

**EMPOWERING OUR FUTURE GENERATIONS
THROUGH TELECOMMUNICATIONS:
AN INTER-SCHOOL TELECOMMUNICATIONS
PROJECT WITH GRADE 3 AND 4 STUDENTS**

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B.Ed., University of Lethbridge, 1980

A One-Credit Project
Submitted to the Faculty of Education
of The University of Lethbridge
in Partial Fulfillment of the
Requirements for the Degree

MASTER OF EDUCATION

LETHBRIDGE, ALBERTA

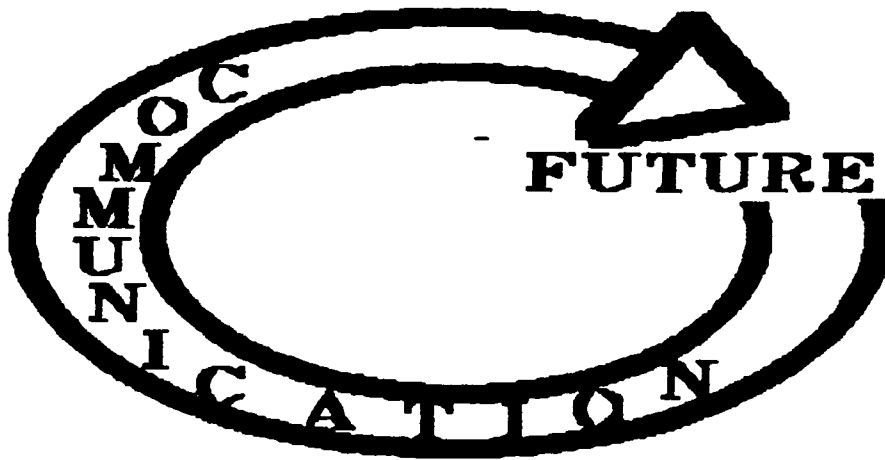
September, 1993

EMPOWERING OUR FUTURE GENERATIONS THROUGH TELECOMMUNICATIONS:

An Inter-school Telecommunications Project
With Grade 3 and 4 Students.

SHARING

COOPERATION



LEARNING

TECHNOLOGY



WENDY MELROSE
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ONE CREDIT PROJECT
MASTERS PROGRAM

Acknowledgements

- My Park Meadows Grade 3/4 class for their cooperation
- Paul Bryant for his dedication and partnership in the project
- Nicholas Sheran Grade 4 class for being electronic pen-pals
- Lethbridge School District #51 for the Innovative Fund
- Erwin Fellner for his support as principal of Park Meadows School
- Trish Jessop for her assistance with the library computers
- Pat Ponting and Ruth Bahnuik for sparking my interest
- Robin Bright, U of L, for her positive reinforcement
- Remie Benoit for his love throughout the project
- Rand Jordan, my brother, for his computer expertise
- My family members for their continued encouragement

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CHAPTER ONE: INTRODUCTION

1. Preface

As educators, our role is to prepare the future generations for their place in the twenty-first century. The modern technology of television, video, satellite, and telecommunications bring rapid communication with all parts of the world. As a consequence, the human population is becoming acquainted with the world as a whole rather than fragmented parts.

This project, "Empowering Our Future Generations Through Telecommunications", was designed to introduce nine and ten year old students to telecommunications. Through the computer and a modem, these Grade 3 and 4 students communicated with their telepartners in another school across the city. The students were immersed in this process for a brief period of approximately three months.

Children must be aware of the larger world in order to locate contributing places for themselves. Young people will need the resources to preserve and to create the changes needed in their environment. As teachers, we must empower these individuals to take responsibility to be lifelong learners and to actively participate in their future.

Computer technology allows these individuals to share experiences with other students. By creating telecommunication networks from student to student, from class to class, from school to school, from city to city or from country to

country, students take electronic field trips that broaden their perspectives and relationships with others. The purpose of this study is to help young children begin to acquire the skills needed to become active participants in telecommunications which will be necessary in their lives.

2. Preliminary Thoughts

The seeds of interest for the project were planted at a Social Studies Conference in Edmonton on October 18–20, 1990, where the theme was "Global Education." I attended a session regarding telecommunications in the elementary classroom. Through this preliminary introduction, I became acquainted with two elementary teachers from Calgary, Pat Ponting and Ruth Bahnuik, who had successfully been involved in telecommunications networks between two schools in their own city as well as other places across Canada and around the world. After their presentation, I took the opportunity to speak with them about their projects, resources and background knowledge. They were not "technoids" but dedicated and knowledgeable elementary teachers who understood the realities of regular teaching. They had similar daily teaching responsibilities to one another, similar computer expertise and their school had similar kinds of computers. In addition, I noted, they were able to function without the most advanced computer labs and equipment.

A few weeks later while attending a Math Conference in Calgary, I visited Pat and Ruth at the O.S. Geiger School in northeast Calgary, where I was able to see their telecommunications project in operation. With their shared expertise, I became very interested in providing my own Lethbridge students with a telecommunications network. I felt comfort in knowing that telecommunications could occur with limited background knowledge and resources. Time and energy were the major factors that I could and would contribute. Therefore, I decided to embark on my own telecommunications project.

3. Setting and Participants

The project was undertaken at Park Meadows School in Lethbridge, Alberta with a school population of approximately 430 students. The school has been operational for eleven years in a middle class neighbourhood with a heterogeneous clientele. I taught a combined Grade 3 and 4 class in addition to my role as school librarian. At the outset of the project, the 24 students showed enthusiasm for computer technology and its applications.

Within the school, most of the computers were located in a computer lab of 25 Apple II's (128K), each with one floppy disk drive. There was one ImageWriter printer connected to an Apple II with a double disk drive. Therefore, there were enough computers for each student. My class was scheduled into the lab at least once a week for 30 minutes. I was also able to utilize the unassigned periods for my students.

In the library, there was also a computer centre with 4 computers. The two Apple II's each had the required Super Serial card in order to operate the modem and printer that were situated there. When I was assigned to my regular teaching responsibilities, the library assistant supervised the students who were accessing this centre. Also, as part of the project, a dedicated phone line was installed into a nearby conference room adjacent to the library, meaning the phone could only be used for the purposes of this particular project. The modem was then connected to this line so access by the students could be closely monitored.

My regular classroom was situated in close proximity to the library which was beneficial as I am 0.5 classroom teacher and 0.5 librarian. This became very important as the project progressed and the transmissions through the modem

commenced. I was often beckoned to make decisions or to connect with the partner school while instructing in my regular classroom.

The partner school was Nicholas Sheran Community School with Mr. Paul Bryant and his Grade Four class of 22 students. The two schools are considered "twins" as they were built at the same time, using the same floor plan. Park Meadows School is located in north Lethbridge while Nicholas Sheran School is on the west side. Paul Bryant had also attended the Social Studies Conference in Edmonton and showed interest in pursuing a telecommunications project. He proved to be a wonderful, hard-working partner who remained enthusiastic and determined that the project be a success.

In order for the project to proceed, new hardware and software needed to be purchased. I accessed funds through the Lethbridge School District Curriculum Innovation Fund for the dedicated phone line, the modem, modem cables, software and blank diskettes. With the district support, I had made a real commitment to the project.

At our own home, we have two computers, one Apple IIGS and an IBM compatible unit. For this project, we also installed two phone lines into the house (with separate numbers) and this proved invaluable in connecting the hardware. With the home computers in the same room, we compared screen messages to assist in sending the transmissions over the modem. I discovered telecommunications is not simply plugging in the modem, booting up the computer and having success. There were many hours spent in practice and trial and error.

With the preliminary research and planning accomplished and the necessary hardware and software in place, the project was ready to begin. The next step was to identify the objectives. What did I want to accomplish with the students? What did I personally hope to gain from my experience? What would

my school and colleagues gain from this project having been funded at their school? On a broader level, what impact would the experience have on the future for the children and education? I had to formulate these important objectives in my mind.

4. Objectives

Computer technology is rapidly expanding into all aspects of our lives. Elementary school children must be prepared with the appropriate skills to compete for their place in this environment. This project is designed to acquaint students with the power of the computer through telecommunications. Young children generally show a natural curiosity about the computer and are comfortable and accepting of its capabilities. They enjoy creating their own stories and sharing them with their classmates and parents. The students in this project have had an introduction to keyboarding and word processing, but it was hoped they would become more adept in these areas.

The following objectives emerged for this telecommunications project:

For the teacher:

1. The teacher will become acquainted with telecommunications as it relates to the elementary classroom.
2. The teacher will use a modem to connect two Lethbridge schools.
3. The teacher will send and receive files using the modem.
4. Computer use will stimulate teacher creativity.

For the students:

1. Students will "talk" with each other using the computer at Park Meadows School.
2. Students will become "electronic pen-pals" through a modem with students of Nicholas Sheran School.
3. Students will create research reports.
4. Students will practise keyboarding skills.
5. Students will utilize a word processing package.
6. Students will send and receive files using the modem.
7. Telecommunications will provide motivation for writing.

The realities of my elementary school setting included minimal financial assistance and minimal computer equipment. This project was conducted with students working on AppleII computers with 128K without a hard disk drive. An external modem was attached to one terminal. As my computer expertise was very limited at the outset, I initiated a project that provided me with a level of comfort that would result in successful completion. There is a limited amount of expertise in the elementary schools with regards to telecommunications as most teachers are generalists teaching a multitude of subjects often at many grade levels. To compensate for the inadequate facilities, minimum background knowledge and time available, there was an abundance of energy and enthusiasm from both myself and the students.

CHAPTER TWO: REVIEW OF THE LITERATURE

1. Projects

Throughout the world, many students have shared the power of the computer through telecommunications. Telecommunications is a method of simply exchanging information from one computer to another and has had many applications. There has been a multitude of telecommunications networks employed within the school setting. A sample of some of the projects will be described below to set a context for this project.

In the "*Kid Link Learning Online*" project in Louisiana, Grade 3 students from opposite sides of the state, exchanged cultural and scientific information by doing research using on-line encyclopedias, news services, weather information and bulletin boards. They integrated language learning, science and social studies in their telecommunications project. At the end of the project, telepartners met in person at the state capitol in Baton Rouge (Stall, 1991).

The *AT&T Learning Network* linked children and technology as part of a world communication system. Through this network, eight schools from around the world were linked in a friendship circle for learning and sharing. This long distance learning broadened the classroom by channelling unique experiences through electronic field trips. Each classroom sponsored a project that the other schools in the circle make contributions (Martinelli-Zaun, 1993).

On a local level, Tom Wilson and his Grade 6 class at Lakeview School in Lethbridge participated in an AT & T Learning Network Project during the 1991 school year. His class sponsored a project for the Mind Works Curriculum called

"Incredibly Interesting Incidents." Students wrote a short anecdote about an interesting event that took place in their lives. Other members, who participated to varying degrees in this learning circle, were from schools in Salmon Arm, B.C., California, Texas, New York, Pennsylvania, Connecticut and Michigan, as well as Riyadh, Saudi Arabia and Cairo, Egypt (Wilson, 1992).

Several projects reinforced the idea that the primary goal of language learning is communication. Telecommunications had been successfully used in a second language learning environment. The *PRODIGY* Service was utilized to involve a black school population in Miami with a Caucasian population from the linked school in New Hampshire (Montoya, 1992). One of the objectives of "*Hola Amigos*" was to increase cultural awareness by comparing differences and similarities in their respective cultures. The topics addressed were about the schools such as ethnicity, population, programs, location, traditions, school colours, sports and leisure. The other main topic was their community including climate, location, special events, hobbies, life styles, house and entertainment. Through telecommunications, the Miami students were able to dispel stereotypes about news stories of crime and violence in their city. According to Montoya, "The doors of our classrooms opened as students and teachers passed electronically into each other's classrooms closing the gap of miles, crossing cultural and language barriers" (p.53).

