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ABSTRACT

This qualitative study investigated the following questions: (1) How quickly can first graders master basic e-mailing skills? (2) Does communicating through the Internet and e-mail provide motivation or incentive for children to read or write? (3) Will children write with specific conventions due to having an identifiable audience to whom they are writing throughout the activity? (4) What types of communication subjects will young emergent readers and writers choose to share with their peers? and (5) Do children's social skills begin to grow and expand as a result of using this form of communication? The study focused on five first grade and five fourth grade children. Primary data sources were observations, field notes, student and teacher interviews, and the students' e-mails. Findings in the following areas are discussed: beginning e-mail knowledge; e-mail topics; managing the software; word processing skills; ability to read the e-mail messages; e-mailing capabilities; the motivation of e-mail; changes in students' writing; technical difficulties; and classroom management. Reasons why the project was not successful are summarized, including classroom management, e-mailing, computer access, and word processing issues. Recommendations for making this a more successful activity are offered. (Contains 30 references.) (MES)

E-Mail Communication with First Graders

By: Elizabeth A. Michaels

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Introduction:

What can emergent readers and writers in first grade accomplish through the use of the Internet and e-mail? This qualitative research study investigated how young readers and writers combined that learning process with the use of technology such as e-mail. The question was whether and how that combination would strengthen the children's ability as communicators.

Purpose of the Study:

Specifically, I was interested in investigating the following questions throughout this study:

- How quickly can first graders master basic e-mailing skills?
- Does communicating through the Internet and e-mail provide motivation or incentive for children to read or write?
- Will children write with specific conventions due to having an identifiable audience to whom they are writing throughout the activity?
- What types of communication subjects will young emergent readers and writers choose to share with their peers?
- Do children's social skills begin to grow and expand as a result of using this form of communication? Will they write longer messages to children their buddies as time goes on?

Review of the Literature:

Technology is beginning to become a more daily aspect of students' lives. It must be worked into the curriculum so that it becomes second nature to the student and so that the student can progress and adapt as technology does. "Schools must start early, recognize the unique nature of how young children learn, and design programs that will ensure that all children have the same opportunity to participate in the technological world of the 21st century" (Bowman, 2000, p.1). "This vision endorses teaching children to be active users of technology rather than simply reactors to it—a vision wherein technology is not simply putting the same old thing inside a box rather than on a piece of paper or a slate, but a tool for their own

thinking" (Bowman, 2000, p.9). Research suggests that "between the ages of five and seven, children should be able to start the computer on their own and operate software with simple written directions. They may be e-mailing and using word-processing software" (Dwight, November 1999, p.94).

In addition, researchers have found that the benefits of providing computers to kindergarten and primary-grade children vary depending on the kind of computer experiences offered and how frequently children have access to computers. They have found that "the potential gains for kindergarten and primary children are tremendous, including improved motor skills, enhanced mathematical thinking, increased creativity, higher scores on tests of critical thinking and problem solving, higher levels of what Nastasi and Clements (1994) term effectance motivation (the belief that they can change or affect their environment), and increased scores on standardized language assessments (Haugland, 2000, p.2).

Other researchers have found that "computer use enhances children's self-concept, and that children demonstrate increasing levels of spoken communication and cooperation. In addition, children share leadership roles more frequently and develop positive attitudes toward learning (Clements, 1994, Cardelle-Elawar & Wetzel, 1995; Adams, 1996; Denning & Smith, 1997; Matthew, 1997).

A growing number of educators also feel that "too much 'screen time' at a young age, they say, may actually undermine the development of the critical skills that kids need to become successful, diminishing creativity and imagination, motivation, attention spans, and the desire to persevere" (Kelly, 2000, P.50). They fear the increased amount of time that young children are spending on the computer both in and out of school. Many feel that we do not fully know the impact of technology on young children. They believe that "children need stronger personal bonds with caring adults. Yet powerful technologies are distracting children and adults from each other" (Kelly, 2000, p.50).

We need to have the ability to "give students the tools, and they will be the single most important source of guidance on how to make their schools relevant and effective places to learn" (Tapscott, 1999. p.8). As Robert Soprano said "Technology is for all students, and with a little extra help, all students can become successful" (in Burtch, 1999, p.34). The tools that we use must be developmentally appropriate for the children involved in order for this technology endeavor to be successful.

