study (2001) suggests that “a virtual museum field trip is educationally effective and a viable alternative to an actual field trip” (§ 5) as a social studies achievement objective. She further suggests that “these findings are significant to classroom teachers in supporting the use of this type of internet resource in the classroom and museum educators in supporting the use of web sites for educational outreach” (§ 6).

Internet access in the public schools has been sanctioned by the United States Department of Education and its progress documented by the National Center of Education Statistics (U.S. Department of Education, 2001). Internet access has been surveyed to measure what proportions of the public schools are connected to the internet. “By the fall of 2000, almost all public schools had access to the internet: 98% were connected. In comparison, 35% of public schools had access to the internet in 1994” (§ 2).

Pedagogy

What are the choices for pedagogy in the 21st century environment? What are the choices of pedagogy as a system of teaching disciplines of knowledge? Moallem (1996) asserts “teacher’s knowledge is a complex blend of personal, practical and theoretical knowledge – research in teaching, learning and instruction has to shift its emphasis from cognition to social construction of knowing” (p. 9).

According to Bruner (1966), “if information is to be used effectively, it must be translated into the learner’s way of attempting to solve a problem” (p. 53). The nature of human is creative (Gardner, 1993). Gardner says, “we believe that a great majority of people are capable of using their competencies in a skillful way” (p. 248). Look at the human environment established by culture and civilization. McBee (2000) credits teachers with the same creativity. “The image of teachers as designers of their own instruction needs to be emphasized in the instructional technology field” (Moallem, 1996). The pedagogue is naturally an integrator, responding to and applying the personal, practical, and theoretical knowledge that is represented in the profession (McBee, 2000). The inclusion of technology, especially the access and application of the interactive internet supports the multidisciplinary needs of pedagogy and learning and the multi-intelligence of the student and the teacher (Brown, 2000).

Friere (1992) speaks out about his transformations – space-time of a learning process in a place that he lived called Jabotão where he watched and experienced, what Bronfenbrenner (1979) might call the phenomenological perspective of life’s transitions (p. 25). This experience subsequently offered Friere a philosophy of life that connected all of his development and experiences through the discipline of hope. Friere’s numerous

learning experiences or elements of the development of hope pervaded his transformations from a fatherless, and poverty stricken school boy to a man of high literary competence (Friere, 1992).

Aisa Hillard, a psychologist of the African of America group feels that the most important way of improving education, is to use education the way it is supposed to be used. We must “follow our worldview to ultimate purposes” (Mabie, 2000, p. 251).

In this realm of philosophy that seeks to incorporate a world view, ecology and pedagogy compliment each other because one defines the interconnectivity of earthly existence (Webster, 1984). The other acts to respond to the need of human intelligence as a learner, recognize multi-intelligence in transformation, and create interactive technology and pedagogical strategy that is necessarily interactive with the environment (Meyer, 1997).

CHAPTER III: METHOD

Design of Study

Three computer labs of Arthur A. Richards are where observations took place for 15 school days. The researcher asked permission to observe various activities in the computer labs. Upon permission being granted from appropriate authorities to carry out the research, a letter was given to teachers, explaining what was to take place, along with an enclosed copy of the observation tool. Pedagogues were observed in each of the labs according to the availability of computer labs and the presence of the computer lab teacher.

The researcher was in the computer lab as an observer. The researcher observed the average number of students at each computer. The researcher verified the request for use of the computer lab as it was subject to scheduling changes and availability initiated by school activities, by the computer lab teacher, by curriculum goals, or by the science department. The researcher recorded the date, length of the class period, the class period's position in the daily schedule, internet access, type of internet interaction, number of web sites offered in the lesson if any, and interdisciplinary activity using *Observation Tool A: Computer Lab Environment and Observation tools B: Computer Lab Activity*. Description of interdisciplinary activity was also part of the observation.

The block schedule ranged over a four day period, beginning Monday and ending Thursday. There were three block schedule classes each day lasting one hour and forty minutes. On Friday, the regular schedule included periods one through seven. The regular schedule period was fifty minutes. The lunch schedule was sixty minutes in the

block schedule and sixty-five minutes in the regular schedule. These periods of block, regular, and lunch schedules were used to observe computer lab activities in the three labs.

These observations were made in order to determine if the internet was being used by pedagogues in the lab requested time, and if so, in what ways. The basis of this experience was to observe pedagogical use of the internet as an interactive tool for teaching and learning at Arthur A. Richards junior high school, 7th and 8th grade, computer lab environments, in St. Croix, United States Virgin Islands.

Observation Tools

Observation tools were developed by the researcher. See appendix A, entitled *Observation Tool: Computer Lab Environment* and appendix B, entitled *Observation Tool: Computer Lab Activities*. Qualitative factors included the environment of the computer lab, the pedagogue, the pedagogical ecology or the interaction between the pedagogue and the single discipline activity, the multidisciplinary activity, the student, and interactive technology of the internet. Each of these factors was observed as a special operation or system contributing to the unified, interconnecting, cycle nature of teaching and learning.

The Observation Experience

Fifteen days of observations took place according to scheduling availability. There were a total of 29 sessions of scheduled time periods divided between block schedule, regular schedule and lunch schedule. Observations began on February 26 and ended March 26. The days observed were as follows: February 26, 27, 28; March 3, 4, 6,

12, 14, 17, 18, 19, 20, 21, 25, and 26. Six teachers of classes at Arthur A. Richards, directly or indirectly accessed the services of the computer laboratories during the observations. Indirectly accessing meant that the teachers' lesson plan was carried out in the computer lab under the facilitation of the computer lab teacher, without the teacher, who had requested time, being present.

The Three Environments

The science lab consisted of nine working laptop computers. None were on-line. There were two to three students at each laptop, depending upon the number of students in the class. If the number of students was over 18, then there would be one or more computers seated with three students. The lab time was scheduled during the block schedule for two days a week for each science teacher. The requests had been assigned at the beginning of the school year by the science department. See Table: Record of Observations in the Science Lab, the Mac Lab and the PC Lab. There were a total of four science computer lab sessions observed, with the science teacher present in the lab.

The Mac lab consisted of 18 computers. Fourteen were on-line. The Mac lab teacher allowed 12 students maximum to participate in a computer class. The laboratory teacher held classes every day as pre-scheduled by the school administration. Classes in the Mac lab were scheduled two periods out of the seven periods. In all classes that were observed there was no more than one student per computer. The computer lab environment of the Mac lab was held in a schedule of a regular class called Computer Class. The lab time was fixed by the school schedule for the 2002-2003. The lab time observed was according to the block or regular school schedule. See Table: Record of

Observations for time observed for each Computer Class. There were a total of 10 Mac computer lab sessions observed, with the computer lab teacher present at each class.

The PC lab consisted of 17 computers, 15 of which were on-line. The lab teacher's policy was to allow half of a class roster to attend the computer laboratory so that as long as half the class attendance did not go over 15, all students accessing the lab had access to a computer on-line. The schedule of the computer laboratory teacher originated from the block schedule of the teacher who requested use of the lab. Friday's schedule was reserved by the computer lab teacher, to allow make-up time for the scheduled class that had missed a session during the block schedule. Eleven sessions were observed with the computer lab teacher as the facilitator or instructor. The home economics teacher facilitated one session with the computer lab teacher actively assisting. During the three sessions of the computer lunch program, students' needs to access an application program and the internet were served by the computer lab teacher. There were a total of fifteen PC lab sessions observed.