The "*Computer Pals Across the World*", which utilized the electronic mail service provided through OTC (Overseas Telecommunications Corporation), involved schools in many different countries including Canada, United States, Australia, New Zealand, United Kingdom, Peru, France, Germany, Japan, Sweden and China. Students shared experiences, opinions, discussion of current events, social and cultural information, creative writing and newsletters. This project began in 1983 between Alaska and Australia in the Australaskan Writing Project (Clyde, 1992).

Electronic "appearances" can be used to host a special guest, such as David Suzuki or Farley Mowat. Students can correspond synchronously as in a chat feature, (the students and guest type back and forth in the present time) or asynchronously (which is most commonly done), where the files are saved through a bulletin board. These projects allow students to communicate with leaders, inventors, authors and other professionals who are accomplished in their fields (Harris, 1993).

The *National Geographic Kids Network* are telecommunications-based science and geography units available for Grades 4–6. Projects such as "Too Much Trash?", "What's in our Water", "Acid Rain", "Weather in Action", "What are We Eating", allow students to be real scientists as they study a topic, conduct experiments, and share their data via a modem with other students across the network (Graham, 1992).

Another useful application is using electronic communications systems to communicate when regular schools and other means, such as telephone or mail service, are unsatisfactory. Electronic mail has been successful in teaching correspondence courses to geographically isolated students. This *Distance Education* has been utilized in the outback of Australia and in Northern Canada (Upitis, 1990).

Furthermore, the *River Oaks Public School* in Oakville, Ontario has utilized technology to focus on the school motto of the three E's — engage, enable, empower. The school is a completely networked facility with approximately 220 MacIntosh computer systems — one computer for every three students. There are also scanners, CD-ROM players, video disk players, telecommunications equipment, robotics equipment and other specialized software tools. With few texts or manuals all the material used in classes comes from CD-ROM or external databases. This visionary school has capitalized on computer technology (Lieberman, 1993).

There are also examples of projects that occur within one classroom where two computers are connected and students can talk with a partner in a "*Classroom Chat*." This has been expanded to "*On-Line Chat*" where two students may talk to each other between schools within their own community (Ponting, 1990). This eliminates the telephone expenses that are incurred through long distance. Local calls are less intimidating for the beginning telecommunication users.

Summary

After having reviewed some of the literature regarding school telecommunications projects, I initiated a project as an introduction to the world of telecommunications that would be within our own city limits. I knew that my expertise in this field was limited so I wanted to choose a project that was at my level to ensure success. Children of nine and ten years of age relate better with their own community than distant, unfamiliar places. I liked the personal aspect of a local partnership where the students would meet their electronic pen-pals to bring reality to the experience. Many of the networks accessing more distant places seemed overwhelming with the limited time and equipment available at our school. I also wanted the students to have the opportunity to operate the modem and upload and download files themselves rather than just the teacher handling the hardware. This is easier to accomplish when the files are sent during school hours and without the added expense of long distance charges. I also wanted the project to be directly related to our curriculum and not an "add-on" as part of an agenda from another school.

2. Positive Effects

Engaging in one of these multitude of telecommunications projects offers many benefits to the students, the teachers, and the schools that become involved. These positive effects are thoroughly documented in the literature about the

use of computers in telecommunications. For instance, the thrill of being able to converse with a telepartner in the next school, city, province or country provides motivation for everyone involved in a telecommunications project. Utilizing new technology provides a challenge that fascinates both students and teachers.

By adding a modem to a computer, acquiring communications software and subscribing to a network, the user has the power to talk to the world (Phillips, 1990). Telecommunications provides a vital link to open the isolated classroom learning situation to the classrooms around the globe. The more we know about others in the world, the more we learn to celebrate our similarities and respect our differences (Martinelli–Zaun, 1993). As these cultural differences melt, this human contact goes a long way towards promoting global understanding.

The rapid speed of transmission and improved response time over regular mail service makes telecommunications an exciting vehicle (Phillips, 1990). These computer field trips allow a transfer of information among many divergent communities as actual field trips to foreign countries are usually impossible. Students become acquainted with people in distant places.

Students are not the only ones to benefit from these distant partnerships. Teaching within the confines of the classroom walls is education in isolation. Telecommunications allows teachers to converse with other professionals who share a common interest or goal. This type of collaborative work among teachers provides them a channel for the discussion of many issues related to school issues (Riel, 1992). Sharing ideas among colleagues provides recognition and motivates teacher creativity. Electronic mail offers many ways of enhancing the curriculum for students and giving support to teachers by expanding the communications network and reducing geographic, environmental and professional isolation (Clyde, 1992).

Another positive benefit for teachers is the satisfaction that arises from being an innovator in the new area of technology. These teachers show leadership with the implementation of new equipment, new policies and new procedures in new situations. They can be empowered to provide expertise to their colleagues and intrinsic rewards follow when they receive recognition for their education endeavours (Kearsley, 1992).

In addition, computers can provide students and teachers with a vehicle for meaningful applications for receptive and expressive language skills (Ponting, 1990). Students are given the opportunity to share their writing with a real audience which gives purpose to their work. Students are more motivated when they are involved in an active use of language for real communication (Alberta Education, 1992).

There are several advantages to using a word processor for written communication. According to Moore (1991), writings of elementary students increased in length when using a word processor. Students often wrote longer responses to questions, especially when they related to their own personal lives, according to the researcher. Students' attitudes changed as they became more positive towards the writing process (Riel, 1989). With a more positive outlook and increasing the actual amount of written work, the student gained the benefits by using the word processor.

Word processors teach written language and the skills and knowledge associated with it (Turner, 1990). Nine year olds who use spell checkers discover that proper nouns are not in dictionaries, and that what they had always thought was a correct spelling, needs correction. If the children use grammar analysis software, there are always new suggestions for improving the technical quality of their work.

Also, when using a word processor, revisions are often easier to make as an erasure hole does not appear on the paper (Turner, 1990). Students need practise in manipulating the software in order to capitalize on the editing features. Deleting and rearranging of one's writing is easier with a word processor. Any tool that encourages students to properly revise and edit their written work is a welcome addition to the classroom. According to Fisher, the word processor is that tool (Fisher, 1983).

The physical appearance of a printed word processor document offers visual appeal to the producer and the reader. A more positive feeling occurs when the problem of handwriting is eliminated by the use of a word processor and printer (Zarry, 1991). A story produced with the aid of technology has a professional quality that appeals to students, especially if graphics are added to assist in the visual presentation.

Often, telecommunications projects are approached through a cooperative learning atmosphere. Students work together to answer questions, research information or create a document. Students gain the benefit of their classmates' expertise as they sit down at the same keyboard to develop common thoughts on the monitor (Turner, 1991). Spoken and written language grow when peers are discussing an issue. From this sharing experience, reciprocity, enthusiasm and validation result which enable the computer to be an interactive tool.

Summary

Engaging computers in a telecommunications project offers many positive effects. Students as well as teachers are motivated to challenge themselves with the new computer technology that is part of the present and has a wide range of uses for future applications. Students and teachers find the collaborative work ethic rewarding. Often, both teachers and students are learning together. No one is the authority figure when manipulating the

hardware and software as there is so much to learn by everyone involved. Using a word processor in the writing process improves the amount of writing as well as the presentation.

Conversing with telepartners throughout the world expands horizons. Tolerance and understanding improves when communication increases. According to the literature reviewed here, a telecommunications project offers many benefits for all those who participate.

3. Possible Problems

As with any teaching strategy, there are always positive and negative aspects to the experience. Many of the benefits of utilizing electronic services have been cited but there are several areas of potential problems that should be studied before engaging in a telecommunications network. I found this most helpful in the planning stages of the project as the experiences of these others were both informative and thought provoking.

A strong curriculum link is critical for the success of any telecommunications project (Phillips, 1990). The classroom teacher already has a full complement of activities and responsibilities for the teaching assignment and does not need another "add-on" to a busy schedule. Projects are much better received if they directly follow the prescribed agenda for the students. With computers and networks, the starting point is not technology, but educational goals that can be accomplished through that technology (Riel, 1986).

Telecommunications offers a motivating and challenging vehicle to present issues and meet objectives within many facets of the curriculum. The computer project must directly relate to the prescribed curriculum.

Most teachers have had less than a decade of experience using the new technology within the classroom (Kearsley, 1992). In fact, many of the initiators of networking projects have had little experience before becoming involved with telecommunications. Often, teachers are isolated in their endeavours and must use their own resources to solve the problems that are encountered, leaving them feeling insecure and unskilled with respect to their use. Lack of close proximity to expertise can result in frustration and a consumption of precious time when searching for solutions to the problem.

In conjunction with limited available human resources, there is often considerable time involvement in learning the system and getting the technology working smoothly (Phillips, 1990). Especially in the elementary school, there is limited access to computers and frequently they are not the latest in design. Allowing time in advance to familiarize yourself with the network helps in avoiding the frustration once the students are involved.

Transmission of messages through the network has the advantage of being more rapid than the regular postal service but often problems arise. Electronic mail is not like the postal service. It does not stare at you from the mailbox on your in-tray. Some effort and cost has to be made to look at it (Aston, 1990). Files need to be placed on the screen for perusal and often then a hard copy made for reading reference. This is not instantaneous and a conscious effort by the initiator and receiver must be made to access the electronic files. The use of telecommunications is only more efficient than other media if the participants take their responsibilities seriously for sending material regularly. Setting up an arrangement with the network partners and being committed to following the schedule are critical factors in the success of any project (Phillips, 1990).

Experiences provided with poorly planned or supported innovation attempts have often left teachers floundering (Kearsley, 1992). Without proper preparation time and experience, projects may be poorly conceived and subject

to failure. Perhaps the goals have been unrealistic or the materials are not appropriate. Good planning does not preclude flexibility and the ability to seize opportunities as they arise (Phillips, 1990).

According to Riel, teachers should avoid pen-pal only projects as she feels that to match one-to-one with students at a distance is too great when the cost of teacher planning time and student learning time is considered. She states that the time and money involved in maintaining the electronic cooperation is far greater than any educational gain that occurs. Messages that are sent to the whole class on topics related to classroom learning would have more educational value (Riel, 1992).

Initial excitement happens when being linked up to distant schools in other parts of the world. This thrill is not always sustained. The need to communicate with unknown children is not as strong as the need to communicate with someone who had a real role to play in the children's lives. If children are asked to communicate with unknown people on issues that are not of interest, and if those factors are compounded by the inevitable difficulties associated with setting up and running an electronic mail system, then it is simply unrealistic to expect any meaningful results (Upitis, 1990).

Another weakness in telecommunication cited by Upitis is that teachers spend more time than the students as far as administering the electronic equipment. This is time consuming and may be expensive and so often becomes the exclusive domain of the teacher. Sometimes, teachers and students are left with a vague feeling that the activity might have somehow been better and more easily achieved without electronic means. This argument is presented in pen-pal and round robin story activities (Upitis, 1990).

Schools most often must adhere to strict budget considerations and engaging in a telecommunications project precludes some expense. There is the

hardware, such as the computer, modem and cables, as well as a suitable software program. There are also long distance charges for the network links. Savings can be made by transmitting messages in the less expensive times of the day. Schools very rarely go on-line in the cheap period from 6 p.m.— 8 a.m. which is understandable but economically regrettable (Aston, 1990).

Knowing that the written creations will be transmitted to a telepartner provides motivation for writing. In conjunction with this positive aspect, the quality of the text that is sent through electronic mail is less concerned with grammar, punctuation, spelling, completeness and structure (Aston, 1990). Sometimes, users wish to save time typing and save money on the length of the message. Some educators advocate that "proper style" should be utilized within the school setting. The quality of language improves dramatically if the text has been produced on a word processor before transmission.