We need to explore the possibility of using e-mail with younger children. Using electronic mail with first grade students will provide them with meaningful and authentic writing experiences. "Just as young

children need to participate in conversation to learn the ins and outs of oral language, they need to participate in computer talk to learn the ins and outs of this new form of communication" (Bowman, 2000, p.6). "They should learn that technology is a tool for addressing personally relevant issues, rather than a medium over which they have no control" (Bowman, 2000, p.6).

There are many unanswered questions in this field of research. There has not been a great deal of research about the use of e-mail communication with young children. This study provides us with some input on how first grade students manage to learn and utilize basic e-mail skills. It will also shed some light on whether or not using e-mail communication is developmentally appropriate for first grade students.

Design of the Study:

This qualitative study was conducted in a suburban elementary school near a major eastern city. The school district in which this study took place was very committed to integrating technology into its existing curriculum. Administrators have invested a great deal of time and money into purchasing computer hardware and software, along with providing staff training. At the time this study took place the school district had three elementary schools with a fourth elementary school under construction. Each one of the existing elementary schools serviced approximately 700 children. The school in which this study took place typically had five classes each of grades first through fifth. There were four kindergarten classes in 1999.

The first grade class from which the participants for this study were chosen contained twenty-five children. All of the twenty-five children in this class came from two-parent households. All but six of the children attended the half-day kindergarten program provided in this neighborhood school. The five who did not attend this school for kindergarten went to full-day private school programs. Five of the children had Individualized Education Plans (IEP's). Of the five, four of the children were seen part-time on a daily basis in the special education resource room. They also attended speech therapy and one of them received occupational therapy. The other child with an IEP only received speech therapy. The five fourth grade students were chosen from a heterogeneous fourth grade class within the same school. They all participated in the regular education classroom on a full time basis.

All of the classes in this school were arranged heterogeneously, with high, middle, and low achieving students placed in mixed groups. The school administration felt strongly that children should be grouped with their age-appropriate peers and that the needs of mixed groups are best met in the regular classroom. Of the twenty-five children in the first grade class, in addition to the five children with IEPs, five were regarded as academically high by their teacher, four were in the remedial program, and the remaining nine were functioning at grade level within the first grade curriculum.

For the purposes of this study, I focused on five first grade children and five fourth grade children. I selected three boys and two girls from my class of twenty- five students. The fourth grade teacher also chose three boys and two girls. My primary focus was on the first grade students. One of the five first graders was a student who was perceived by his teacher to be a high achieving male. He had excellent writing abilities, but often chose not to write. He often had difficulty thinking of a topic to write about during writing time. Another first grade student was perceived by her teacher to be an average achieving female in the areas of reading and writing. One of the first grade girls was also perceived to be a high achiever. Two of the other students were judged by their teacher to be struggling or pre-emergent readers and writers. These students were selected in an attempt to explore the process and impact of this activity on children of both sexes performing at various developmental levels.

We communicated with a fourth grade class in the same school setting. We completed buddy activities with the members of this class approximately every other Friday. The children worked with the same buddy for each activity. They communicated via e-mail with their buddies. The fourth grade class was a heterogeneous group. There were twenty children in this class. The fourth grade teacher selected five children from her class to participate in this activity. She chose three girls and two boys who were performing at a variety of academic levels.

The school district in which this study took place was very committed to the use of technology in the classroom. The school district was connected to the Internet two years ago. My first grade classroom contained three computers with Internet and e-mailing capabilities. The fourth grade classroom had six computers with Internet and e-mailing capabilities. All of these computers were powerful, recent model Macintosh computers. The e-mail system within the school district currently allowed us to e-mail both within the district and to the outside world. The children communicated under my e-mail account and the

fourth grade teacher's e-mail account. The classroom teachers monitored all e-mail interchanges. At this time, there was no way to establish individual e-mail accounts for these students to use on our school system.

Gathering and Analyzing the Data:

My primary data sources for this research study were my observations, field notes, student and teacher interviews, and the students' e-mails. As I coded my following observations, however it became apparent that there were themes or common occurrences appearing throughout the data collection. Some of the themes that emerged were the effects on their writing, technology problems and limitations, word processing and e-mail skills, and classroom management issues.

I had a personal relationship with the students in this study since they were in my class since September. I felt that this allowed them to be very comfortable expressing their thoughts, feelings, and experiences. I was very familiar with their academic ability and personal attributes. I was able to observe changes in both of these areas because of the relationship that I had already have established with my students. On the other hand, I was careful to ask my students to explain what was happening, rather than to assume that I understood. I believe that the various forms of data that I collected allowed me to explain what happened from the students' perspectives as well as from my own.