Data Analysis

There were four disciplines that were pedagogically directed in the three computer labs: Science, Computer Literacy, Home Economics, and English. There were multidiscipline experiences that were pedagogically directed under a single discipline activity. Each discipline was represented by one lesson or more, that was devised for the several class sessions of each of the six pedagogues, except for the Computer Lunch Program. The researcher analyzed the data from the observation sheets, and created a

narrative based on the constructs seen within the observations of each lesson. She delineated percentages on time spent on various activities in the computer lab.

CHAPTER IV: RESULTS

Findings

The following results were the observation experiences in the Science lab, the Mac lab and the PC lab of Arthur A. Richards School. The science lab sessions were facilitated with one lesson. The Mac lab sessions were facilitated with four lessons. The PC lab sessions were facilitated with three lessons and the computer lunch program that had no pedagogically directed lessons. Facilitation of a lesson indicates pedagogical direction and input, while working in specific disciplines, with specific topics and activities. Each observation experience was documented by the researcher from two perspectives, internet use and interdisciplinary activity. The observer saw no physical lesson plans. Twenty-nine sessions were observed in the block, regular, and lunch schedule. Nine experiences were observed in the computer lab with a teacher or teachers present. Eight experiences were lessons because they were pedagogically directed. Six pedagogues participated in directing the lessons.

The Science Lab

The observation of the single lesson in the science lab took place on February 26th and February 27th. Interactive software programs were used in the science computer lab lesson. There was no internet access.

The students' use of the science activity software designated science as the discipline of study. The science teacher required students to take notes on the scientific method. There was no printer in place, nor was there a word processing

program utilized to take notes. The discipline of Cursive Writing was used in order for students to carryout the instructions to take notes.

The lesson directed students to access the two software programs produced by Aims Multimedia Interactive Science Essentials Series. *Geology of the Earth* correlated with the classroom lessons in Earth Science. *Thinking Like a Scientist* was used to familiarize students with the scientific method in preparation for the upcoming science fair.

Outcome: Science Lab

Of the lesson observed, there was 0% interactive internet activity. This science lesson was based on student interaction with a science software program.

There was interdisciplinary activity observed by the researcher, but the teacher in the computer lab did not pedagogically direct it. The role of mathematics was observed by the researcher and demonstrated by the skill activities in which students participated and practiced. Students interacted with science software programs. They measured distances using the metric measurement system, and computed information from graphs and charts.

The science lab was facilitated by the science teacher only. Even though there was no online access, and computer literacy was not the focus of the directed lesson, the teacher provided guidance for the operation of the software program. Was she trained specifically for this operation, is a question to be asked.

The Mac Lab

The observation of the Mac lab took place on February 28th, March 3rd, March 6th, March 12th, March 14th, and March 26th. Mac lab activities were based upon the lessons facilitated by the Mac lab teacher. Internet access was available from the Virgin Islands Department of Education E-tan server. There was a printer and word processing software available in the lab. The Mac lab teacher facilitated lessons for students scheduled to meet for computer [literacy] instruction. Before each lesson students were directed to practice typing skills using a software program composed of exercises to improve speed and accuracy. The researcher referred to each lesson that was pedagogically directed as Lesson 1, 2, 3, and 4.

Lesson 1

On February 28th, March 3rd, and March 6th, Lesson 1 was observed by the researcher in the Mac computer lab. Students were given an interactive internet activity. They had to research a specified web page for the purpose of collecting data. In order to carry out this lesson the teacher of the computer class supplemented a web page, www.seaworld.org. Students had to search for ten animals and select specified characteristics for data input. The researcher observed the goal activity to include computer literacy instruction and creating a data-base of animal characteristics. The pedagogue directed students in computer literacy exercises and creating a data base from internet research.

Interdisciplinary activity was observed by the researcher and demonstrated in the directions for the lesson. The lesson facilitated Computer

Literacy, Science, and Cursive Writing. Students' research of information on the internet focused on animals and their characteristics. The teacher also required cursive writing practice. Students were required to copy and list characteristics of an animal from the internet using paper and writing tools (pen or pencil) which added a cursive writing exercise to the lesson.

Lesson 2

On March 6th, Lesson 2 was observed in the Mac computer lab. Internet access was available. A web page was assigned to complete the lesson. The type of internet interaction observed from the pedagogical directions included locating a specific web site on the internet, navigating a web page, scanning to find five specific facts, and drawing conclusions from charts and graphs. The web page suggested was www.usatoday.com.

Interdisciplinary activity was observed by the researcher and demonstrated by students' activity online when students had to access the web site using computer literacy skills and then they had to carry out instructions that utilized skills in Social Studies. The researcher observed Social Studies and Computer Literacy interconnected in the lesson. Students were directed by the computer lab teacher to use and practice computer literacy skills for accessing the internet while seeking information from this news media service.

Lesson 3

On March 12th and March 14th, Lesson 3 was observed in the Mac computer lab. The pedagogical facilitation of the computer literacy lesson included word processing skill development for using columns that formed a

booklet in which poems were to be printed. Pedagogical directives included clip art and font features as well as instruction on how to cut and paste pictures from the internet. If students chose to do so, they searched on the internet for poems, wrote their own poems or acquired poems from some other source. With the use of the columns toolbar, ten poems from the various sources were typed in a booklet. No particular web page was suggested. A general search using a search engine was encouraged. The search engine, www.google.com was suggested by the teacher.

Interdisciplinary activity, online, was observed by the researcher and demonstrated as students were required to carry out a language arts exercise with a creative writing experience using computer literacy skills. Poems taken from the internet were copied into copy books for cursive writing practice.

Lesson 4

On March 26th Lesson 4 was observed in the Mac lab. The fourth lesson directed the experience through web page labeling, introduced internet basics, and concentrated on the history of the internet service. There was no internet access during the observation of this lesson. The computer lab teacher instructed students that there would not be any access to the internet during this lesson. Instruction on internet basics as a computer literacy skill was offered in reading activity handouts.

Interdisciplinary activity was observed by the researcher and demonstrated during the facilitation of the lesson as students carried out a reading exercise, answered content questions that related to internet basics handouts, and studied

the history of the internet. Promised in the directions by the pedagogue was a review of the answers to the questions.

Outcome: Mac lab

In three out of four, or 75% of the lessons, interactive internet activity was directed by the pedagogue in the Mac lab. Interactive internet use was facilitated in Lesson 1 and Lesson 2. The computer lab teacher gave specific web sites for students to access and activities to pursue. In Lesson 3, there was no specific web site offered. Students were instructed to locate and select poems from the internet and write them in their copybooks. In Lesson 4, by pedagogical directions, there was no interactive internet activity goal intended.

Whether online or offline, interdisciplinary activity was not facilitated by the teaching directions for the four lessons and was therefore calculated at 0%. The researcher observed Lesson 1 to include Science, Cursive Writing, and Computer Literacy interconnected in one lesson. The Mac lab computer teacher facilitated Computer Literacy and Cursive Writing. The researcher observed Lesson 2, to include Social Studies, Computer Literacy and Cursive Writing, interconnected in one lesson. The Mac lab teacher instructed Computer Literacy and facilitated Cursive Writing practice. The researcher observed Lesson 3 to include Creative Writing (Language Arts), Computer Literacy, and Cursive Writing interconnected in one lesson. The Mac lab teacher instructed in Computer Literacy and facilitated cursive writing practice. In Lesson 4, the researcher observed contextual reading activities on computer literacy and the

History of the internet interconnected by the computer lab teacher. The computer lab teacher facilitated reading for content understanding.