There are several steps in the writing process, such as planning, first draft, peer conferencing, editing and revision. Persuading children of the importance of revision is a challenge for teachers. Often students see revision as a punishment for making writing mistakes. Children do not have the expertise needed to identify the errors in their own writing. Children make very few revisions affecting the meaning of their work; they make most changes to correct typing errors (Zarry et. al., 1991). The claims that using a word processor as a solution to producing wonderful documents, may be highly overrated.

In summary, Kearsley (1992) provides a list of some of the common problems associated with technology use in education:

- lack of knowledge on use of the technology
- lack of adequate time for the project
- lack of sufficient funds
- use of technology for its own sake rather than genuine need
- poorly designed facilities resulting in limited access
- negative attitudes about the technology

Summary

Despite the lack of experience and training in telecommunications, the financial considerations, the time commitment; most of these problems can be overcome with a fundamental belief in the innovative project. According to published reports; with adequate planning, sufficient time and substantial motivation, problems can be solved to bring the project to a successful conclusion.

After reading the literature regarding the implementation of telecommunications and becoming conscious of the strengths and weaknesses, I decided to accept the challenge and become involved. Many of the positive and negative findings will be addressed in my own telecommunications project of "Empowering our Future Generations Through Telecommunications."

CHAPTER THREE: THE PROJECT

Empowering Our Future Generations Through Telecommunications

1. The Project Explained

"Empowering Our Future Generations Through Telecommunications" was a project that would span several months and involve two schools, two teachers and approximately fifty students. Following is a brief explanation of the steps in the project. Table 1 outlines the steps, the software/methods used and the objectives to be accomplished for that segment of the project. Preliminary planning was crucial so that the project could meet the target dates. At the beginning of the project, Paul Bryant, the teacher from Nicholas Sheran School, and I prepared a calendar for each month until June. A revised calendar is included (Appendix A).

In order to use a computer effectively, we knew that students needed to gain proficiency in their keyboarding skills. Starting in September, 1992, each student had 15 minutes daily to practise keyboarding using the software *Type to Learn*, a software package for developing speed and accuracy. In our computer lab, there are enough computers so all students may practise at one time.

Table 1: Computer Project Outline

Empowering Our Future Generations Through Telecommunications		
<u>Procedure</u>	<u>Software/Method</u>	<u>Objective</u>
Keyboarding	Type to Learn	- to increase keyboarding speed and accuracy
Classroom Chat	FredSender	- to give experience in direct computer communications
Greeting Box	inter-school mail	- to introduce partner schools
Word Processing	Bank Street Writer	- to create, retrieve and save word processing files
School Chat	ProTerm	- to communicate directly between schools
Daily Journal	ProTerm - Ascii mode	- to send and receive files
Autobiographies	Children's Writing and Publishing Centre	- to exchange info between electronic partners - to include graphics - to send and receive entire disks
Endangered Species	CWPC Graphics Gallery	- to create documents in newspaper format - to send and receive entire disks
Culmination Visit to Nicholas Sheran School		- to meet our electronic pen-pals - to visit our twin school
Thank-you letters	inter-school mail	- to thank for a wonderful time

Combined with the keyboarding practise, students also were introduced to word processing using the software *Bank Street Writer*. The Lethbridge School District has a district license for both the *Type to Learn* and *Bank Street Writer* programs. The students learned to create, edit, save and retrieve files. They also experimented with a Spell Checker. With the preliminary work of having some expertise at keyboarding and becoming familiar with word processing, the main project was ready to be initiated.

After the students had practised keyboarding and word processing, the next step was to connect two computers in the library with a null modem cable for "*Classroom Chat*." A null modem cable permits two computers in the same room to talk together through a direct connection and was obtained from our local Apple dealer. Using the public domain software of *FredSender*, the students would keyboard a message which would appear directly onto the monitor of the other computer located in the opposite carrel. The objective of this segment was to give experience in direct computer communication through the "chat" mode. This software package is user friendly and each student had at least one turn to communicate with a class partner. A complete listing of the hardware and software used during the project appears in Appendix B.

In order for the students in my class to participate in the telecommunications project and to have their work published, I needed to gain permission from their parents. A letter was sent to each family which briefly described the project and the involvement with their children (Appendix C). All 24 students were allowed to participate. Also, a pre-questionnaire was administered to gather information about their present computer knowledge (Appendix D).

As part of the project, we decided to have Paul Bryant's class from Nicholas Sheran School and my Park Meadows class fill a "*Greeting Box*" to generate enthusiasm and excitement for the project. The materials put into the box provided information about the partner school as well as personal information

about each student. Included in these introductory packages were class pictures, individual pictures, school shirts and pins and a multitude of donations from the students. Taking into consideration the students' interests and abilities, we, the teachers, identified which students would be electronic pen-pals.

After the students had practised "Classroom Chat" within Park Meadows School, the students would now send messages across the city to the partner school. In this "*Inter-School Chat*", the messages again would appear directly onto the monitor and the students would engage in a modem conversation with questions and then immediate responses.

The next step in the process was to have the students send and receive files that had been saved on disks in a *Daily Journal*. In the morning, two students would go to the library and prepare messages, using the word processing package *Bank Street Writer*. At the appointed hour of 10:20, the pen-pals from Nicholas Sheran School would call us through the modem and we would send our files and receive theirs using ASCII mode. When the messages were sent, they would appear on the monitor at Nicholas Sheran School. The messages appeared too quickly to read, but would be kept in the copy buffer and then a hard copy would be printed for the students.

Autobiographies, or to be more exact, short stories about the students' interests, as they had sent written autobiographies in the greeting box, were the next exchange. Each student used *Children's Writing and Publishing Center* software to create their one-page personal essay (Appendix F). The students easily learned to manipulate another word processing package and enjoyed the added features of graphics and different fonts to their documents. This taught students how to upload and download files using *ProTerm* software. Once the files were ready to send to Nicholas Sheran School, five files were loaded onto

another data disk. This time, students were taught to send and receive whole disks as opposed to files.

The final step in the project was "*Endangered Species*" reports that my students had created (Appendix L). Again, we used *Children's Publishing* as the software and incorporated additional graphics from *Graphics Gallery*. This was an integrated approach as we had been studying Endangered Animals in Science and Language Learning and Art. The Nicholas Sheran class studied "Sea Animals" and sent riddles on this topic. Students also sent and received entire disks through the telecommunications network.

The *Culmination* activity for "Empowering Our Future Generations Through Telecommunications" was a visit by our Park Meadows students to the partner school of Nicholas Sheran Community School (Appendix G). Students met their electronic pen-pals and spent the day together. Some of the activities planned were a get acquainted activity (Appendix H), a craft constructed together, lunch in the adjacent Nicholas Sheran Park and finally a swim at the Nicholas Sheran Pool.

This briefly describes the equipment used, the steps in the project and the sources of data (Appendix I). Each of these activities produced data from which I was able to extract themes about the positive and negative aspects of involving students in a project around telecommunications. Next, a detailed analysis of each component as the project progressed through the weeks is offered. The topics emerged through observation, in the chat files, in conversation and in my own records of my personal journal (Appendix K).

2. Analysis, Results and Discussion

This is Education Week and I have never felt so elated and excited about education. I am working in the present, participating in the future.

My Personal Journal, March 23

Keyboarding

Learning to keyboard with reasonable speed and accuracy were two of the objectives that our school had outlined for all Grade 4 students in the school year 1992–1993. Since I had a combined class, my grade 3 students also capitalized on this experience. As keyboarding was placed as a school priority, the computer lab timetable was arranged so that my class was scheduled to practise for 15 minutes at the beginning of each day. In the first two months, three students were able to finish the 21 lessons in the *Type to Learn* program with a maximum speed of approximately 25 words per minute. These students were very proficient and later were able to do some peer coaching with the other students.

Some of the students felt that computers were to be used for games rather than keyboarding practise. They spent more time on the game options than on the gruelling task of keyboarding. They had no idea how much keyboarding they would do in the upcoming months! Many students requested computer time be made available for those volunteer students who wanted to practise to gain speed and accuracy. When students were doing their own "Endangered Species" reports, which were rather involved, the students realized the value of competent keyboarding skills. This keyboarding was crucial to the success of the program and I felt that before starting with telecommunications, the

students benefitted from the two months of practise. The short time period on a daily basis for keyboarding was appropriate.

In the elementary setting, many of our computer tables were not at an appropriate height for the children as the lab must accommodate all grade levels. Much of the furniture was not specifically designed for computer work so the students found that their fingers and arms became tired very easily. This was a problem that needs to be addressed, perhaps with adjustable chairs or actual computer tables with the monitor and keyboard being adjustable.

Classroom Chat

As outlined by Pat Ponting and Ruth Bahnuik in our conversation and in their literature, the students were given their first experience in direct computer communication (Ponting, 1990). The students thoroughly enjoyed the "Classroom Chat" mode between the two fellow classmates through the computer. Two computers, located in the library centre, were connected with a null modem cable which allows an interactive conversation rather than the computer being for input only. The public domain software *Fredsender* was user friendly for the students. Other students utilizing the library, were intrigued by this new use of the computer.

Without documentation for the *Fredsender* software, I became frustrated when I needed to use it for the modem. More sophisticated software would be required when communication commenced between the schools. With the innovative fund money, the telecommunications package *ProTerm* was purchased. The manual became my bedtime reading for the next few months.

Greeting Box

As an introduction activity, "Greeting Boxes" were to be exchanged between Park Meadows School and Nicholas Sheran Community School. The classroom became electric with enthusiasm as students suggested many fantastic ideas

for items to be placed in the "Greeting Box." We covered a box with our school colors (blue, green and white) and placed two Park Meadows School T-shirts and pins inside along with many other treasures. Their written autobiographies and photographs, which we had done earlier in the year, were sent as an introduction to each student. Students donated articles for each of the electronic pen-pals such as Lethbridge pins, a computer banner, Park Meadows peas, refrigerator magnets, stickers, fancy pencils, bookmarks, keychains, candies and hand-made crafts. Mandy made each Nicholas Sheran student an owl with googly eyes, using pine cones and felts. The accompanying slogan said, "Give a Hoot, Go Compute!" These were constructed as they represent the provincial bird of Alberta, the great horned owl. Also, the owl is one of the mascots for Park Meadows School! Using the school colors, Mandy also made a wool snake using her spool-knitting kit. She placed 24 spots of glitter along the back to represent the students of our class. One large dot on the head of the snake represented the teacher! Catherine made a large yellow school bus on which we put our pictures with our little faces looking out of the windows, accompanied by our personal autographs. The students were so proud of all the treasures they were sending. This opening activity was very positive as the students all participated with interest and enthusiasm.

On Friday at the appointed time, through the interschool mail, we put our beloved box in the office to be sent over to our electronic pen-pals at Nicholas Sheran School. What a surprise when the carrier brought into Park Meadows School, a black and yellow box with a magnificent gold bow! Our class, which was in the library, witnessed the arrival and were "berserk" with excitement. What fun!

As preplanned, we were to open the Greeting Boxes on Monday. As the anticipation mounted during the weekend, everyone was waiting to see what we had received. Inside were two coal miners' hats and Nicholas Sheran Special Person buttons which special students are allowed to wear on

important occasions. Our students proudly wore the hats and buttons when they were in the library on the modem to Nicholas Sheran School. Also, there was a school T-shirt, a computer banner and poster, a NS button for each one, student pictures and stories, bookmarks, Pac person fuzzies and bags of candies. What wonderful surprises for all!