Beginning the Process:

I began this activity formally with my students in March of 2000. I studied and observed this activity until June, which provided me with four months of observations and data. In preparation for this activity, I needed to get parental approval and approval from my principal. I sent home a letter to the parents of my five students and the five students in Mrs. Hope's class requesting their permission to have their children participate in this activity. The letter explained the particulars of the study and explained that the children will be supervised throughout all e-mail activities and interchanges.

Since a major part of this activity involved basic word processing skills, I needed to teach these skills to my students. I taught them how to use the mouse, basic typing skills, how to erase, add a space, and insert information in a small group setting. Mrs. Hope reviewed these skills with her students. I also

modeled this activity and the above mentioned skills by writing letters to my husband with these students. We e-mailed my husband a set of questions that were posed by the children for him to answer. He e-mailed us his responses and encouraged the children to e-mail other children. I incorporated all the above skills in these beginning e-mail communications. I believe that children at this age learn best by doing. I provided them with opportunities to practice these skills prior to sending their first e-mail message.

At the beginning of this study, we e-mailed Mrs. Hope's class together as a whole group. We asked her if we could e-mail our buddies. She responded positively and provided us with the names of the children who would be participating in our activity. My students composed their first e-mail to their buddy independently. They composed their message in Apple Works and then copied and pasted their message into our e-mail program. I introduced these skills to my children in a small group setting and provided assistance to the students when it was needed.

As we began to encourage more independent e-mailing, I provided my students with a writing frame to compose their initial messages. I suggested that the children begin their e-mailing by answering the following story frame; "My favorite part of our buddy activity was....". Another possible writing frame was "I liked when we....". They were also allowed to choose to write their own e-mail messages. As the children became more comfortable e-mailing and their writing skills began to further develop I encouraged them to write their own e-mail messages. I also gave them some choice concerning the content and the topics of their e-mails to their buddies. Many of their communications were in a personal pen-pal type of exchange. As this study progressed I did try to encourage them to communicate in a more academic nature such as sharing stories, writing stories, interviewing each other, and working on an informational pamphlet about the school.

How E-mailing Happened:

On a typical day, the five children in my study either read or wrote an e-mail response. They wrote their messages primarily during our language arts program and writing workshop block in the morning. These two blocks of time were set up to meet the needs of the various academic levels in the classroom. The morning language arts block was a two-hour time slot in which the various areas of the curriculum were all integrated. The writing workshop block was a half- hour block of time that occurred

on daily basis. During this block of time the children had access to the computers to type and send their messages. I required that the children write at least one message a week to their fourth grade buddy.

It was often difficult to provide them with an opportunity to write their e-mail messages due to the fact that there were only three computers in my classroom that had the Apple Works program and had access to our GroupWise e-mail program. Due to the children's excitement and interest in this activity many of them also chose to e-mail during their recess time. Three of the students attended the after-school care program and also asked if they could come to my room to e-mail their buddy at that time.

The children in this study were very excited to send and receive their e-mail messages. They used Apple Works to compose their messages. They then cut and pasted their messages into our GroupWise e-mail system. They had to log in under their teacher's name and password due to system limitations. Their messages were sent to their buddy's teacher. In the subject area the children wrote "to Susan from Lauren". They typically sent out and received two or three e-mails a week.

The children were often left to compose their messages independently due to fact that I was trying to manage a classroom of twenty-five students at the time. They often had to help each other or wait until I had a moment to check in with them to provide them with assistance. In addition, when there was a problem or a question I would show them on the small computer monitor that was available in our classroom. Their ability to send and receive their e-mail messages was often based on their access to our Group Wise e-mail system, which was often not working.

The fourth grade students experienced many of the same problems on a daily basis. Due to the fact that they were much more independent than my first grade students, Mrs. Hope allowed them to e-mail during their writing time and whenever they finished their work. They were encouraged to send an e-mail message once or twice a week. They also had to fit in their e-mail time around the other students in their class. Each fourth grade student needed to use our type to learn program three times a week. They only had the six computers in their room to complete this task.

Findings:

Upon analyzing the data that were collected during this study the following technology issues emerged: the children's basic e-mail knowledge, the e-mail topics that the children chose, management of

the word processing software, word processing skills, their e-mailing capabilities, and the technology limitations. There were also issues related to the impact that the study had on the reading and writing skills of the participants in the study such as: the children's ability to read their e-mail messages, the motivation and incentive that e-mail communication provided, and the changes in the children's writing. Finally, we must explore the classroom management issues that emerged throughout this study.