The PC Lab

The observations of the PC lab took place on March 6th, 17th, 18th, 20th, 21st, and 25th. There were three types of pedagogical experiences observed in the PC lab. The first was facilitation of a lesson in the computer lab by the pedagogue of a particular discipline with the assistance of the computer lab teacher. The second was facilitation of a lesson by the computer lab teacher for the pedagogue of a particular discipline without the presence of that pedagogue. The third was facilitation in the computer lab by the computer lab teacher. Teachers directly or indirectly accessed the computer lab. In every experience the computer lab teacher was present. These pedagogical experiences created the environment for the lessons that were facilitated in the PC lab. The researcher referred to each lesson by numbers 1, 2, and 3.

Lesson 1

On March 6th the Home Economics teacher facilitated Lesson 1 in the PC computer lab and utilized the internet in a search activity with the assistance of the computer lab teacher. The Home Economics teacher used her classroom and the lab to facilitate the lesson. The students were assigned a drug topic in their regular class, and then came to the computer lab to research their drug topic in order to answer three questions: Where does the drug come from? How is the drug made? What are the harmful affects on the human body? The stated goal of

the pedagogue to her students was to enable each student to access information to teach other students about drugs. The Home Economics teacher directed students to be prepared to give a presentation to other students based on the information researched and answered by the questions. Some students copied the information from the internet onto their copybooks. Others used a word processing document, and the copy-and-paste tool. The use of writing tools or word processing technology was left to the choice of students.

Interdisciplinary activity was observed by the researcher. The computer lab teacher assisted to help students search the internet, point to, and click on choices. In this activity, students were required to use scanning and critical thinking skills to find information and then use it to answer the questions. The researcher observed goals directed by the pedagogues for Home Economics, Computer Literacy, and Language Arts reading skills, interconnected in the lesson facilitated by the Home Economics teacher with the assistance of the lab teacher.

Lessons 2 and 3

Two lessons were facilitated by the computer lab teacher for a teacher, without the pedagogue of that discipline being present. Lesson 2 took place on March 17th, March 18th, March 19th, March 20th, March 21st, and March 25th. Lesson 3 took place on March 25th. The researcher will refer to each of the two lessons facilitated as English A and English B respectively because these particular requests for computer lab access were both made by English teachers.

The computer lab teacher facilitated Lesson 2 for English Teacher A in the PC lab. Students used word processing skills to write an autobiography.

Students had to write a two-paragraph autobiography, consisting of a minimum of five sentences in each paragraph. Word processing instruction also included reminders to use both hands in typing, how to use spelling and grammar check, selection of readable font style, filing documents, cut and paste tool, and sending to print. This activity included an interactive internet lesson, with computer literacy instruction and practice.

The researcher observed that the computer lab teacher in cooperation with English Teacher A developed an interdisciplinary activity. The computer lab teacher in support of the English Teacher A language arts' assignment, devised a lesson for internet activities and word processing that interconnected with course requirements in the English curriculum. English Teacher A students were handed a worksheet devised by the computer lab teacher. Interactive internet facilitation directed students to the URL (uniform resource locator), www.sabine.k12.la.us/thr/GJBearstone/index.html. Students had to scroll down and then click on links to access information that would answer two of three activity assignments made up for internet lesson and writing instructions: 1) Write a paragraph that contains five or more sentences telling about the author; 2) Walter's farm is at the edge of the Weminuche Wilderness located at the base of San Juan Mountain range. Describe five things you might see if you were on vacation there; 3) the San Juan National Forest is located in southwestern Colorado. Write a paragraph containing five or more sentences describing what Cloyd might experience when he goes on his adventure up the mountains. The internet lesson referred to a story that students were reading in English class. The

researcher observed Language Arts, Computer Literacy, and Geography interconnected.

Lesson 3 was the facilitation of English Teacher B lesson directed by the lab teacher. Students were directed to write a letter to Harriet Tubman. English teacher B was not open to a suggestion for an internet activity lesson directed by the computer lab teacher. Students were required to type a letter using five sentences in each paragraph. The computer lab teacher instructed students to use a list of questions supplied by the classroom teacher as a guideline for the content of the letter. English Teacher B wanted Word Perfect to be use as the word processing program rather than Microsoft Word.

The researcher observed interdisciplinary activity when the computer lab teacher interconnected computer literacy directions in order for students to complete their language arts assignment. The computer lab teacher incorporated computer literacy lessons on capitalization, spacing with comma/question mark; spacing with a period, explanation of a word trap, use of tabs, spell check, grammar check, and print menu. A sample of a full block letter was attached to handouts from the computer lab teacher.

Computer Lunch Program

The facilitation of the computer lab by the lab teacher took place on March 3rd, March 4th, and March 26th. The computer lunch program was a service for students provided by the lab teacher during the 4th period lunch. The 4th period lunch was used by students as an opportunity to access computer technology for web searches and word processing. Online activities spearheaded

computer access. The lab teacher disallowed participation in asynchronous activity such as email and synchronous activity such as a chat room.

In the first session on March 3, the computer lab teacher questioned the students' purpose and had them sign in. Three searches observed by the researcher of students internet access activity included current events, science project topics and biographies. For the March 4th and 25th students entered on a first come, first serve basis. This was the lab teacher's lunch period as well.

Outcome: PC lab

The computer lab was used as an on-line tool by three pedagogues. The Home Economics teacher and the English A teacher in cooperation with the lab teacher initiated the lesson directions to access the internet and research information. In Lesson 1 the Home Economics teacher developed and facilitated a lesson to be carried out in the computer lab with online access. The computer lab teacher incorporated computer literacy skills in the lesson. In Lesson 2, English A teacher sent students to the computer lab to access the word processing tool. The computer lab teacher cooperated with this assignment by directing student activity in computer literacy skills and internet access activity. In Lesson 3 there was no internet access requested by the classroom pedagogue, English Teacher B. Internet access was allowed in the computer lunch program although there were no pedagogically directed activities in place. Therefore, of the three pedagogically directed lessons observed in the PC computer lab two of out of three or 66.6% required internet access by the students.

The pedagogical directions that interconnected Computer Literacy and Home Economics in Lesson 1 facilitated interdisciplinary activity on-line. Pedagogical directions that interconnected Computer Literacy and English in Lesson 2 facilitated interdisciplinary activity on-line. Interdisciplinary activity was observed in Lesson 3 without online access.

Aggregate

The lesson in the science lab had no technology for internet access. In the PC lab sessions, entitled 'The Computer Lunch Program', student activity was the primary input and not pedagogical direction. The three sessions of the computer lunch program were not numerically delineated in the results observed for internet access or online, interdisciplinary activity because there was no lesson.

Responses to Research Questions

Research Question 1: How often were pedagogues of 7th and 8th graders using the computer lab in a fifteen-day period?

The Science Lab

The science teacher used the computer lab according to the schedule assigned at the beginning of the school year by the science department. According to the schedule each teacher in the science department was placed within a cycle in which teachers accessed the science lab on a rotational basis. The researcher observed a science teacher within this schedule. The schedule gave each teacher an average of two consecutive bloc days per month. The

science teacher was observed directing one lesson in the rotation of the schedule in the science lab.