Both classes arranged the pictures, stories and other materials on bulletin boards to remain on display for the duration of the project. These greeting boxes were excellent for stimulating interest and enthusiasm as the students were active participants in the compilation of the boxes. This exchange was a very positive step in the project. Students now had individual pictures of their electronic pen-pals and some interesting information. They had tangible evidence of a real person and what he/she looked like. This gift box started with tangible objects and then the project would proceed through the workings of telecommunications.

Inter-School Chat

After the greeting boxes were exchanged, the two schools began to practise telecommunications through the modem. On March 25, the first transmission occurred across the Oldman River. Although not too profound, the first words to appear had become familiar to Paul and myself after many nights of practise.

Hello, are you there?

My journal entry for the date expresses the sense of satisfaction I felt when we were able to communicate.

These are the most beautiful words in the world when they appear for the first time across the monitor.

We had our students and also the principals of the respective schools gather to participate in this momentous event by sharing greetings. At Nicholas Sheran School, Paul had connected a large overhead screen so all could read our famous words.

One small byte for man and woman and one giant leap for our future generations!

My feelings of accomplishment were expressed in these same day journal entries

I was truly elated and proud that the modem had finally worked.

A wonderful day, as the students shared the excitement and anticipation of the project.

A fantastic way to celebrate Education Week!

Now the students were able to converse with the students from Nicholas Sheran School using the direct mode. The students were sent to the library in pairs to chat with their new friends. This Inter-School Chat was greatly enjoyed by the students as this personal interaction through the computer made telecommunications a reality. Paul noted that,

As the students' own words appeared magically on the screen, their eyes would light up with wonder.

The students realized the importance of keyboarding skills but were surprisingly patient while they waited for the message to be labouriously keyed onto the monitor. At first, during the Inter-School Chat, the students were critical of the spelling and punctuation used by their telepartners. Later, the students accepted and realized that the message was most important and overlooked keyboarding and grammatical errors.

Word Processing

Word processing is an important tool for all students in their educational careers. These young students learned to manipulate the *Bank Street Writer* software and could easily create, edit, save, retrieve and print files. Students enjoyed creating their documents using the computer as the finished product has a professional appearance.

Organization of the floppy disks was challenging. For each different software used, each student would also need a different data disk to store his/her own documents. Students were given numbers which matched the numbers on their

data disks. These numbers were posted as students in other classes from Park Meadows School also used these data disks. Generally, students did not tamper with fellow students' work. Therefore, my 24 students each used 3 different programs and I had to organize these 72 data storage disks plus all the software disks to accompany each program. Computers with hard disk drives would be so much easier!

Printing became a major time consuming activity. With just one printer in the lab, the students usually had to save files. I spent a great deal of time after hours retrieving the files and printing so students could actually see their hard copy. Ideally, each computer needs its own printer so students can print as the need arises.

With just one disk drive, there was a great deal of disk shuffling which was also very time consuming. Most of the students have not had great access to more advanced technology so accepted the computers that the school had to offer. Astounding as it seems, this project was tackled with seemingly archaic equipment.

Daily Journal

The next step in the project was to have the students prepare and send files using the ASCII mode. In the morning, two students at a time would go to the

library and prepare messages for their electronic partners. They would prepare a mini-letter like the following which I have taken from the students' data disks.

Hi Shannon!

Today is Monday and at school and we had a band come. On the weekend I went to a birthday party. It was fun. On Friday, our school had a Fun Fair. It was very much fun when I got my face painted. My stomach started to hurt. Then we found out that it was appendix. I am OK now. When the band came to our school today, they played three songs from the movie *Beauty and the Beast*. It was cool. It is my sister's birthday tomorrow, that is Tuesday and tomorrow in school Mrs. Lepp, our art and science teacher is taking our class on a field trip to the Art Gallery. I have to go, see you later.

Shereen

Preparing the files first and then sending the messages via the modem was not as successful as I had predicted. It did solve the slowness and waiting time for the keyboarding, but the messages did not engender the same interest in my students and they often did not know what to say. Students preferred the direct interaction when using the null modem cable, where the students could ask a question and get an immediate response. Like a telephone conversation, this was much more fun as humour was often used. They would laugh and generally be patient enough while the pen-pal laboriously keyed in a message. Students soon recognized the importance of decent keyboarding speed! The students preferred to read the monitor as opposed to receiving a hard copy from the printer where they would just glance at the message. There was usually at least a day delay when preparing the daily journal entries which also lessened the interest.

Telecommunications Hardware

My personal journal expressed the frustrations and jubilations that I experienced as I worked with my computer and modem. The journal entry of Saturday, March 20, captured the feelings of despair that occurred when attempting to install the modem.

I feel that an extraterrestrial force has visited during the night with the idea to sabotage the project and to cause me stress.

In order to find the modem problem, I changed many screens with many choices that I do not understand. I hoped that I was not changing any configuration beyond repair.

Also, there is a sense of satisfaction when another step in the telecommunications process has been mastered. Throughout my personal journal, many of the feelings of accomplishment are recorded. Some examples of gratification appear in the journal of Monday, April 12 — the day that files could be sent and received successfully through the modem.

This project is growing by leaps and bounds. I am learning so much I can't believe it.

Another modem miracle has occurred. We were thrilled as now we knew the project would succeed.

From the germination of the project, my greatest concern was the manipulation of the hardware to successfully transmit the messages. My own experience and expertise were limited and I knew that professional resource people being available for assistance was also doubtful. When working with computer technology, trial and error for hours and days was expected. This project proved this to be so. Many problems arose with the modem, the cables, the computers, the phone lines and learning the software.

The modem must have a separate telephone line. This caused some problems as the phone was used for other purposes before the actual project started and many outside people knew the phone number at Park Meadows School. The telephone line used at Nicholas Sheran School was also designated for other purposes. Just when you were trying to connect, an outside party would interrupt the transmission signal. A secret, dedicated line for the modem in both schools is a must!

Also, there were problems locating the correct cable for each computer. At home, I was using an Apple IIGS while at school we have Apple IIE and Apple IIc's. Each computer needs a different cable to connect to the modem. Paul had a Mac at home but not the correct software. He would carry home from his school an Apple IIc, as this computer was the most portable and the correct cable was available. This worked for direct chat but he could not receive my files. This problem took many hours of our attention. Finally, after many phone calls to our local dealer, Apple Canada in Toronto and to Phoenix where the *ProTerm* software originated, we found a possible solution to our transmission difficulties. All of the experts had never really worked with our older models of computers and were more familiar with modern technology. Finally, we experimented and found that the disk drive on the Apple IIc was running too slowly and would not read the messages! Paul finally had to try another computer but did not have the correct cable for an Apple IIE. Our local dealer only has a minimum supply of cables as so few people are using these old

computers with a modem. Finally, we were able to locate the correct cable to use to receive files using the *ProTerm* software. This is all very complicated and cost many hours of trial and error and frustration. My personal journal of Monday, April 12 described the process in eliminating possible error problems until you have success.

An exhausting but rewarding day with all the problems resolved for sending basic files.

There were some other technical difficulties, such as the phone line was not plugged in, or the phone line was busy at the partner school, as it was not a dedicated line. I gained confidence in being able to identify the problem and arrive at a solution.

Engaging in the process of setting up all the hardware and software for this project was frustrating but educational. After the many hours spent, I had learned a great deal about my computer and modem. Next year when I again have a telecommunications project between two schools, I do not anticipate the laborious process for the connection of the hardware. Once we had finally found the correct cable and computer and software, the project ran smoothly. Now we just had to learn to send and receive files.

Autobiographies

The students worked on their autobiographies which were really interesting anecdotes (Appendix F). We had limited use of the computer lab, so these creations took longer than is ideal, even though I had limited the students to a one-page document. They enjoyed utilizing the different fonts and graphics available through the software of *Children's Writing and Publishing Centre*. Learning to manipulate this new software package was exciting but involved a great deal of practise and time.

The children saved their documents on their data disk. Again, printing the hard copies was time consuming as there was usually access to one printer. Students sometimes were able to print their own stories but each file needed to be reloaded and time was a problem. Often I had to do the printing after school. Students really should be able to print themselves when they need a hard copy.

One objective for the students with their autobiographies was to learn to send whole disks of information rather than just single files as in the Daily Journal. Five stories were loaded onto a master data disk for the transmission. Once the connection was made to Nicholas Sheran School, the transmission usually occurred without problems. There was a great feeling of accomplishment when the words appeared across the top of the monitor stated: "files received." Many students had the opportunity to send the disks but sometimes became disinterested as each disk sent and received took 10 minutes. There was not much interaction as the transmission occurred. To promote independence by the students, instructions were provided at the computer lab so that they could send and receive files themselves. Having the students manipulating the modem and files, rather than just the teacher using the hardware, had been one of the objectives for the project (Appendix J). Students were capable of uploading and downloading the documents.

Endangered Species

For the final project through the telecommunications network, the students prepared information on the topic "Endangered Species" (Appendix L). The students incorporated titles, reports, poems, acrostics and riddles onto their page. This project was very time consuming on the part of the students, but they never complained and always wanted to go to the computer lab to work on their reports.

Printing out the copies was tedious. Students did as much as they could in the limited time available and I personally did much of this work after hours. I knew that I was going to publish these stories in my documentation and also into a book for each of the school libraries so the stories had to be error free (in my estimation). I was surprised that the students never complained when they had to correct errors in their final copy. I spent a great deal of time doing editing and much of it cosmetic for my own presentation.

One objective was to ensure that the students had practise in the actual use of the modem while sending and receiving files. All students were able to connect and receive messages with the modem in "Classroom Chat" mode within the school setting. Often, due to the previously mentioned technical problems when trying to connect, the teacher had to make the initial contact or set up the modem in the "Inter-School Chat." As Nicholas Sheran School did not have a dedicated line, it was easier for them to "call" Park Meadows School and we would answer. When files were actually sent, this was very time consuming and the students were not available or they lost interest waiting for the transmission to be completed. This was especially noticeable when sending the entire disks. All students had a general understanding of the use of the modem but I would have liked all of them to gain more experience in dialing into the system and handling the telecommunications software.

Nicholas Sheran students created riddles on the topic of "Sea Animals." The Park Meadows students enjoyed receiving these files but found much greater satisfaction in their own work. They tended to be critical of detail in the riddles and found them "too hard." We did not really take the time to study the sea animals and Nicholas Sheran students did not send us their research. Perhaps both schools should have been working on the same topic and they would have been more adept at the answers? The real learning was in preparing their own reports and files. Nicholas Sheran students also sent us ten fairy tales that had been written from another point of view. Our students loved these creative

stories. Creative stories are much more interesting and I would recommend this for future projects.

Culmination

Wednesday, June 2, was the day to meet our electronic pen-pals in person after conversing for the past several months. This was a momentous day as captured in my personal journal: (Appendix L)

What a day! The culmination of the telecommunications project has been a huge success!

One of the strengths of the project was the close proximity of the two partner schools. The students knew that this was not a long distance relationship and they would be meeting their partner at the completion of the project.

The desire to meet their partners often appeared in the transmissions in the "Inter-School Chat."

**Dear Crystal,
Today we are making God's eyes for Mother's Day. I am really excited to meet you. I'm really excited about my class going camping. We are going to Popson Park for an over-night campout. I can't wait to see you. Today in class we are going to write in our At-Home Journals. I'm probably going to write about computers. I wish I was in French club. They are putting on a luncheon for the teachers and other staff today at noon.**

**Your Pen-pal,
Melanie.**

Several activities were planned throughout the day. First we had the students engage in a get acquainted activity to encourage mingling and chatting as they seemed so shy (Appendix H). Since both classes had just completed the novel "Owls in the Family" by Farley Mowat, we made owl bark creations. After a picnic lunch in the neighbouring park, both classes went for a swim at the Nicholas Sheran Pool followed by a snack and the final goodbyes.