Beginning Email Knowledge:

At the beginning of this study I asked the children some basic questions about e-mail communication and their knowledge of this form of communication. There were some preconceived notions and beliefs that we needed to overcome. A couple of the students felt that e-mail was something that their parents used at work or other adults used. For example, Susan said, "My mom, my dad, grandmom, and grandpa use e-mail. This made the other students feel like it was a privilege or a "grown-up thing" to be able to use e-mail. Other students were familiar with using e-mail and were even using it themselves. Lauren stated, "My family uses the computer a lot. We send e-mail to our friends. I like getting on line and hearing the computer tell me that 'I got mail!'"

E-mail Topics:

The children were given the option of choosing to compose their e-mails by following a prescribed sentence a frame such as "My favorite thing about buddies is..." or composing their own e-mail message. The children in this study preferred to write about their own topics. They wrote about their teachers, dancing, camp, sports, food, and TV. They seemed to enjoy writing about the things that they were most comfortable with in their lives. They wrote like kids who were out at recess. The girls wrote about popular fads such as the Backstreet Boys.

The students had more success in communicating with their buddies when they had something in common to serve as an "icebreaker". Kim said, "I like writing about dancing. My buddy and I both like to dance so we have a lot to talk about." Scott said, " I play and watch all kinds of sports. They are fun to talk about." Their conversations were more socially oriented than academic. They thrived during this authentic writing experience. This is in support of Huntley-Johnson and Merrit's belief that "if our goal is

for students' work to be significant, meaningful, and useful, we may need to envision alternative assignments and be mindful about structuring a pedagogy that invites authentic learning"(Huntley-Johnston & Merrit, 1997, p.174). While I saw value in this type of communication such as writing to an authentic audience, increased length of their writing, and practice using word processing and keyboarding I thought this project could incorporate so much more.

Some of the children had a great deal of difficulty thinking of a topic to write about with their buddy despite the opportunity to use a sentence frame to support their writing. I found this to be true especially for Adam and Tim. I believe that they did not participate in this e-mail project for long due to their struggle to think of a writing topic. In fact, Tim told me "I can never think of anything to write. By the time that I do it is time to get off of the computer." Adam also stated, "I don't know what to say. When I know what to say it takes too long to find the letters. I don't like it." This supports the research that found that "many students appear to have nothing to say, and trivia will only sustain a conversation for so long. No wonder some students complain that keypals often stop writing back" (Mosbacker, 1996, p. 42).

As the project progressed, I attempted to steer the children's writing into a more academic capacity. I encouraged them to write a pamphlet about our school for new the e-mail activity. The children viewed e-mailing as a more social time than as a learning tool. They were not interested in using it to write creative stories but viewed e-mail as in Jody & Saccardi's (1996) findings that these young people were more interested in a penpal relationship and needed some coaxing to respond in a more academic manner.

Managing the Software:

The children used the word processing program Apple Works to compose their messages. Much like I started the project, I spent time asking the children if they had heard of word processing and taught them how to use it. They quickly learned to use the various features of this program such as typing, adding spaces, using ending marks, and deleting words. The concepts of cutting and pasting their messages, logging into our e-mail system, typing at an effective pace, and using spell check, however; proved to be challenging for my first grade students.

They also had trouble learning how to utilize the select all command and copying and pasting their messages into our e-mail system. This was a step that led to frustration. Often times the children were heard saying, "Oh! I forgot to copy my message before I quit the program." Unfortunately, this was a necessary step due to the fact that our e-mail program often logged the children out in the middle of their e-mail. Being shut off by the computer frustrated the children. This was a tough concept for them to understand. Children are not used to having the computer lock up on them.

Word Processing Skills:

In addition, they are used to being able to write on paper freely at whatever speed they want. It took the children a long time to compose their messages due to their limited typing skills and at times lack of topics to write about. They did a lot of "hunting and pecking" which took them a long time. One of the students told me, " This takes a lot longer than if I were just writing it myself." The females in this study seemed to be able to write with less hesitation than the males who were involved, due to an abundance of topics and things they had in common not their typing skills.

The children also had a great deal of difficulty learning to use the spell check feature of the Apple Works program. They could locate the feature in the program but they had difficulty reading and identifying the word that they wanted to use. The students also had motor problems trying to highlight the word that they wanted checked by the spell checker. Also, words that are pronounced the same but did not fit within the content of the sentence were overlooked by the spell check, which made the students think that the word was correct. For example, the computer saw no problem when one of the students typed about ..."excited I was that I new the answer." Spell check proved not to be a helpful tool for the students unless they already had a strong vocabulary background. Spell check proved still be a tool to correct the children's common typing mistakes rather than a tool that would help teach them new words or how to correctly spell other ones.