The Mac Lab

The Mac computer lab pedagogue was assigned a schedule of classes for the school year. Use of the Mac lab was based on the schedule of the lab teacher. The Mac lab teacher was observed directing four lessons in the lab schedule.

PC Lab

PC lab use was based on the schedule of the teacher requesting access to the lab. During the observation period three teachers accessed the PC lab. The PC lab teacher scheduled two weeks for each teacher to use the computer lab to direct a lesson. The researcher observed three lessons in the PC lab. The PC lab teacher cooperated with the classroom teachers for three lessons because they requested access to the computer lab for their students.

Aggregate

The researcher observed eight lessons in the fifteen-day period divided among twenty-nine scheduled class sessions. There were six pedagogues using three computer laboratories. Two were computer lab teachers. The other four were classroom pedagogues using and/or accessing the computer lab to facilitate lessons in their disciplines. One was a science teacher, one was a home economics teacher, and two were English teachers.

Research Question 2: How often were pedagogues of 7th and 8th graders using the computer lab as an online, interactive experience in a fifteen-day period?

The Science Lab

The science lab was not online. The science lab was not connected to a server.

The Mac Lab

In three of the four lessons observed in the Mac lab, instructions called for students to use the internet as an interactive experience. Students were required to research a web site or search for information. In Lesson 4, the lab teacher directed the goals of the lesson that excluded online access.

PC Lab

Teachers developed lessons for an interactive, on-line experience in two out of three of the pedagogically directed lessons in the PC computer lab. In two lessons teachers directed students to access the computer online system for information that complimented the classroom study or the discipline. There was no online access in Lesson #3.

Aggregate

Six pedagogues used the Science, Mac and PC labs. They operated alone in directing their lessons and they cooperated in directing their lessons. Their activities directed five out of eight or 62.5% of the lessons in which the computer lab was used as an online interactive tool during the fifteen day period.

Research Question 3: In what ways were pedagogues incorporating the online experience into the learning experience?

The Mac Lab

In Lesson 1, the Mac lab teacher directed students to access a web page to collect information for the purpose of creating a database. The researcher observed Lesson 1 to include Science, Cursive Writing, and Computer Literacy interconnected in one lesson. Computer literacy instruction and creating a database was observed by the researcher as the goals of the lesson. Students' research of information on the internet focused on animals and their characteristics. The researcher observed this activity as a science lesson. The teacher also required cursive writing practice. Students were required to copy and list characteristics of an animal from the internet using paper and writing tools (pen or pencil).

In Lesson 2, the Mac lab teacher directed students to a web site where they had to navigate through a web page, scan its contents for information, and draw conclusions from charts and graphs as a computer literacy learning experience. The researcher observed Lesson 2, to include Social Studies, Computer Literacy and Cursive Writing, interconnected in one lesson. The Mac lab teacher instructed Computer Literacy and cursive writing practice. The researcher observed students accessing the web site using computer literacy skills and then carrying out instructions that utilized social studies skills. The researcher observed Social Studies and online Computer Literacy interconnected in the

lesson. Students were directed to use and practice computer literacy skills for accessing the internet while seeking information from this news media service.

In Lesson 3, the Mac lab teacher directed students to search the internet to gather poems for the creation of a poetry booklet as a component of a computer literacy lesson. The researcher observed Lesson 3 to include Creative Writing (Language Arts), Computer Literacy, and Cursive Writing interconnected in one lesson. The Mac lab teacher instructed in Computer Literacy and facilitated cursive writing practice. In Lesson 4, there was no online experience instructed by the Mac lab teacher.

The PC Lab

In Lesson 1 the Home Economics teacher used the online experience to direct students on a search to find information for presentations under the subject of “drugs”. The computer lab teacher assisted in helping students search the internet, point to, and click on choices. In this activity, students were required to use scanning and critical thinking skills to find information and then apply it to answer the questions. Home Economics, Language Arts, including reading skills, and Computer Literacy were observed by the researcher as being interconnected in the lesson facilitated by the Home Economics teacher with the assistance of the computer lab teacher in an online activity.

In Lesson 2 the online experience facilitated by the computer lab teacher directed students to read questions from the assignment sheet, access a web page, click on a link choice, and obtain answers to these questions from the content of the web site to which they had linked. The online experience was directed as a

cooperative experience with the reading requirements of the English curriculum. The computer lab teacher directed the lesson in English and Computer Literacy to interconnect with the online experience.

In Lesson 3 there was no online access. The Computer Lunch Program had no pedagogically directed lesson.

Aggregate

The Mac lab and the PC lab learning experiences were directed to interconnect with the internet. In three out of four lessons or 75% of the lessons observed by the researcher in the Mac lab, internet access was instructed in the pedagogically directed lesson. In two out three or 66.6% of the lessons observed in the PC lab, online access was an activity directed by the pedagogues in the learning experience.

The science lab had no internet service. Three out of eight lessons in the Mac lab, the PC lab and the Science lab or 62.5% had no online access. This condition was created by the choice of the teachers or the state of the computer lab. The statistic was influenced by the fact that the Science lab had no online access and therefore depreciated the value of the learning experience.

Research Question 4: How often were pedagogues involving interdisciplinary studies in the computer lab using online, interactive activities?

The Mac Lab

In Lesson 1, 2, and 3 the Mac Lab teacher did not facilitate the goals of the internet lessons for interdisciplinary activity. The researcher observed this

interconnectivity as the lessons' goals evolved and were directed in the computer lab by the pedagogue. In the three online lessons, interdisciplinary activity was an outcome that was observed by the researcher, rather than as a directed goal of the pedagogue in the computer lab experience.

The PC Lab

In Lesson 1, and 2, the researcher observed interdisciplinary activity as an outcome of the online experience and the cooperation between the pedagogues: the classroom teacher and the computer lab teacher. In Lesson 3 there was no internet access requested by the classroom pedagogue. Internet access was allowed in the Computer Lunch Program although there were no pedagogically directed activities in place. Out of the two pedagogically directed lessons that used the internet and accessed the online technology, interdisciplinary activity was observed by the researcher, first as an outcome of the computer lab experience in which two teachers of two different disciplines were directing the lesson in the computer lab environment. And second the computer lab teacher sought to develop an interdisciplinary lesson online as was demonstrated by the directives and handouts that were developed for the students.

Aggregate

During five lessons pedagogues accessed the computer labs and used the online system. Interdisciplinary activity online was at 100% given the two analysis by the researcher that computer literacy was present as a discipline at all times when classroom teachers accessed the computer lab environment and

pedagogical cooperation was an outcome of the use of the computer lab.

Through internet technology teachers accessed the discipline or disciplines they needed, not just Computer Literacy, when using the computer lab.

Research Question 5: In what ways were pedagogues using the interactive internet and interdisciplinary curriculum synchronously?

The Mac Lab

Synchronous activity between the activity of accessing the internet and interdisciplinary activity was an observation made by the researcher in the environment of the Mac computer lab. Even though the Mac lab teacher directed students to incorporate other disciplines in order to facilitate a computer literacy lesson, there was no observation or communication that an interdisciplinary activity was a goal of any of the lessons observed by the researcher.