The personal contact seemed to be a strong part of the whole process in the telecommunications project. If pen-pals had been across the country or world, the students may not have had as much interest knowing that they probably would never meet their partner.

The project finished the following day with the thank-you letters to our electronic pen-pals at Nicholas Sheran School for the exciting day. Unfortunately, the Nicholas Sheran students did not return to Park Meadows School for a reciprocal visit. Time simply ran out as at the end of the year there are so many other activities. Then the final questionnaire was completed and the project was finished. As the school year drew to the end, a sense of accomplishment was felt by myself as well as the students.

CHAPTER FOUR: STUDENT RESPONSES

In order to gather further information regarding the project, the students from my Grade 3/4 class at Park Meadows School were asked to complete similar questionnaires at the beginning and again at the conclusion of the project. There were 24 students in the class for the duration of the telecommunications project and all completed both questionnaires. The questionnaire was designed with a rating scale from 1 to 5. For example:

1. I enjoy working with computers.

1-----2-----3-----4-----5

to a very
small extent

to a very
great extent

1. Pre-Questionnaire

The preliminary questionnaire was presented on Friday, March 19, 1993 (Appendix D). Since the beginning of the school year, the students had been practising their keyboarding skills. They also had been creating stories using the word processing package *Bank Street Writer* and so were familiar with creating, editing, saving and retrieving files. The students had also had one period of thirty minutes instruction with the *Children's Writing and Publishing Center* package to introduce them to the utilization of graphics in their documents. On the previous day of March 18, I had introduced the "Classroom Chat" mode in which two computers are connected using the null modem cable. The students had heard me at least say the word "telecommunications" but I had been very sparse in my explanation of this word.

From the beginning questionnaire, the results showed that the majority of the students already enjoyed working with computers (Table 2). Much of their previous experiences, especially in earlier grades were in the game format, to reinforce learning.

This year I had emphasized the keyboarding and word processing uses for the computer. Before the project commenced, the majority of the students felt reasonably confident in their keyboarding and word processing skills. For the uses they had encountered, their speed and accuracy at the keyboard seemed adequate. There were 22 out of 24 students who rated themselves average or above in keyboarding. From my journal of March 19 when I was commenting on the results of the questionnaire.

They are just fine at keyboarding, when in actual fact most are able to key 10 wpm. They think because they know home position that they are great.

They are so confident in their abilities and hardly realize all there is to know.

Students appeared very receptive to the idea of having "electronic pen-pals" in another school with only two students appearing very negative about the prospect. As to be expected, the majority of the students were very unsure about the use of a modem before the project began.

From their comments, students generally had a positive attitude about using computers in many aspects such as games, as well as for stories and keyboarding. Many students indicated they wanted more time with computers and would even be willing to come to a Computer Club at lunch time.

The following list contains the comments written by the students before the project began.

- I like keyboarding sometimes.
- I like keyboarding games all the time.
- I would like for the school to play games that are fun and makes us learn stuff.
- In our school I don't think we use the computers enough to learn anything.
- Our class goes once a week and I think we should go more!
- I would like more computer time and more games.
- The thing I hate about computers is I don't like using the right fingering.
- I wish we could write more stories and do more pictures.
- I enjoy computers very much but I'm not able to write stories really good (well) in computers.
- I would like to have more time on the computer.
- I would like a computer club. I think that would be neat.
- I like telecommunications, the rest not really.
- I like computers because they have games.
- I like to have a computer because it helps you learn a lot more.
- I also like it because it is easier to type it than to write it.
- I wish we could send messages to a computer pen-pal.
- My favorite things about computers are the games.
- I like computers. When I play a game called Classic Concentration by myself at home, I have to play with the computer and it always wins. But I still like it!
- I don't get to play on the computer much because my dad owns his own company and works all by himself so my mom has to do the books first.
- I think computers are really fun.

- The computers are alot better than typewriters.
- I think the school should start typing at Grade 3.
- I really want to work with a pen-pal from another school.
- I would like to have more time to play and discover things on computers.
- I would like to get in contact with another school.
- Computers are very unique.
- I liked what we did yesterday when we talked to the other person.
- I like to work on computers lots.
- I want to keep using a computer and I want a computer club at lunch with Type to Learn and games.
- I really like computers.
- I would like more time at computers.
- We should start a computer club.
- We should get more games.
- The computer at home is an Atari.

Table 2: Pre-Questionnaire Results

Pre-Questionnaire Results	1	2	3	4	5
I enjoy working with computers		1	3	4	16
I am able to use my keyboarding skills	1	1	11	5	6
I am able to write stories on the computer	1	3	3	5	12
I am able to create pictures or graphics on the computer	3	2	5	8	6
I would like to send messages to a computer pen-pal in another school	2			3	19
I would like to receive messages from a computer pen-pal in another school	1			3	20
I am interested in learning about telecommunications		1	3	6	14
I know what a "modem" does	13	2	7	1	1
Our family has a computer at home.	No - 11			Yes - 13	

2. Post Questionnaire

The final questionnaire was given on Friday, June 3 after the culmination activity (Appendix E). The questions were similar plus there were two open-ended statements to complete regarding their likes and dislikes about the project.

At the conclusion of the project, all 24 students indicated very positively that they still enjoyed working with computers, which was slightly higher than the first responses (Table 3). The students had worked so hard on the computer for the last few months, yet still enjoyed computers and seemed to have satisfaction with their efforts. An interesting observation was the slight decline in the confidence shown in their keyboarding skills. Perhaps this was a result of all the keyboarding that was required during the project. The students may have realized that speed and accuracy are of great importance when creating a large document. Previously, most computer work had just been to enter a single number or letter.

The students also indicated that they were able to write better stories using a word processing package. Twenty-three students indicated to a great extent that they were able to add the graphics to enhance the presentation of their documents.

After sending and receiving so many files and disks, one student still indicated that he/she did not find it a real positive experience while most students indicated a favourable response. The results were similar to the pre-questionnaire with approximately the same number of students showing interest in the possibility of having electronic pen-pals. As to be expected, most students knew the function of the modem at the conclusion of the project with one

student still very unsure. With the post questionnaire, one student seemed appeared very negative about the project. He/She may be the student that generally is negative about any project whether it is at home or school!

Results pre- and post- project showed that approximately one half of the class have home computers. If students had access to a computer at home, I always encouraged that the final copy of their creative writing stories could be created using their home computer.

The final questionnaire was given two days after the culmination activity, so many of their comments reflected the excitement from the recent visit to Nicholas Sheran School. Comments were generally positive.

The following list contains the comments from the post questionnaire.

Responses to:

I liked the telecommunications project because...

- I got to meet my pen-pal in person.
- Also I liked it all.
- We had a chance to meet our pen-pals.
- We learned new computer skills.
- We were able to help Mrs. Melrose on her computer project.
- I enjoyed working with another school.
- It was fun. We could meet new people.
- I practised on my typing more. Typing a story on the computer is easier than writing.
- I got to meet our pen-pals.
- Computers are fun to work with.
- I have a nice pen-pal to talk with about some stuff.
- We got to go to their school to meet them and to go swimming.
- I enjoyed talking about things to my pen-pal through the modem.

- The stories we got and sent were fun.
- We got to go to Nicholas Sheran School and go swimming.
- It was fun to work with the computer.
- It is a good experience for kids and to teach the little kids telecommunications so they grow up around computers.
- It was neat sending messages across computers. I didn't know that was possible. It was awesome.
- We got to meet new friends.
- I made new friends, learned how to make a bark craft, make stories in the computer so I liked it all.
- We got to go to their school and do bark carving and the picnic and most of all swimming.
- I got to meet my pen-pal.
- I like typing a story on the computer.
- We got to meet our telecommunications pen-pal.
- I like using the computer.
- We got to talk to our pen-pals and then go to their school.
- I liked it when we got to write stories.
- It was neat because we sent messages from the Northside to the Westside on computer.

After reading the comments from the students, most students felt that telecommunications was enjoyable. One of the strengths was the personal communication with a person with similar backgrounds and interests. Thirteen responses indicated that they liked having and meeting their pen-pals.

I did not like the telecommunications project because...

- I liked everything we did.
- I didn't like to go into the library to send files.
- Nothing.
- We had too much work on this project.

- Well, I am not very good at typing.
- When we did bark carving, everybody burned themselves.
- I did not get to meet my pen-pal. (She was in the hospital.)
- It was a lot of typing.
- I had to wait for my turn.
- I liked it all.
- My pen-pal was mean to another boy.
- I liked everything, there was nothing wrong.
- I did not dislike anything about this project because I think it was an excellent way of learning and I loved every bit of it.

From these responses, two students mentioned the keyboarding as being a problem, especially with the amount of typing required. I realized that keyboarding was crucial to the success of the project and was surprised that more students did not express frustration with their developing abilities in this area.

From the questionnaire, the students were overwhelmingly positive about all aspects of the project. The students played an active role and knew my purpose for the project and wanted it to succeed. The culmination activity where the students visited Nicholas Sheran Community School and actually met their pen-pals was one of the highlights.

Table 3: Post-Questionnaire Results

Post-Questionnaire Results	1	2	3	4	5
I enjoy working with computers				5	19
I am able to use my keyboarding skills	2	3	7	9	3
I am able to write stories on the computer			3	6	15
I am able to create pictures or graphics on the computer		1		4	19
I enjoyed sending messages to a computer pen-pal in another school		1	1	4	18
I enjoyed receiving messages from a computer pen-pal in another school		1	1	3	19
I am interested in learning about telecommunications		3	2	4	15
I know what a "modem" does	1		1	2	20
Our family has a computer at home.	No - 12			Yes - 12	

CHAPTER FIVE: FUTURE CONSIDERATIONS

1. Observations

Throughout the project, many formal and informal observations were made by the students and myself. Many of these outcomes were mentioned in the previous chapters but some need to be highlighted for those of us who will want to work in the area of telecommunications.

As students worked on their computer projects, there were no discipline problems. As computer time was limited, they realized they must work hard and produce in the 30 minutes available to them. They enjoyed creating their own documents but also assisted each other when difficulties arose. Computers are often solitary tools but there certainly was some interaction and cooperative problem solving. Many students helped each other find an appropriate graphic, move some text, print or just share in each other's accomplishments. Just as Turner indicated, I, too, found that students gained the benefit of their classmates' expertise as they sat down at the same keyboard to develop common thought on the monitor (Turner, 1991).

Often a modem is used to transmit messages from city to city, or even between countries. This incurs long distance telephone charges which can be prohibitive for an elementary school. This may be intimidating for the teacher to "tackle" for the first telecommunication experience. Communicating to someone over long distances can seem pointless and become boring, as in pen-pal written letters which often "die" due to lack of real contact. Also, at

the age level of 9 and 10 years old, the students relate more readily to the immediate vicinity. Their real world is more localized than understanding the geography and happenings in a foreign country possibly on the other side of the world. Telecommunications became the major focus for energy and time.

The calendar was prepared well in advance, in collaboration with Paul, enabling us to focus on the target dates. Elementary schools often have other agendas and interruptions that require attention. As Phillips indicated, the classroom is a busy place and the project must have a strong curricular link (Phillips, 1990). The project was more oriented towards Park Meadows School and my program, as opposed to Paul Bryant's class at Nicholas Sheran School. He mentioned that sometimes he felt overwhelmed. The schedule was very demanding and perhaps should have been accomplished over a longer period of time. A little "breathing time" in the middle of the project may have been beneficial to allow time to return to a regular classroom routine. This was particularly a consideration at Nicholas Sheran School where the facilities for the project were more remote. The telecommunications network was located in the library, a considerable distance from the classroom involved. Also, Nicholas Sheran School had 15 computers in the lab setting, which complicated the creation of documents in the short time frame.