Ability to Read the E-mail Messages:

Due to the children's difficulty using spell check many of the children's messages were written and sent using invented spelling. This did make it difficult for the older children to read the younger

students' e-mail messages at times. Nicholas said, "Sometimes I am not sure what Scott is trying to say, so I have to guess." Kim said, "My buddy likes to use big words. I can read some of them, but not all of them." I also found that my children who had difficulty reading in the classroom also had a great deal of difficulty reading the e-mail messages that the older students sent to them. I was surprised that the fourth graders had as much difficulty spelling their words in their e-mails as they did. I was hoping that their writing would be a helpful examplestudents.

E-mailing Capabilities:

The children enjoyed the actual process of e-mailing despite some of the problems that they experienced during this project. Many of the problems that they had e-mailing stemmed from our particular e-mail system and not the actual act of e-mailing. The children had a great deal of difficulty learning to copy and paste the message that they composed in the Apple Works program. Unfortunately this was a necessary step due to the fact that our e-mail system would log the children out if they took too long to compose their message.

Their next difficult revolved around the fact that they could not log into the system independently due to the fact that they had to e-mail the buddies under my name and password. I believe that the children would have had no problem logging into our system if they could have used their own name and password. Often times they would click on the Group Wise icon and have my name typed in before I got to the computer.

Once the children were in the system their only really difficulty came in remembering how to paste their message into the e-mail system. This problem also did not relate directly to e-mailing. This process got easier over time and the "Mrs. Malone, I need help getting my message" quickly turned into the children independently getting their message into the email system. Once their message was in the system they could type their name and their buddies name into the subject area of the message. They could also type in Mrs. Hope's name. Once all of the information was typed into the correct fields the children could easily click send and send their message to their buddy.

The children experienced some of the same problems and successes retrieving their e-mail messages. They needed to wait until I logged them into the system under my name and password. Once

they were into the system they could easily find their name and double click on any message that they received. This was the children's favorite part. They loved to receive messages. Kim said, "Getting messages is so much easier than sending them."

The Motivation of E-mail:

When these children were presented with the idea of e-mailing a buddy within the school, they were very excited. They knew that this was a new form of communicating. Most of them saw it as a fun and exciting opportunity. The first graders also saw it as an opportunity to ask older students questions about what the upper grades do in school. One-fourth grade student was slightly concerned about e-mailing a younger student. He stated, "I don't think that I would like to e-mail a first grader because they are too young. What are we going to talk about?"

By the end of the study, the majority of the participants really enjoyed e-mailing each other but unfortunately they did not gain much in the academic areas. The students did enjoy the communication aspect and looked forward to using the computer. This supports the belief that "Learners should engage from their earliest years in rich, complex, authentic experiences that provide a tension between creativity and utility. These experiences should also offer frequent opportunities for feedback and an environment of trust and open communication"(Hancock, 1997, p.62). Amanda said, "I can't wait for my buddy to e-mail me back. I ask Mrs. Hope to check to see if she has e-mailed me back all of the time." Three of my first grade students asked all the time if their buddy had e-mailed them back yet. These same three students offered to miss their recess to e-mail their buddies back.

The students were enthused every time that they were at the computer. These students had a positive glow about them as I told them to come to the computer because they had received a new message. One student proclaimed that this was the best part of the school day. Many of the other students in my classroom continually asked, "When will it be my turn to e-mail a fourth grader?" This supports the study that focused on the use of e-mail communication between college students and younger students that found that "students' attitudes, motivation, and relationships were positively influenced by this approach"(Fargen, 1996, p.278).

Some of the students did not enjoy the experience as much as the other students did. Adam stated, " I don't think that I would like to e-mail anymore. I don't like to e-mail. It takes me too long to type. I don't always know where all of the keys are on the computer. I also like writing with Jason." Tim also stated, "I don't always like to type because it hurts my hands." Two of the male students in my class lost interest in e-mailing very quickly. I found that the girls had more interest in this e-mail project than the boys did. The boys had trouble sitting still at the computer and the attention span was shorter. They had the tendency to be more "fidgety" at the computer and had trouble focusing on the task at hand.

Changes in Their Writing:

I did notice some changes in my students' writing, particularly in the writing of the three students who participated in the activity through the end of the year. The e-mails of the female students grew in length as the project progressed. Other teachers have also found that participating in keypal activities "provided the opportunity for my students to work with the writing process in a very personal and meaningful way"(Oakes, 1996, p.38). The writing of the children in this study changed due to the authentic communication experiences that they participated in during this e-mail project. I did not however see much increase in the length of their writing when they used pencil and paper. It was as if they viewed the two types of writing as different activities with different practices.