The PC Lab

The PC lab teacher cooperated in directing students in computer literacy activities with the home economics lesson (#1), and with the English lesson (#2) that interconnected with the curriculum of Language Arts studies. The researcher observed synchronous activity between accessing the internet as a form of a lesson in computer literacy exercise directed by the computer lab teacher and the lesson of English Teacher A (Lesson 2). The researcher observed no pedagogically directed goal by the Home Economics teacher or the English Teacher A that was inclusive of more than one discipline.

Aggregate

Internet access was an activity in the Mac and PC computer labs. Internet access activity was directed by the computer lab teachers and in a single case, by the Home Economics teacher. Interdisciplinary activity was an outcome of the experiences that developed in each computer lab. The internet was another tool of the operation of using the computer labs. Five of the pedagogues who used the computer lab technology did so to supplement their particular discipline rather than to direct a synchronous experience of interdisciplinary study by using the internet. The sixth pedagogue, the PC computer lab teacher, directed Lesson 2 as an interdisciplinary experience in which students accessed a web search using computer literacy skills to facilitate an assignment from the English curriculum.

CHAPTER V: CONCLUSION

Discussion: The Ecological Nature of Pedagogy

The ecological experience of pedagogy is a single discipline interacting with another discipline or disciplines creating activity that is a multidisciplinary experience. This it seems appropriately describes the ecological nature of pedagogy that occurred in the computer lab in Arthur A. Richards Junior High School. When teachers and students entered the computer lab, the way of teaching was of interacting disciplines. The classroom teacher represented a discipline. The computer lab represented an environment of technology in which students and teachers necessarily interacted using computer software and the internet.

The classroom teacher had a need for the computer lab. The computer lab software, in the case of the science teacher, and the computer lab teacher, in the case of the Mac and PC computer labs, were there to assist in providing a service to satisfy the need of the classroom teacher. The computer lab teacher represented a discipline called computer literacy. When the classroom teacher and the computer lab teacher came together in the computer lab their lesson goals automatically integrated. Whether planned or not planned in the pedagogically directed goals, once the classroom teacher entered the computer lab the necessary interaction of disciplines took place. In the case of Arthur A. Richards the eight pedagogically directed lessons observed were synchronous with interdisciplinary activity although only one of the eight was directed as

an interdisciplinary activity. The remaining seven lessons where interdisciplinary activity occurred were by accident or unplanned outcomes.

The online computer labs were environments where classroom teachers and students applied computer literacy in order to use the computer lab technology, especially the internet. The internet could not be accessed without a server, the use of computer lab technology, or the computer lab teacher. Accessing the internet as a component of computer literacy in the computer lab environment supported the ecology of pedagogy in two ways. First, the internet provided pedagogy with a tool and resource where information was accessed, stored and shared. Second, the classroom disciplines were integrated and interconnected with other disciplines when teachers and students interacted with the internet or computer software programs.

Lack of internet access depleted the value of the learning experience. Three lessons of the eight did not use the internet as a resource to empower the discipline and students with the multiples of knowledge resources and environments that were needed for the teaching of any one discipline.

Interdisciplinary activity was a natural outcome of the computer lab learning environment given the presence of computer software and internet access, computer literacy goals of the computer lab teacher and/or the goals of disciplines that came from the classroom. With minimal training can most classroom teachers be made aware of their options and the empowerment of using the internet?

The PC computer lab teacher was the only teacher to take responsibility for the interdisciplinary activity as a directed goal of the lesson in which the internet was

integrated with the English lesson. The classroom teacher cooperated with the lesson directed by the computer lab teacher's design of an interactive internet experience. If teachers and students are as diverse and creative as multi-intelligence theory promotes why wasn't the internet used in the directed goals of all the lessons? A computer lab with no internet network, two teachers who declined the use of the internet in the directions of their lessons, were the conditions that disallowed the use of the internet.

Online technology was underutilized in the computer labs. Was the computer lab operating at maximum service capacity as a system or interactive environment, if a component of computer literacy, that of interacting with the internet, was declined or denied in a lesson taking place in the computer lab?

Online access and the learning experience were synchronic, interactive experiences. Computer literacy was required for online access. Turning on the computer, clicking on the necessary icons to get access to the internet, searching for information by using a search engine or uniform resource locator, were tasks that had to be performed in order to interact with the internet. These tasks were observed in the computer lab as they were being instructed by the computer lab teacher and were therefore characterized as learning experiences. In the PC lab online access required the student coming from the classroom discipline to interact with computer literacy goals directed by the computer lab teacher. In the Mac lab students were required to interact with other disciplines in the computer lab and on the internet in order to achieve computer literacy goals directed by the computer lab teacher. In the science lab there was no internet service. When teachers or the institution decided not to utilize the

internet, they depleted interdisciplinary activity in the student's lesson and the subsequent learning experience that came with the activity.

Important Findings

The researcher observed the following findings were important outcomes of the research in the 15 day period.

1. Teachers of several disciplines used the computer labs.
2. Interdisciplinary activity was an outcome in all pedagogically directed lessons that took place in the computer lab environment, whether planned or unplanned.
3. Computer lab online technology was underutilized.
4. Internet technology motivated single discipline lesson goals to interact with other disciplines.
5. Lack of internet access depleted the value of the learning experience.
6. Online access and the learning experience were synchronized in the computer lab environment.

Recommendations for Further Study

- Conduct a study of classroom teachers facilitating a computer lab who have been trained in computer lab facilitation to determine the extent of internet access and interdisciplinary activity.
- Conduct a study of more than one classroom teacher operating or facilitating a computer lab to determine to what extent disciplines synchronize that are normally taught in separate classrooms under separate goals.
- Design and arrange computer labs to determine how the computer lab can be used to improve interdisciplinary activity.
- Design teacher experiences and training environments as cooperative experiences in the computer lab to determine how and to what extent internet interaction and interdisciplinary activity can be enhanced.
- Conduct a comparative study of an equal number of computer labs online and off line to determine the level of and kinds of interdisciplinary activity that takes place.
- Conduct a study to determine if lesson plans designed by students for the use of internet technology will increase student motivation.
- Conduct a study of teacher understanding of the term "ecological pedagogy" to determine the level of its application when teachers are accessing computer lab technology.

The researcher recommends that the number of schools and the extent of the observation be increased in any further study.

Final Conclusion

Internet use in Arthur A. Richards Junior High School on St. Croix was available but underutilized. Underutilization of the internet evolved from the lessons designed by the computer lab teacher, the choice of the classroom teacher not to use the internet when accessing the computer lab, a lack of a server connecting the lab to the internet, and the lack of teacher-directed goals to use interdisciplinary activity as a method of teaching a single discipline lesson.

Online interdisciplinary activity was a natural outcome of accessing the computer lab and interacting with the internet, rather than a planned activity of teacher-directed goals. Thus, interdisciplinary activity was exemplified in all eight lessons that were pedagogically directed. Seven of the lessons exemplified interdisciplinary activity by accident or as a natural outcome.

In summary, what this study confirmed was that the internet in this the junior high school environment acted as an intrinsic, subliminal force in the motivation of multidisciplinary method of teaching and learning. Eighty-seven-and-a-half-percent of the teachers were evidently unaware that when they accessed the computer lab and interacted with the internet they increased the value of learning experience from a single discipline goal to a multidisciplinary goal. Students received the benefit of the

traditional subject area curriculum as well as the benefit of accessing the experience and curriculum of other subject areas or disciplines.

traditional subject area curriculum as well as the benefit of accessing the experience and curriculum of other subject areas or disciplines.