Before the project commenced, I was concerned that the students would become discouraged with the level of competence in their keyboarding skills. Most students do not type with sufficient speed or accuracy to create their documents with ease. I found that their proficiency at the keyboard did not deter the students from completing their lengthy documents. There were only a few complaints and requests for assistance with the actual keyboarding. I was impressed with the level of cooperation and perseverance shown by the participants. The students also mastered, quickly and efficiently, the software package *Children's Writing and Publishing Center*. They were able to utilize the different fonts and incorporate graphics to produce an attractive document

(Appendix L). As Riel stated, I too found that students had a more positive outlook towards the writing process when they were using a word processor (Riel, 1989). The students requested extra computer time to work on their creative writing stories.

The keyboarding proficiency of the students also was not as much of a factor as I had predicted when they were using the modem directly. The first transmissions were accomplished through the "direct chat." As students wrote on their computers, the message would appear directly on the monitor in the partner school. I learned that the students were much more enthusiastic with direct communication. Personalities seemed to develop with this immediacy as thoughts, jokes and happenings were shared. This sharing seemed to be an important aspect of the process. For the direct communication, two students at the same time, were sent to communicate with the partner school. The reaction was immediate. With their limited expertise in typing speed, the waiting time for each letter to appear seemed rather tedious to me. I thought that the students would much prefer the method employed in the Daily Journal segment of the project. In this process, the students were to create their files, save them on their disks and then send their documents when completed. They also would receive the files from Nicholas Sheran School after they had been prepared. The creation of the document was solitary as each student produced his/her own manuscript without the contact with another friend. Often, they found that they had nothing to say. Sharing of the experience seemed most rewarding to the students.

The personal contact that was part of this telecommunications project was also very important. The students were energized with the creation of the "Greeting Boxes" they were to send to the partner school. The students enjoyed the element of giving and sharing of their treasures. They also were delighted with the reciprocal box and the surprised it held. The exchanging of these gifts was a fantastic opener to the project. The closing activity, where the Park Meadows

students visited the students at Nicholas Sheran School also was well received. These activities brought the personal touch that may be missing when only a computer is used for communication.

According to Upitis, teachers frequently spend more time than the students as far as administering the electronic equipment (Upitis, 1990). I was aware of this possible weakness when planning the project. My students did have opportunities to engage in the direct chat mode and send and receive files which involved the telecommunications equipment. As Upitis found, I too felt the students would have benefitted from actually dialing the partner school and manipulating the hardware. Usually, the teachers made the initial contact as we often experienced technical difficulties. The students should have had easier access to the printers for the hard copies of their own documents. As I gained expertise, I was able to have my students operate the modem, but time became a crucial factor which curtailed student involvement.

My personal journal (Appendix K), recorded the telecommunications project as it unfolded and is included in its entirety. Devoting time to my thoughts and feelings during the process proved to be most advantageous to me. A great sense of accomplishment resulted as I reviewed my writings at the conclusion of the project. Other teachers interested in implementing a similar network may benefit from my experiences.

As Kearsley indicated, I also found the professional growth as a teacher was most rewarding (Kearsley, 1992). Learning to use the computer for telecommunications gave a sense of participating in the present in preparation for the future. I also have gained expertise in telecommunications. Other schools have contacted me to be of assistance as they strive to initiate a similar project. I feel a sense of gratification at being a leader in the field.

For the teacher, there were other growth areas related to the project. I learned to create questionnaires, submit proposals, meet deadlines, involve other teachers with my innovative idea, recognize the importance of planning, cooperate with other teachers, read technical manuals, manipulate the computers, connect the hardware and see a project to successful completion. The project had a wide range of positive influences for myself as a teacher to broaden my interests and horizons. For instance, I have gained confidence and would be able to engage in a broader telecommunications network without intimidation.

2. Conclusions

In the preliminary proposal, specific objectives both for the students and for the teacher were stated. As there was this clear focus, all objectives were met in this telecommunications project. The objectives accomplished were:

For the teacher:

1. The teacher will become acquainted with telecommunications as it relates to the elementary classroom.
2. The teacher will use a modem to connect two Lethbridge schools.
3. The teacher will send and receive files using the modem.
4. Computer use will stimulate teacher creativity.

For the students:

1. Students will "talk" with each other using the computer at Park Meadows School.
2. Students will become "electronic pen-pals" through a modem with students of Nicholas Sheran School.
3. Students will create research reports.

4. Students will practise keyboarding skills.
5. Students will utilize a word processing package.
6. Students will send and receive files using the modem.
7. Telecommunications will provide motivation for writing.

In addition, objectives that were not stated emerged from this project. I have gained confidence in my own expertise at using a networking system for telecommunications. I felt a strong sense of pride at planning, proceeding and accomplishing such a large undertaking in addition to my regular responsibilities as a classroom teacher and librarian. I enjoyed working closely with my friend and colleague, Paul Bryant, in this cooperative learning experience. These are not cognitive outcomes but are important just the same.

3. Recommendations

Engaging in a telecommunications project is a learning experience. My project has been able to provide insight into computer technology that may be of benefit to other colleagues contemplating becoming involved in the area of telecommunications. Following is a list of recommendations that emerged from this project and may be useful to others:

1. Become involved in telecommunications as it is a rewarding endeavour. Develop confidence as the project develops.
2. Pre-plan the project to insure success.
3. Find an interested colleague for this cooperative learning venture.
4. Involve the students in the planning of the projects so they also develop ownership.
5. Allow enough time to connect the hardware before involving the students.

6. Utilize the equipment available as a telecommunications project can be done without more advanced technology.
7. Install a dedicated phone line in close proximity to the project users.
8. Commence keyboarding practise as soon as possible.
9. Allow the students to manipulate the communications package by uploading and downloading their own files.
10. Plan simple enough projects to ensure success.
11. Share the project with other colleagues.
12. Capitalize on your own interest and enthusiasm.

4. Planning for the Future

Empowering Our Future Generations Through Telecommunications was a rewarding experience for all those involved in the project. These nine and ten year olds were successful in improving their keyboarding skills, manipulating word processing packages, incorporating graphics into documents and sending and receiving files using a modem. Everyone involved worked cooperatively to bring the project to a successful completion. A tremendous feeling of accomplishment was evident by all participants.

Computer technology is important for our future generations. The students placed in our care need the skills to utilize this technology to allow them to be the lifelong learners, creative thinkers and skilled problem solvers to bring our country into the twenty-first century. Students already accept the power that telecommunications can offer to create a world of tolerance and understanding. I hope that by becoming involved in the project "Empowering Our Future Generations through Telecommunications", my students will be better able to be active participants in creating a better future for themselves.

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APPENDICES

Appendix A:	Project Calendar
Appendix B:	List of Hardware and Software
Appendix C:	Letter to Parents – Permission to Publish
Appendix D:	Pre–Project Questionnaire
Appendix E:	Post–Project Questionnaire
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Appendix A: Project Calendar

TELECOM PROJECT March 1993

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
	1	2	3	4	5	6 PREPARE QUESTIONNAIRES
7 PREPARE CONSENT LETTERS	8	9	10	11 INITIATE PLANS	12	13 REDO QUESTIONNAIRES
14 COMPILE FINAL PROPOSAL Create Cover	15 3:00pm SUBMIT HUMAN PROJECT CHECKLIST (WENDY)	16	17 FIRST CONNECT AT HOME  7:00pm HOME MODEM PRACTICE	18  CLASS ROOM CHAT NULL MODEM CABLE	19  CLASS ROOM CHAT Beginning questionnaire to students.	20  MODEM PRACTICE WENDY/PAUL
21  MODEM PRACTICE WENDY/ PAUL	22 EDUCATION WEEK CLASS ROOM CHAT  PERMISSION LETTERS SENT	23 EDUCATION WEEK CLASS ROOM CHAT 	24 EDUCATION WEEK CLASS ROOM CHAT   1:05pm PRACTICE WENDY/PAUL	25 EDUCATION WEEK FIRST DIRECT CONNECT BETWEEN SCHOOLS 	26 EDUCATION WEEK  SEND GREETING BOX	27
28	29  OPEN GREETING BOX	30  SCHOOL GREETINGS INTRO.	31 STUDENTS EXCHANGE GREETINGS IN PAIRS			

9/14/1993

TELECOM PROJECT

April 1993

SUNDAY

MONDAY





















TUESDAY

WEDNESDAY

THURSDAY

FRIDAY






SATURDAY

				1 GREETINGS  8:15am APRIL FOOLS 8:30am PREPARE AUTO-BIOGRAPHS	2  12:15pm STAFF MEETING	3
4	5  PARK MEADOWS SCHOOL ANNIVERSARY AUTOBIOGRAPHS	6 AUTOBIOGRAPHS	7  AUTOBIOGRAPHS MODEM PRACTICE	8  AUTOBIOGRAPHS MODEM PRACTICE	9  EASTER	10  EASTER
11  EASTER	12  EASTER FIRST MODEM TRANSFER	13  EASTER	14  EASTER	15  EASTER	16  EASTER	17  EASTER
18  EASTER	19	20	21	22	23	24
25	26  SHARE AUTO-BIOGRAPHS	27  INTER SCHOOL CHAT	28  INTER SCHOOL CHAT	29  INTER SCHOOL CHAT	30  INTER SCHOOL CHAT	

9/14/1993

TELECOM PROJECT



May 1993

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
						1
2	3 PREPARE PARK MEADOWS ENDANGERED SPECIES BEGIN OWLS IN THE FAMILY	4  INTER SCHOOL CHAT	5  INTER SCHOOL CHAT	6  INTER SCHOOL CHAT	7  INTER SCHOOL CHAT 12:15pm STAFF MEETING	8
9	10 PREPARE PARK MEADOWS ENDANGERED SPECIES	11 PREPARE PARK MEADOWS ENDANGERED SPECIES	12 PREPARE PARK MEADOWS ENDANGERED SPECIES	13 PREPARE PARK MEADOWS ENDANGERED SPECIES	14 PREPARE PARK MEADOWS ENDANGERED SPECIES	15
16	17	18	19  LAST INTER SCHOOL CHAT	20	21 DOWNLOAD SEA ANIMAL RIDDLES	22
23	24 VICTORIA DAY	25 UPLOAD ENDANGERED SPECIES REPORT	26 SHARE SEA ANIMAL RIDDLES	27	28	29
30	31					

9/14/1993

TELECOM PROJECT

June 1993

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
		1	2  CULMINATION VISIT NICHOLAS SHERAN	3 THANK YOU LETTERS	4 FINAL QUESTIONNAIRE 12:15pm STAFF MEETING	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25 PD DAY	26
27	28	29  SCHOOLS OUT	30			

9/14/199

Appendix B:

List of Hardware and Software

HARDWARE USED

Chat Mode inside the Classroom

Hardware: 2 Enhanced Apple Ile's (128K)
2 Super Serial Cards
Serial Switches must point to modem
Null Modem Cable

Software: ProTerm
(FredSender may be used)

School Chat Within the City

Hardware: An Enhanced Apple Ile (128K)
Super Serial Card
Serial Switch pointing to modem
Hayes Compatible Modem
Modem cable to computer
Telephone line

Software: ProTerm

Baud Rate: 1200 bps

SOFTWARE USED

Bank Street Writer III, Scholastic

The Children's Writing and Publishing Centre, The Learning Company

Graphics Gallery, Software Sense Ltd.

ProTerm Telecommunications Software, Insync Software

Type to Learn, Sunburst

Calendar Creator Plus, Power Up Software (for IBM)

Appendix C: Letter to Parents – Permission to Publish

Park Meadows School

50 Meadowlark Blvd.
Lethbridge, Alberta T1H 4J4
Telephone: 328-9965



Dear Parent:

The students in our class have been practising keyboarding and word processing on the computer for the past few months. I would like these students to participate in a project where they use the computer to share their stories with students from Nicholas Sheran School in Mr. Paul Bryant's class. The students will be sending and receiving entries from these students who will be their "electronic penpals". We will be using a modem and a telecommunications package to link the two schools. The purpose of this project is to introduce the students to telecommunications at this elementary level.