One of my female students used the space bar excessively throughout her e-mail communications. I did not see this carry over into her pencil and paper writing. When she wrote with pencil and paper she was able to use spacing between her words correctly. When I asked her why she used such exaggerated spacing in her e-mail messages she said, "The words are so small you can't read them. They are too close together. It is easier to read if they are further apart." I used a larger font to show her that there was space in between her words, but she still insisted on using these exaggerated spaces when she was word processing.

This same student learned to use complete sentences in her writing. On one occasion, her buddy e-mailed her with a list of questions. Susan e-mailed back, "Yes. No. Yes. Do you like school?" When we met for buddies the following day Susan's buddy said, "Thanks for e-mailing me back, I didn't know what questions you were answering." Susan said, "All of them." Lauren said that it would have helped her if

Susan had written, "Yes, I like recess" so that she would know what Susan meant. Susan sent her a new e-mail with these changes. This supports the idea that "children began to hone their writing skills because they had an audience that did not know much of what they took for granted" (Bowman, 2000, p.8).

Susan also said that using word processing and e-mailing helped to make her handwriting neater. She said, "I think that the way that the letters look on the screen are really neat. They look like letters in a book. I try to make my letters look that neat when I write them myself."

Technical Difficulties:

Our e-mail system was very unreliable. The first day that I wanted to introduce the project, the system was being upgraded and unfortunately there were many quirks in the new system that caused delays. There were many days when the system was not working properly and no work could be done. This was very frustrating for both the children and myself. As quickly as the children were excited about starting the project, the children became disenchanted with the delays in the system. It also slowed down the process of creating and receiving e-mail messages.

Another problem with the system was that the children were not capable of e-mailing under their own names and checking to see if their buddy e-mailed them back independently. The led to dependence on me to log them into the system. They could not do any independent work on e-mailing if I was not there to sign onto the system. This also disrupted schedules when I was out of the classroom. If I had a meeting or was sick, the children could not do any work. Also, it became confusing at times to remember who was receiving e-mails from whom. It also became mixed with my personal e-mail from other teachers. Because the students were only permitted to log onto the system under my account, only one student could be working on this project at a time. My account can only be active on one workstation at a time.

Classroom Management:

At the beginning, the students needed more one-on-one teaching than I could give them. Many times the students came up and were asking me questions while I was helping another student who was doing work off of the computer. When I tried to give a student information about the computer, he or she became confused, which led to my having to go over to the computer and show them how to work the e-

mail system. This led to the other students losing one-on-one teaching time but also used up too much time for those trying to communicate via e-mail. Although they were very willing and at times capable of helping each other, they still needed one-on-one assistance from me. This was difficult to provide due to the fact that I had twenty other children in the classroom at the time.

Why the Project Was Not Successful:

Classroom Management Issues:

The classroom management aspect of this activity proved to be very difficult with this age child and the fact that there were twenty-five children in this classroom. We only had three computers in the classroom with e-mail access. It was extremely difficult to manage the class while also trying to assist and monitor the children who were e-mailing.

It was difficult to try to find time during the day for the children to e-mail their buddies. I had to set aside time during our language arts block and our writing time. Unfortunately, I only had three computers, which contained the Apple Works program and our e-mail program. I could not sacrifice our regularly scheduled computer curriculum for this project.

This also led to my time being pulled away from the students. The children had many questions since this was such a new program for them. I tried to have the students work independently on the computer while I worked with the other children. With a content-area computer program, there are generally less questions and interruptions. With this project, due to the difficulty, the children interrupted more. They had questions such as "How do I get into Apple Works?" and "I can't read this note from my buddy." This led to me being "out of sorts" with my classroom routine. The students doing the e-mailing needed a lot more attention than other students doing their computer activities.

It was very difficult for me to balance time between our daily routines and this project. I was hoping that it would become easier over time and it did not. I never anticipated that the project would be so time consuming. It seemed that trying to accomplish all of our daily goals and this project made me juggle my schedule around more. It became difficult to get first graders into a daily routine, which is key to successful classroom management.

E-mailing Issues:

As discussed before, my school had changed e-mail software and servers during this project. This made the project difficult because we would lose messages from buddies and the server would be down so we could not send out e-mails. This led to the children being discouraged. The children were so excited at the beginning to get started on the project and the system was being changed. When we had multiple days in a row when the system was down, this led to the children losing interest. It was difficult to get their interest back.