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APPENDICES

Appendix A
Computer Lab Environment

Appendix A: Computer Lab Environment

Subject/Discipline	Average Number of students at computer	Lab time requested	Lab time observed

Appendix B

Computer Lab Activities

Appendix B: Computer Lab Activities

Date; class period	
Length of class period	Regular ___ Block ___
Internet access	Yes ___ No ___
Type of internet interaction	Research ___ Other ___ Explain other:
Web sites suggested or listed by the pedagogue	Yes ___ No ___
Interdisciplinary activity	Yes ___ No ___ If yes, describe:

Comments:

Appendix C

Table: Record of Observations in the Science Lab, the Mac Lab
and the PC lab

Appendix C

Table: Record of Observations in the Science Lab, the Mac Lab, and the PC Lab

Date	Discipline	Lab	Schedule	Internet interactive	Interdisciplinary activity	No. of students Per computer
1. February 26	Science	S	Block	No	Yes♣	2 + 3 sharing
2. February 27	Science	S	Block	No	Yes♣	2 +3+3 sharing
3. February 27	Science	S	Block	No	Yes♣	2 +3 sharing
4. February 27	Science	S	Block	No	Yes♣	2 + 1 alone
5. February 28	Computer Class	M	Regular	Yes	Yes♣	1
6. February 28	Computer Class	M	Regular	Yes	Yes♣	1
7. March 3	Computer Lunch Program	P	Block	Yes	NA	NA
8. March 3	Computer Class	M	Block	Yes	Yes♣	1
9. March 4	Computer Lunch Program	P	Block	Yes	NA	NA
10. March 6	Computer Class	M	Block	Yes	Yes♣	1
11. March 6	Home Economics	P	Block	Yes	Yes♣	1
12. March 12	Computer Class	M	Block	Yes	Yes♣	1
13. March 12	Computer Class	M	Block	Yes	Yes♣	1
14. March 14	Computer Class	M	Regular	Yes	Yes♣	1
15. March 14	Computer Class	M	Regular	Yes	Yes♣	1
16. March 14	Computer Class	M	Regular	Yes	Yes♣	1
17. March 17	English/Computer Literacy	P	Block	Yes	Yes	1
18. March 17	Eng/Comp. Lit	P	Block	Yes	Yes	1
19. March 18	Eng/Comp. Lit	P	Block	Yes	Yes	1
20. March 18	Eng/Comp. Lit	P	Block	Yes	Yes	1
21. March 19	Eng/Comp. Lit	P	Block	Yes	Yes	1
22. March 19	Eng/Comp. Lit	P	Block	Yes	Yes	1
23. March 20	Eng/Comp. Lit	P	Block	Yes	Yes	1
24. March 20	Eng/Comp. Lit	P	Block	Yes	Yes	1
25. March 21	Eng/Comp. Lit	P	Regular	Yes	Yes	1
26. March 25	Eng/Comp. Lit	P	Block	No	Yes	1
27. March 25	Computer Lunch Program	P	Block	No	NA	NA
28. March 25	Eng/Comp. Lit	P	Block	No	Yes	1
29. March 26	Computer Class	M	Block	No	Yes♣	1

NA: Not applicable because activities were by students' choice rather than pedagogically directed.

♣ Interdisciplinary activity observed by researcher.

Appendix D

Letters to Appropriate Authorities and Teachers

Appendix D:
Letter to Commissioner

Mrs. Norma Jean DeMund
P.O. Box 26442 Gallows Bay
Christiansted, St. Croix, USVI 00824
Email: demund@viaccess.net

Dr. Noreen Michael, Commissioner
Department of Education
2133 Hospital Street
Christiansted, St. Croix, USVI 00820

Dear Dr. Michael:

I am asking permission as a graduate student at the University of the Virgin Islands Master of Arts degree program in Education and Technology to observe computer lab activities in Arthur A. Richards for a period of fifteen school days. The reason for this activity is to observe pedagogical use of interactive internet technology in the computer lab environment.

Specifically, I am requesting permission to observe classes in the computer lab while responding to and filling in information on the observation tools. Enclosed are copies of the observation tools.

Upon permission granted by you and the other authorities, a letter to the teachers will follow, along with copies of the observation tools. A copy of the proposed letter to the teachers is also enclosed.

Thank you in advance for your cooperation.

Sincerely yours,



Mrs. Norma Jean DeMund

Appendix D:
Letter to Insular Superintendent

Mrs. Norma Jean DeMund
P.O. Box 26442 Gallows Bay
Christiansted, St. Croix, USVI 00824
Email: demund@viaccess.net

Mr. Terrance Joseph, Insular Superintendent,
Department of Education
2133 Hospital Street
Christiansted, St. Croix USVI 00820

Dear Mr. Joseph:

I am asking permission as a graduate student at the University of the Virgin Islands Master of Arts degree program in Education and Technology to observe computer lab activities in Arthur A. Richards for a period of fifteen school days. The reason for this activity is to observe pedagogical use of interactive internet technology in the computer lab environment.

Specifically, I am requesting permission to observe classes in the computer lab while responding to and filling in information on the observation tools. Enclosed are copies of the observation tools.

Upon permission granted by you and the other authorities, a letter to the teachers will follow, along with copies of the observation tools. A copy of the proposed letter to the teachers is also enclosed.

Thank you in advance for your cooperation.

Sincerely yours,

Mrs. Norma Jean DeMund
Mrs. Norma Jean DeMund

Appendix D:
Letter to Principal

Mrs. Norma Jean DeMund
P.O. Box 26442 Gallows Bay
Christiansted, St. Croix, USVI 00824
Email: demund@viaccess.net

Mr. David Rossington, Principal
Arthur A. Richards
2133 Hospital Street
Christiansted, St. Croix, USVI 00820

Dear Mr. Rossington:

I am asking permission as a graduate student at the University of the Virgin Islands Master of Arts degree program in Education and Technology to observe computer lab activities in your school for a period of fifteen school days. The reason for this activity is to observe pedagogical use of interactive internet technology in the computer lab environment.

Specifically, I am requesting permission to observe classes in the computer lab while responding to and filling in information on the observation tools. Enclosed are copies of the observation tools.

Upon permission granted by you and the other authorities, a letter to the teachers will follow, along with copies of the observation tools. A copy of the proposed letter to the teachers is also enclosed.

Thank you in advance for your cooperation.

Sincerely,



Mrs. Norma Jean DeMund

Appendix D:
Letter to Pedagogues

Mrs. Norma Jean DeMund
P.O. Box 26442 Gallows Bay
Christiansted, St. Croix, USVI 00824
Email: demund@viaccess.net

Pedagogues of Arthur A. Richards School
2133 Hospital Street
Christiansted, St. Croix USVI 00820

Dear Teachers:

My name is Mrs. Norma Jean DeMund. I am a graduate student at the University of the Virgin Islands. In order to fulfill the requirement for the degree of Master of Arts in Education with a concentration in Technology, I have received permission to observe the computer lab environment at Arthur A. Richards School for a period of fifteen school days. The purpose of this observation is to research my thesis topic: **The Use of the Internet in a Junior High School of the United States Virgin Islands: A Contribution to the Ecology of Pedagogy.**

Specifically, while observing in the laboratory, I will be filling in the observation tools that are enclosed with this letter.