As part of this project, your child will be asked to answer a questionnaire about his/her knowledge regarding computers and telecommunications before the project begins, and also another similar questionnaire about their participation at the conclusion of the project. The culminating activity will be in June, where the students from both participating classes will meet to share their experiences.

I will be using this project to complete my Masters Degree at the University of Lethbridge. All information will be handled in a confidential and professional manner. When responses are released, they will be in summary form only, without any identifying information. You have the right to withdraw your child from the study, without prejudice, at any time.

Please indicate your willingness to allow your child to participate by signing and returning this letter with your child to our school.

I very much appreciate your assistance in this study. If you have any questions, please feel free to call me at Park Meadows School. Also feel free to contact the supervisor of my study, Dr. Robin Bright, (329-2066) and/or any member of the Faculty of Education Human Subject Research Committee, if you wish additional information. The chairperson of the committee is Dr. Jane O'Dea (329-2425).

Yours truly,

.1

EMPOWERING OUR FUTURE GENERATIONS THROUGH TELECOMMUNICATIONS

I agree to allow my child, _____ to participate in this project.

64

Name

Signature

Date

Appendix D: Pre-Project Questionnaire

EMPOWERING OUR FUTURE GENERATIONS THROUGH TELECOMMUNICATIONS

Student Questionnaire - at the beginning of the project.

1-----2-----3-----4-----5

to a very
small extent

to a very
great extent



- | | | | | | |
|---|----|---|---|---|-----|
| 1. I enjoy working with computers. | 1 | 2 | 3 | 4 | 5 |
| 2. I am able to use my keyboarding skills. | 1 | 2 | 3 | 4 | 5 |
| 3. I am able to write stories on the computer. | 1 | 2 | 3 | 4 | 5 |
| 4. I am able to create pictures or graphics on the computer. | 1 | 2 | 3 | 4 | 5 |
| 5. I would like to send messages to a computer penpal in another school. | 1 | 2 | 3 | 4 | 5 |
| 6. I would like to receive messages from a computer penpal in another school. | 1 | 2 | 3 | 4 | 5 |
| 7. I am interested in learning about telecommunications. | 1 | 2 | 3 | 4 | 5 |
| 8. I know what a "modem" does. | 1 | 2 | 3 | 4 | 5 |
| 9. Our family has a computer at home. | No | | | | Yes |

Comments: _____

Appendix E: Post-Project Questionnaire

EMPOWERING OUR FUTURE GENERATIONS THROUGH TELECOMMUNICATIONS

Student Questionnaire - at the conclusion of the project.

1-----2-----3-----4-----5
to a very small extent to a very great extent

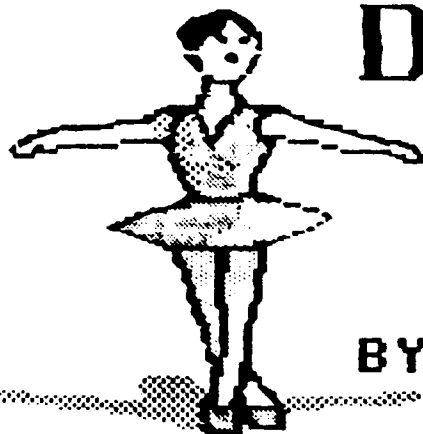


- | | | | | | |
|---|----|---|---|---|-----|
| 1. I enjoy working with computers. | 1 | 2 | 3 | 4 | 5 |
| 2. I am able to use my keyboarding skills. | 1 | 2 | 3 | 4 | 5 |
| 3. I am able to write stories on the computer. | 1 | 2 | 3 | 4 | 5 |
| 4. I am able to create pictures or graphics on the computer. | 1 | 2 | 3 | 4 | 5 |
| 5. I enjoyed sending messages to a computer penpal in another school. | 1 | 2 | 3 | 4 | 5 |
| 6. I enjoyed receiving messages from a computer penpal in another school. | 1 | 2 | 3 | 4 | 5 |
| 7. I am interested in learning about telecommunications. | 1 | 2 | 3 | 4 | 5 |
| 8. I know what a "modem" does. | 1 | 2 | 3 | 4 | 5 |
| 9. Our family has a computer at home. | No | | | | Yes |

I liked the telecommunications project because _____

I did not like the telecommunications project because _____

Appendix F:
Sample Autobiography

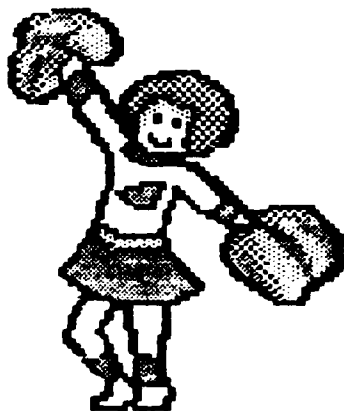


DANCER



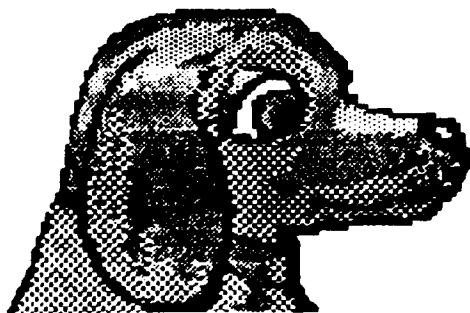
BY CATHERINE

Hello! My name is Catherine. When I was 3 years old I started to Dance. I thought I would never be as good as I am. I have been asked to dance at the Royal Winnipeg Ballet this summer, Everyone is excited. My mom is coming with



me and my grandma and grandpa are going with me too. I am staying in residence. I am going in July to August. I got to pick out my roommate Her name is Christa. Down in Winnipeg there are lots of mosquitoes and I am

allergic to mosquitoes so I have to pack lots of repellent. I have to go now see you later!



Your friend,
Catherine

Appendix G: Letter to Parents — Project Wrap-up Itinerary

Park Meadows School



50 Meadowlark Blvd.
Lethbridge, Alberta T1H 4J4
Telephone: 328-9965

Principal - Mr. E. Fellner, B.Ed., M.Ed.

Asst. Principal - Mrs. P. McAlister, B.Ed., M.Ed.

May 26, 1993

Dear Parents:

Our "Empowering Future Generations Through Telecommunications" project with Nicholas Sheran Community School has been a wonderful learning experience for all of us. The students have practised their keyboarding and word processing skills and were able to create stories and reports using graphics. Great interest and success were shown in creating, sending and receiving files via the modem.

We are having a celebration and meeting of our "electronic pen pals" on Wednesday, June 2, 1993 when we will be guests at Nicholas Sheran School.

The planned itinerary is as follows:

- 10:00 - 10:30 - leave Park Meadows by car and meet at Nicholas Sheran
- 10:30 - 11:45 - create "Bark Craft" projects together.
- 11:45 - 1:00 - Lunch at Nicholas Sheran Park (students bring lunch)
- 1:00 - 2:00 - Free swim at Nicholas Sheran Pool
- 2:30 - 3:00 - Snack at the park (will be provided)
- 3:00 - 3:15 - say good-bye and return to Park Meadows

I would like to thank all the students for their wonderful cooperation and assistance during this project.

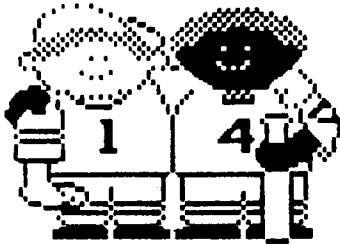
Yours truly,

A handwritten signature in cursive script that reads "W. Melrose".

Wendy Melrose

/jk
Melros(9)

**Appendix H:
Get Acquainted Activity**



HI THERE!



-
1. Is born in the same month as you.
month _____ student _____
 2. Has the same shoe size
Size _____ student _____
 3. Takes dancing lessons _____
 4. Plays soccer _____
 5. Plays the piano _____
 6. Plays baseball _____
 7. Has been to Disneyland _____
 8. Was NOT born in Lethbridge.
place _____ student _____
 9. Has a pet that is not a dog or cat
Pet _____ student _____
 10. Likes spinach and liver _____

Appendix I: Sources of Data

1. *"Classroom Chat"* — between Park Meadows students. These small exchanges were usually printed from the copy buffer into hard copy.
2. *"School Chat"* — direct chat between the students from the two schools was also printed.
3. *Practise* — Much of the modem conversation between Paul and myself from both our homes and school was also saved. This often expresses some of the frustrations and jubilations.
4. *Student Questionnaires* — the 24 students from Park Meadows School were asked to respond to pre- and post- project questionnaires.
5. *Student Autobiographies* — Each student from both schools prepared personal interest information with graphics using "Children's Writing and Publishing Center Software."
6. *Endangered Species* — reports, riddles, poems and graphics prepared by Park Meadows students.
7. *Sea Riddles* — prepared by Nicholas Sheran students to coincide with an Integrated Unit on "The Sea."
8. *Fractured Fairy Tales* — these were ten extra stories that Nicholas Sheran students sent for us to enjoy.
9. *Thank-you letters* — hand written letters to thank the Nicholas Sheran students for allowing us to visit their school on June 2, 1993.
10. *Personal Journal* — personal feelings of accomplishments and happenings as the project progressed.

Appendix J: Telecommunications Instructions

TELECOMMUNICATIONS INSTRUCTIONS

TO BOOT PROTERM 22a

1. Insert ProTerm 22a Disk (label side up) into drive 1.
2. Turn on computer and monitor.
3. The words PROTERM will be highlighted in the *top left* corner.
Press RETURN.
4. The words PROTERM SYSTEM will be highlighted in the *top left* corner. Press RETURN.
5. Change the date (at the bottom of the screen) using arrows and typing over the numbers. You may leave the date, for it isn't absolutely necessary. ***Make sure the modem is turned on at this point!*** Press RETURN. The modem will be initialized now.
6. Now the MAIN MENU will appear!

TO DIAL USING PROTERM:

1. Press D (for Dial).
2. Use the arrows to highlight Park Meadows School.
3. Press RETURN.
4. The *System Parameters* screen will appear with the word DIAL highlighted. Press RETURN.
5. You will hear a dial tone, then the modem dialing the numbers. When your screen clears, PRESS RETURN a few times.
6. When the letters **Pwd.** appear (it is asking for the password), type hello (five dots will appear). Press RETURN.
7. It will then ask for a command (**Cmd.**). Type a C for chat. PRESS RETURN.
8. It will ask for a command (**Cmd.**) a second time, but do not type C, as the students at Park Meadows have to do this.
9. When it says: "Operator is on-line", you can begin typing to each other!
10. Press Open apple C to turn the copy buffer on. It will tell you if it's on at the top of your screen.

TO RECEIVE A CALL USING PROTERM:

1. Press U.
2. Press RETURN eight times and the screen will change. A box saying **Unattended** should be displayed.
3. *WAIT FOR THE PHONE TO RING*
4. When the phone rings, *let the modem answer it!*
5. When it asks for the command (Cmd.), type the letter C Press RETURN.
6. When it says "Operator is on-line", you can begin typing to each other.
7. Press Open apple C to turn the copy buffer on. It will tell you when the copy buffer is on at the top of the screen.