Computer Access:

The classroom management problem was further complicated by the fact that we only had three computers in the classroom with e-mail access. It was extremely difficult to manage the class while also trying to assist and monitor the children who were e-mailing. All of the children were not able to participate in this activity.

I had to allow all of the children equal access to these computers in the classroom, which led to the students being rushed to complete their e-mail messages. It would be extremely helpful if there had been additional access to computers during this activity either within the classroom or in a computer lab.

Word Processing Issues:

The children involved in this study were able to successfully use the Apple Works program for word processing during this project. It was difficult for them to use some of the options such as the cut-and-paste feature. They also had some difficulty making the font larger. They were unable to utilize the spell check feature of this program. This inability was due to the fact that it was not developmentally appropriate for them at this time. They were unable to read some of the words that were presented and therefore unable to make an appropriate word selection. They were much more successful at word processing when they used a developmentally friendly word processing program such as The Student Writing Center.

Recommendations:

Not all of the findings in this study were negative. There were some benefits to using e-mail with first grade children such as the exposure to word processing and e-mail, improvements in their writing skills, increased motivation to write, and the opportunity to write to an authentic audience. I believe that under different circumstances and with some minor modifications this activity could be more successful and developmentally appropriate for a first grade child.

Classroom Management:

I would suggest that this project would be more successful if the project were incorporated into the entire first grade curriculum. This would allow the teachers to prepare better and have all the children learning at the same time. It is easier to manage the classroom if everyone is working on the same project.

It would be extremely helpful if there were additional access to computers during this activity either within the classroom or in a computer lab. If class sizes were too large, having a part time computer aide or classroom volunteer would also help control the interruptions. The aide or volunteer could go from room to room and grade level to grade level, working in smaller groups on the computer while the teachers worked with the other students or vice versa. This year I have both a computer lab aide and a couple of classroom volunteers. This has been a positive change, both in my classroom and the computer lab. They are able to help me assist the children on and off the computer.

E-mail Recommendations:

As my research and findings show many of the difficulties that were experienced during this study can be understood as technological difficulties. The e-mail system should also be reliable. In addition, it would be extremely helpful if the e-mail system had the capability to allow the children to utilize their own individual log in name and password. It would also help to eliminate the need to have the children cut and paste their messages from a word processing document into the e-mail system. This step proved to be very difficult for many of my students. Their problems stemmed not from difficulties with basic word processing and e-mailing but from the merging of the two skills in this manner. Having access to an e-mail system that is current and will not be changed during the course of this project would be helpful.

Our e-mail program is more reliable this year than last year. The children are now able to directly type their e-mail messages into the e-mail program rather than having to rely on cutting and pasting their message. This has made the e-mail process much easier and much more manageable for the children. Unfortunately our e-mail program still does not have the capacity to allow the children to use their own log in name and password to access their e-mail messages. This is not as great a problem due to the fact that they no longer need to cut and paste their messages into the e-mail program, but yet another problem to overcome during this activity.

Word Processing Program Selection:

In addition, it is important to pick a developmentally appropriate word processing program such as The Student Writing Center to use for this activity if the children must word process their documents prior to e-mailing their messages. While my students were able to use Apple Works they were much more successful with The Student Writing Center.

Writing Topic Selections:

My students really enjoyed writing in a friendly, conversational manner with their buddies, although a couple of the students had difficulty selecting a topic to write about during their e-mail sessions. While I found some benefits to this type of communication and e-mailing such as their increased motivation to write, some positive effects on their writing, and their use of e-mail and word processing programs. I felt that modifications in their writing assignments might have provided even more beneficial academic outcomes.

While I believe that it is important for the children to have some choice in what they are writing about to provide them with some ownership of the experience I think that the teacher should have some control of this writing activity. I believe that it would have been helpful if the teacher provided additional writing frames for the children to follow or encouraged the children to write stories together.

For example I would try to encourage the children to build a story together by each of them writing a part and then e-mailing to their buddy to add to the story. They could also help to peer edit each

other's stories. They could have also completed reports or informational studies together. The teacher also could provide the children with writing frames such as "Over the weekend I..." or "Hello! My name is..., I am _____ years old. I like to...". These types of modifications may have changed the children's conversations from mere pen-pal communication into a more academic communication thus making the time spent on this activity more beneficial.