Thank you in advance for your cooperation.

Sincerely yours,

Mrs. Norma Jean DeMund

Mrs. Norma Jean DeMund

RESEARCH APPLICATION

Appendix E

Research Application

Research Proposal

Statement of Confidentiality and Safety

Statement of Non-disclosure of Release of Education Record Information

Signature Approval Sheet

RESEARCH APPLICATION

STATE OF CALIFORNIA
DEPARTMENT OF EDUCATION
OFFICE OF THE ATTORNEY GENERAL
1515 CLAY STREET, SUITE 1000
SAN FRANCISCO, CALIFORNIA 94133

NAME: Dr. [illegible]
MAILING ADDRESS: [illegible]
PHONE: [illegible]

IDENTIFICATION of [illegible]

1. [illegible]
[illegible]
[illegible]

Appendix E

2. [illegible]
[illegible]
[illegible]

Research Application

3. [illegible]
[illegible]
[illegible]

Research Proposal

Statement of Confidentiality and Safety

Statement of Non-disclosure of Release of Education Record Information

4. [illegible]
[illegible]
[illegible]

Signature Approval Sheet

- a. [illegible]
[illegible]
[illegible]
- b. [illegible]
[illegible]
[illegible]
- c. [illegible]
[illegible]
[illegible]

RESEARCH APPLICATION

Office of Testing, Planning, Research and Evaluation
Department of Education
44-46 Kongens Gate
St. Thomas, USVI 00802

NAME Mrs. Norma J. Demund DATE 3/5/03

MAILING ADDRESS: P.O. Box 96442 Collins Bay

PHONE: Home 773-9618 Office --- FAX 773-9618 E Mail Address demund@viaccess.net

A. IDENTIFICATION OF APPLICANT

1. Your Professional Position (check one)

Graduate Student UVI Faculty Teacher Independent Researcher
 School/Central Office Administrator Other _____
(Please Specify)

2. Are you employed by the VI Department of Education? Yes No

If yes, indicate your job title and work site

Job Title: _____ Work Site: _____

3. Which of the following best describes your proposal study?

(a) A VI Department of Education project
 (b) An independent study to fulfill degree requirements
 (c) A Master's thesis project
 (d) A federally funded study
 (e) A collaborated project between/among government agencies
 (f) A doctoral dissertation project
 (g) Other (please specify) _____

4. Is the proposed study in connection with the degree requirements of a college or a university?

No (Go to question "5".)

Yes (If yes, answer parts "a", "b", "c", and "d" of this question)

a) What degree requirements?

Masters Thesis Doctoral Dissertation Independent
 Other _____
(Please Specify)

b) Who is your advisor or committee chairperson?

Name Dr. Jeanette Lovorn Telephone Number 778-1620

Institution UVI - St. Croix Department in Institution Education

c) Indicate your current degree status:

Non-degree Baccalaureate Master's Doctoral

- d) If you are applying as an individual, briefly describe your area of research specialization and your credentials.

5. How are the costs of this proposed study being financed?

By applicant

By government foundation, or other research grant
(identify source):

James Madison Memorial Foundation Fellowship

6. List the name(s), position(s) related to this study, institutional affiliations, and all persons who will (to the best of your knowledge) use the data generated by this study for higher education: degrees, grant applications, or publication purposes:
(Attach additional sheets if necessary)

University of The Virgin Islands
Dept. of Education of the VI

B. ATTACHMENTS

Check the required items attached to this application:

- Application Form
- Research Proposal
- Data Collection
- Instruments
- Study Recommendation Form/Thesis Proposal Approval Form
- Statement of Confidentiality Form
- Rights of Human Subjects Form
- Statement of Non-disclosure
- Signed signature of approval sheet
- Adherence to due date to ensure timely processing

- d) If you are applying as an individual, briefly describe your area of research specialization and your credentials.

5. How are the costs of this proposed study being financed?

By applicant

By government foundation, or other research grant
(Identify source):

James Madison Memorial Foundation Fellowship

6. List the name(s), position(s) related to this study, institutional affiliations, and all persons who will (to the best of your knowledge) use the data generated by this study for higher education: degrees, grant applications, or publication purposes:

(Attach additional sheets if necessary)

University of The Virgin Islands
Dept. of Education of the VI

B. ATTACHMENTS

Check the required items attached to this application:

- Application Form
- Research Proposal
- Data Collection
- Instruments
- Study Recommendation Form/Thesis Proposal Approval Form
- Statement of Confidentiality Form
- Rights of Human Subjects Form
- Statement of Non-disclosure
- Signed signature of approval sheet
- Adherence to due date to ensure timely processing

7. REQUIREMENTS FOR STUDENT SUBJECTS

Will pupils be required as subjects for this study?

- Yes (If yes, answer parts "a", "b", "c" and "d" of this question.)
- No (If no, skip to question "8".)

a) Enter grade(s) and number of students requested. *(using)*
Grade(s) 7 & 8th grades No. of Students (use of computer lab)

b) Check and describe any specific criteria for selection of students to take part in the study.

- Ability level (specify) _____
- Socioeconomic level(s) _____
- Ethnic, racial background _____
- Physical Characteristics _____
- Clinically Identified conditions _____
- History of personal problems _____
- Other (specify) students in computer labs

c) Procedures which will be used to gather data from students:

- | | |
|---|--|
| <input type="checkbox"/> Group testing | <input type="checkbox"/> Questionnaires |
| <input type="checkbox"/> Individual testing | <input checked="" type="checkbox"/> Observations |
| <input type="checkbox"/> Interviews- face to face | <input type="checkbox"/> Inventories |
| <input type="checkbox"/> Interviews - telephone | <input type="checkbox"/> Other _____ |
- (Specify)

d) Are file data on students required?

- Yes
- No

If yes, specify tests, scores, type(s) of other information and the period for which data are needed:

8. REQUIREMENTS FOR SUBJECTS OTHER THAN STUDENTS

Will V.I. Department of Education personnel, parents, or former students be subjects in the study?

- Yes (If yes, answer parts "a", "b", and "c" of this question)
 No (If no, skip to question "7")

a) Indicate category by number requested

- | | |
|--|--|
| <input checked="" type="checkbox"/> # Teachers | <input type="checkbox"/> # Counselors |
| <input type="checkbox"/> # School-Based Administrators | <input type="checkbox"/> # Parents |
| <input type="checkbox"/> # Central Office Administrators | <input type="checkbox"/> # Other _____ |
- (Specify)

b) Are file data on staff requested?

- Yes No

If yes, specify and discuss how data will be used.

c) Are file data on parents requested?

- Yes No

If yes, specify and discuss how data will be used.

9. REQUIREMENTS FOR ARCHIVAL DATA

Will archival data on students or staff be needed to complete the proposed study?

- Yes No

If yes, check sources requested:

- | | | |
|-----------------------------------|---|---|
| <input type="checkbox"/> Reports | <input type="checkbox"/> Research Studies | <input type="checkbox"/> Charts/Graphs/Tables |
| <input type="checkbox"/> Handbook | <input type="checkbox"/> Policies | <input type="checkbox"/> Other _____ |
- (Specify)

10. INSTRUMENTS, EQUIPMENT AND INSTRUCTIONAL MATERIALS

What tests, observation guides, questionnaires, attitude scales, interest inventories, and other typed or printed instruments will be used? Specify below and enclose copies.