Large Screen Monitor:

This year my students and I had access to a computer lab. Not only did this lab contain enough computers for all of my students to be word processing and e-mailing at the same time, but it also contained a large screen monitor. I found that using a large screen monitor to introduce our word processing program and the basics of e-mailing was far more effective than using a computer and a small monitor in my classroom. I could demonstrate the program to all of my students at once, which allowed me to be calmer and more effective. The children also seemed to grasp basic word processing and e-mailing skills more quickly and easily using this approach.

An Overview of a More Successful Approach:

The Computer Lab

Having access to a computer lab this year made a great deal of difference in this activity this year as is shown above. It was much easier to demonstrate the Student Writing Center and our e-mail program while using a large screen monitor. All of my students were able to participate in this activity and word processing at once, which allowed me to better assist and monitor my students. They were more consistently task because they were all participating in the same activity and they did not have to wait their turn as often. Since they were all working on the same thing they were also able to assist each other, which was exciting to see and made this activity more successful.

This year, my class and I have access to a computer lab. The computer lab contains approximately thirty computers and a large screen monitor. We have a thirty-five-minute block of time scheduled one day a week. We also now have access to a program entitled Student Writing Center, which is far more kid

friendly, and developmentally appropriate for my first grade students. They were able to grasp and utilize basic word processing skills more easily in this program than with Apple Works.

I was able to introduce this program to my students using a large screen monitor, which has proven to be much more effective than using a small monitor in my classroom. Having access to a large screen monitor has made it easier to demonstrate the Student Writing Center program to my students in a large group. This also helped to alleviate a classroom management problem since all of my students were focused on the same task at the same time. I was therefore more relaxed and effective when I was introducing this program. Since each child was able to practice using this program at the same time I found that they were able to successfully use this program at an earlier point in time than the children involved in this study last year. They were given more hands-on opportunities to practice and enhance their skills. The increased amount of availability of the computers also helped to reduce the amount of time that it took the children to compose their messages.

There was also more sharing of information and skills among the students since they were all doing the same thing. I was also provided with more uninterrupted time helping individual students. With the computer lab, I saved time by not having to teach the program multiple times while students crowded around my desk. When there was a common question or problem I demonstrated the process on the large screen monitor to the entire class at once.

I found that my students had greater success using word processing in the computer lab setting. This contradicts Papert's belief that by removing computers from the classroom and relegating them to an isolated lab, schools have effectively minimized the potential impact computers can have on children's learning by turning the technology into a separate, unrelated subject area called "computer literacy". Technology cannot become a useful support for students' work if they have access to it only a few minutes a week.

Mrs. Hope's class also attends the computer lab this year. They have two 45-minute blocks of time scheduled a week. Mrs. Hope feels that it would have been easier for her students to participate in this activity this year due to the fact that our e-mail system is now more reliable and there is greater student access to the computers in the lab and in her classroom. Mrs. Hope did state that they still do not go to the lab all that often due to some problems that the lab is having in its first year of operation.

Final Thoughts and Reflections:

What can emergent readers and writers in first grade accomplish through the use of the Internet and e-mail? This research study investigated how young readers and writers combine that learning process with the use of technology such as e-mail. The question was whether and how that combination would strengthen the children's ability as communicators. This study found that the use of e-mail communication was not developmentally appropriate under the conditions that existed throughout this study and did not significantly enhance the children's reading and writing ability.

The first grade students in this study had little difficulty grasping and applying basic emailing skills such as typing in an e-mail address, sending their messages, and receiving their messages. Their difficulties with e-mailing occurred as a result of the problems that the e-mail system that they were using entailed.

Overall, I found that this type of communication activity was not developmentally appropriate for first grade students under the conditions that were necessary during this study. There were some positive affects such as an increase in the length of their e-mail messages, the motivation for the children to read and write their e-mail messages, the opportunity for word processing and e-mail practice and application, and some positive changes in the children's writing. I did not find however, that there was a real impact on the academic skills of the participants in this study. The limitations of the Group Wise e-mail system and the limited access to computers greatly impacted this study. Under different circumstances this type of communication may have been more successful, but I would not fully recommend conducting this type of activity under the above mentioned conditions.

There were some positives such as increased motivation to read and write increased length of writing, incorporation of writing conventions, and basic use of e-mail and word processing programs. The technological difficulties and the user-unfriendly set-up of our system offset the positive effects of this activity. The researcher believed that the children would be engrossed in the technology due to the fact that it should have been easier to construct e-mail messages with the ease of penmanship and editing capabilities. The belief that the children's reading and writing would be greatly enhanced by this form of

communication never came to fruition due to the limitations of time, and the inadequacies of the technology.

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