- Group Test (specify) _____
 Individual Test _____
 Questionnaire _____
 Interview Protocol _____
 Observation Guide _____
 Attitude/Interest Inventory _____
 Other (specify) _____

What instructional materials will be used for research purposes? _____

(Specify or indicate "None".) None

11. DESCRIBE THE DATA ANALYSIS AND INTERPRETATION FEATURES OF THE RESEARCH
(Include description of statistical tests, quantitative/qualitative factors, correlation factors- where applicable)

Qualitative factors include: the computer lab, the pedagogue, and the pedagogical ecology that is supported by interactive technology of the internet. Each of these factors is being observed as a special operation or system contributing to the verified, interconnecting, cycle nature of teaching and learning.

The researcher will analyze data from the observation sheets (O), and create a narrative based on the constructs she sees within the observations. She will also delineate percentages on time spent on various activities in the computer lab.

RESEARCH PROPOSAL

C. APPLICANT'S SIGNATURE

I understand that acceptance of this request for approval of a research proposal in no way obligates VI Department of Education schools or central offices to participate in this research. I also understand that approval does not constitute commitment of resources or endorsement of the study or its findings by the VI Department of Education.

I acknowledge that participation in research studies by students, parents, and school staff is voluntary. I will preserve the anonymity of all participants in the reporting of research results. I will not reveal the identity or include identifiable characteristics of schools or of the school system unless authorized by the VI Department of Education.

If approval is granted, I will abide by the VI Department of education policies and regulations and will conduct this research within the stipulations accompanying any document of approval.

At the completion of the study, I will provide the Office of Planning, Research and Evaluation with one (1) bound copy of the research results.

Norma LeMond
Applicant's Signature

3/5/03
Date

CONTACT PERSON:

Rita J. Howard, Ph.D.
Assistant Commissioner
Office of Testing, Planning, Research and Evaluation
Department of Education
44-46 Kongens Gade
Charlotte Amalie, VI 00802
(340) 774-8505

RESEARCH PROPOSAL

APPLICANT'S NAME Mrs. Norma Jean DeMund
DATE OF SUBMISSION January 27, 2003

1. TITLE OF THE RESARCH

The use of the internet in a junior high school in the United States Virgin Islands: a contribution to the ecology of pedagogy.

2. PURPOSE OF THE RESEARCH

The purpose of the research is to observe pedagogical use of internet computer technology in a class laboratory environment and ways that pedagogues are using interactive and interdisciplinary activities on-line.

3. BENEFITS TO THE VI DEPARTMENT OF EDUCATION

The benefits to the Department of education are threefold. First the research will accrue a record of the numbers of teachers who are accessing the internet. Secondly, the research will delineate types of teacher-use of the internet. Thirdly, this research will offer the Department information useful in determining the level at which the pedagogues in one Virgin Islands school are incorporating the technology standards.

4. STUDY FRAMEWORK

Proposed starting date 2/24

Proposed completion date 3/14

Area of research

Special Education

School Climate

Instructional Personnel

Drug Education

Multicultural Education

Adolescent pregnancy

Student Achievement

Others Edu. & Tech.

Hypothesis and/or Research Question(s).

How often are pedagogues of 7th and 8th graders using the computer lab in 15 school days?

How often are pedagogues of 7th and 8th graders using the computer lab as an online, interactive experience in 15 school days?

In what ways are pedagogues incorporating the online experience into the learning experience?

How often are pedagogues involving interdisciplinary studies in the computer lab using on-line, interactive activities?

In what ways are pedagogues using the interactive internet and interdisciplinary curriculum?

Type of school/research site(s) required

Intact classrooms central office(s)

Other Computer Lab

Please specify

5. REQUIREMENTS FOR STUDENT SUBJECTS

Will pupils be required as subjects for this study?

Yes (If yes, answer parts "a", "b", "c" and "d" of this question.)

No (If no, skip to question "6".)

a) Enter grade(s) and number of students requested.

Grade(s) 7th and 8th grades No. of Students

b) Check and describe any specific criteria for selection of students to take part in the study.

Ability level (specify) _____

Socioeconomic level(s) _____

Ethnic, racial background _____

Physical characteristics _____

Clinically identified conditions _____

History of personal problems _____

Other (specify) Comptuer lab population

c) Procedures which will be used to gather data from students:

Group testing Questionnaires

Individual testing Observations

Interviews-face to face Inventories

Interviews-telephone Other _____

(Specify)

d) Are file data on students required? Yes No

If yes, specify tests, scores, type(s) of other information and the period for which data are needed:

6. REQUIREMENTS FOR SUBJECTS OTHER THAN STUDENTS

Will VI Department of Education personnel, parents, or former students be subjects in the study?

Yes (If yes, answer parts "a", "b", and "c" of this question)
 No (If no, skip to question "7")

a) Indicate category by number requested

<input checked="" type="checkbox"/> # Teachers (all 7 th & 8 th grades)	<input type="checkbox"/> # Counselors
<input type="checkbox"/> # School-Based Administrators	<input type="checkbox"/> # Parents
<input type="checkbox"/> # Central Office Administrators	<input type="checkbox"/> # Other _____ specify

b) Are file data on staff requested? Yes No

If yes, specify and discuss how data will be used

c) Are file data on parents requested? Yes No

If yes, specify and discuss how data will be used

7. REQUIREMENTS FOR ARCHIVAL DATA

Will archival data on students and staff be in the study?

Yes No

If yes, check sources requested

Reports Research Studies Charts/Graphs/Tables

Handbooks Policies Other

8. INSTRUMENTS, EQUIPMENT AND INSTRUCTIONAL MATERIALS

what tests, observation guides, questionnaires, attitude scales, interest inventories, and other typed or printed instruments will be used? Specify below **and enclose copies**.

Group Test (specify) _____

Individual test _____

Questionnaire _____

Interview Protocol _____

Attitude/Interest Inventory _____

Other (specify) _____ observation tools

What instructional materials will be used for research purposes?

(Specify or indicate "None".)

None

9. DESCRIBE THE DATA ANALYSIS AND INTERPRETATION FEATURES OF THE RESEARCH (Include description of statistical tests, quantitative/qualitative factors, correlation factors – where applicable)

Qualitative factors include the computer lab, the pedagogue and the pedagogical ecology that is supported by interactive technology of the internet. Each of these factors is being observed as a special operation or system contributing to the unified, interconnecting, cycle nature of teaching and learning.

The researcher will analyze the data from the observation sheets, and create a narrative based on the constructs she sees within the observations. She will also delineate percentages on time spent on various activities in the computer lab.

STATEMENT OF CONFIDENTIALITY AND SAFETY

I Norma Jean DeMund hereby verify that confidentiality will be maintained in the conduct of this research activity. Every effort will be given to conceal the identity of the students, teachers, schools and other education related subjects of this study; and the research will do no mental, physical or emotional harm to the participants involved in the study.

Mrs. Norma Jean DeMund
RESEARCHER

2/10/03
DATE

Jeannette Lovem, Ph.D.
RESEARCHER ADVISOR

2/10/03
DATE

UNIVERSITY OF THE VIRGIN ISLANDS



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