SENDING AN ENTIRE DISK OF

CHILDREN'S PUBLISHING AND WRITING CENTER:

1. Press Open apple S to send.
2. Use the arrows to highlight Xmodem ProDOS. Press RETURN.
3. Use the arrows to change the word in the highlighted box to DISK. Press RETURN twice.
4. There will be a new box called: **Send Disk**.
5. **TAKE THE PROTERM DISK OUT** and insert the disk that is to be sent in drive 1.
6. Press RETURN to begin sending.
7. A new box will appear called **"FYI: Make sure disk is on-line."**
Press RETURN.
8. Wait until the disk has been sent. **This may take 7-8 minutes to transmit!** A box will appear asking you to press return, so.. Press RETURN!
9. *You can then continue to chat*

RECEIVING AN ENTIRE DISK OF
CHILDREN'S PUBLISHING AND WRITING CENTER

1. Press Open apple R to receive.
2. Use the arrows to highlight Xmodem ProDOS. Press RETURN.
3. Use the arrows to change the word in the highlighted box to DISK. Press RETURN three times.
4. A new box will appear called: "Receive Disk".
5. **TAKE OUT THE PROTERM DISK and insert a blank disk to receive on in drive 1. *(The contents on this disk will be destroyed, so make sure it's blank)***
6. Press RETURN.
7. A new box will appear saying: "FYI: Make sure disk is on-line and ready. All current data will be destroyed." Press RETURN.
8. Wait until all the information has been received. This may take 7-8 minutes depending on the amount of information!
9. When done, a message will appear in the top right hand corner of the screen.
10. *You may then continue typing to the students at the other end of the line.*

Appendix K: My Personal Journal

Friday, January 29

probably cold

The day that changed my life for the rest of this year! I made a phone call to Robin asking her advice about my thoughts for my one-credit project to complete my Masters degree. I had been interested in creating a Telecommunications project after attending a Social Studies Conference in Edmonton over one year ago. I had not given up the idea and hoped that I could combine my final UofL project with my responsibilities at school. With such a positive attitude from her, I almost became enthused to pursue my project. She gave me such encouragement to proceed that I knew I was embarking on a long and tiring, but rewarding trail.

Monday, February 1

chilly billy

A phone call to Carillon, who is with Grad Studies at the UofL and who also gave guidance and encouragement to continue, confirmed that I would be able to have Robin as my advisor for the project. I was thrilled as I knew that I would be able to be natural with her, and yet I certainly recognized her expertise and felt that she would keep my project advancing to the finish. I also would be her first graduate student. What an unbeatable combination!

Weekend, February 13 and 14

not bad

I compiled the first of many drafts for my proposal to submit to the Graduate committee for approval. This was not as onerous as I first worried as much of this had been done previously for an Innovative Project for Lethbridge School District #51. I had proposed this idea last year but never really got it off the ground. I felt intimidated and was concerned about my level of expertise for this new technology. I had so much difficulty in my initial attempts a few months previously in finding the correct cable to connect the modem to the computers. Also, I had tried to use public domain software, *FredSender*, without documentation. This was a lesson in extreme frustration. Finally I did purchase the telecommunications package, *ProTerm* and had a little more success. I also had another phone line put into the house so that I could practise "modemming" from one computer to another as we do have two computers. Manipulating the hardware is the time consuming part of computers. Remie is my salvation and I love him!

Wednesday, February 17

chilly

A note from Robin arrived stating that Cynthia would be pleased to be second reader on my telecommunications project for my Masters degree. This is super and another step in the commitment to completing this project. Sometimes I really question if I have the fortitude to see this project to completion. Can I really work that hard? Do I want to work that hard?

Thursday, March 11

tulips are up

Paul Bryant, a fellow teacher at Nicholas Sheran School agreed to become involved in this telecommunications project. We chatted on the phone organizing the timeline and realizing that time is critical. The first proposal hasn't even been approved and already we are finding that changes are necessary to coincide with our classroom units. As was in the original proposal, we decided not to use the Alberta research quiz as it really wasn't of interest to us and therefore would even be of less interest to our students. Paul is beginning a unit on Sea Animals and I am commencing Endangered Animals after our unit on Dinosaurs. We now think that these topics might be more suitable and spur interest and yet would allow the students to prepare questions from their reports. We discussed the value of the autobiographies and felt that this was a must so that the students develop the electronic pen-pal concept. Our schools are exchanging Greeting Boxes which will contain articles about our own schools plus other gifts and ideas. Even this idea is mushrooming into a major task and hopefully not a competition between the two schools. The students need to play an active part so I will ask that they each contribute 25 things to put in the package. These need not be purchased or expensive but should be creative.

Sunday, March 14

not bad but real misery is in the forecast

Today, we computed all day as I had to redo the beginning and concluding questionnaires. Remie had gone to a week long workshop for AGT and returned with some creative advice for a better evaluation system. Surprising how difficult it is to compose a few student questions that will give you the required information. How can something that looks so easy be so time consuming! The job was finally renovated to our satisfaction. Now to ask Joy, our secretary, to retype what she had just finished so beautifully on Friday so that it looks professional on the laser printer.

Remie also has a manual that emphasizes the value of using pictures to show an idea with just a few words. This is so effective as we tire so easily of plowing through pages of documents so now I must implement this idea into my proposal. I want to create a simple, yet effective, title page for my project. This means that I need a new Mac computer with a fancy graphics package

and a laser printer with a cartridge to produce many colours. I also will require hours, weeks and months to master this new program. Since this is not possible, we will utilize the known and hope for the best in the title page. Computers are fascinating but time consuming. Computers create a copy that is relatively easy to produce and is so visually appealing. The more I see better quality documents, the more professional I want my product to appear. Computers are becoming a passion. A project of this nature may seem simple but I have delved into other areas that are related to the main idea such as graphics for presentation, making questionnaires, writing letters and meeting deadlines. Deadlines are necessary but intimidating!

We also worked on a calendar using Calendar Plus to give a visual picture of the timeline and when the work must be accomplished. This is imperative as time is slipping by so quickly.

Monday, March 15

winter storm, blowing snow

Today we are to start practising connecting modems. I will be so thankful when we have finally made these connections, as the project hinges on this major feat. I have been worried about this ever since the idea of a telecommunications project germinated. Perhaps tonight will be the night for success. Then I can carry on with the more routine matters, such as having the students compose their writings. Motivating students in their creative works is where my area of expertise is.

We were supposed to modem but other projects took too much time. I caught up on my journal and Remie worked on the title page. After two hours, I am exhausted. Tomorrow night will be the night to communicate through the modem.

Wednesday, March 17

A beautiful day!

Today is our third anniversary. At noon, I was called to the office and sure enough a long pink box with a surprise - 12 roses and 12 carnations with baby's breath, all placed in the box like an arrangement itself.

I came home at lunch but Remie had gone to Claresholm so I placed the flowers in a vase. After school I went to the Chocolatier to get a Paddy Pig with Belgian chocolates. Remie is such a romantic and I don't think that a pig has the same connotation as roses. Oh well!

Even though it was our anniversary, we still had to modem. Paul phoned at the appointed time and we commenced. After about an hour of changing duplex, passwords and a multitude of other screens, we found out the problem. I was able to connect with Remie's modem but not Paul's. It was a stroke of

foresight when we put two phone lines with different numbers into the house so that we could practise "modemming."

Finally 'Eureka'! Paul realized that he had installed his modem on Baud 300 and not Baud 1200. This is one of the major stumbling blocks to "modemming." Our on screen parameters had matched but he finally went in to re-initialize and found the troublesome error. Once corrected, we were able to connect. What a feeling of Euphoria when his keyboarding appeared on my screen! We chatted and chatted enjoying the fruits of our new found skills. This was a major day — the first time connecting with a modem. I felt such a sense of excitement and satisfaction!

Thursday, March 18

A lovely day

Today I went to school and wanted to hook up a null modem cable between the 2 Apple II's in the library. My luck was incredible! I found a cable hanging from one of the designated computers, not really knowing if it was the beloved null modem cable that I had left there from my preliminary explorations a year ago. I screwed it into a slot that fit. I hoped that the computer had the required Super Serial card. What a relief when I fired up *Fredsender* and it worked. An absolute miracle and just plain luck!

Today I started my students on 'Classroom Chat' in the library. I was able to send them four at a time so the computer time would be faster. They mastered the idea and were very successful at chatting with a classmate. Their keyboarding skills certainly have improved. I also arranged for Shannon Coffman, who has my 7 Grade 3 students for one-half hour each day, to take them to the computer room to begin *Children's Writing and Publishing Center*. Our assistant principal also offered her assistance to teach word processing. One of the objectives for my project is to provide leadership in computers by getting other teachers involved. The students will benefit and therefore so will I from all this practise. I worry that in the project that we may be bogged down by the actual creation of files to send as they will have to be of a good quality. It is hard to believe that the project is really materializing and proceeding forth and not too far off schedule.

Friday, March 19

A Spring day!

Today I gave the students their pre-questionnaires. I glanced at the answers but have not analyzed them to any great extent. Most students gave themselves a top rating in many of the categories. Many are confident in keyboarding when in actual fact most are only able to key 10 wpm. They think, because they know home position that they are great. Also they are fantastic at word processing, which they have used to a minimal extent. They are good at graphics when they have had two lessons using *Children's Publishing*. They

are so confident in their abilities and hardly realize all there is to know. I feel my statistics will be very interesting and will need a great deal of interpretation. Perhaps they are so confident because, I have told them all year that I am interested in computers and so our class has had extra projects and responsibilities. Probably my class has had more exposure than most students but little do they know what knowledge they need. I enjoyed reading their opinions!

After the pre-questionnaire, I explained the project in greater detail and I wish I could capture the enthusiasm in this journal. The class was electric with enthusiasm. We discussed the Greeting Box the two schools are going to exchange next Friday. The students are so generous in their sharing and came up with fantastic ideas which we listed on the board. Some ideas were pencils, photos, stories, autobiographies, school t-shirt and pins, magnets, paper pads, bookmarks, candies, keychains. They are to gather items and surprises over the weekend. Paul and I will have to have some input so that the share boxes are comparable so that one class is not disappointed. An excellent start and certainly bolstered my enthusiasm for the project!

Saturday, March 20

Spring has Sprung

Today, Paul and I had arranged to commence modem practise at 10:00 a.m. Sure enough, the modem whines at 9:50. Paul is a fantastic partner as he is reliable and enthusiastic and wants to make the project a success. He always has his homework done and shows incredible perseverance, which is the most valued characteristic needed in computing!

We had such high hopes to be able to send files but for some reason, my modem would not pick up his transmissions. This creates so much frustration but is the major part of learning new technology. The only assistance is beloved Remie and a complicated manual that I take to bed every night. I have read the manual but it does not make sense until I have done that particular part or have encountered a particular problem. I cannot express fully the frustration level but this seems to be necessary part of the learning process, to learn by trial and error. Finally, I found out that my 'Install modem' had magically changed to a different one that was not compatible. How does this happen? I feel that an extraterrestrial force has visited during the night with the idea to sabotage and cause me stress. Finally, I realize that it probably changed when I was attempting to make a working copy of the Telecommunications package, *ProTerm*. I had many unsuccessful attempts and will describe this stumbling block in one minute.

In order to find the modem problem, I changed many screens with many choices that I do not understand. I hoped that I was not changing the configurations beyond repair. I must be so careful to note what I have done and to just make one change at a time and then try, try and try again. Finally, after an hour, I decided to go back to square one and check the modem installation

and "Eureka" there it is. Finally get on the right track and proceed. One step forward and two steps back!

Paul and I then commenced to attempt to load and send files. After many attempts and phone calls, through the regular phone lines, we have reached another plateau. He was able to receive a file and I was able to send. He was only able to read the last few sentences but my screen said that the entire 8 blocks had been transmitted. It is somewhere in his copy buffer. We felt a little exhausted but elated. I then realized that I had not turned on my copy buffer so that I had not saved what I had been keyboarding to Paul. This is unfortunate because many of our learning frustrations appear in this print. Now I have learned to put on my copy buffer, save the file and am able to load the words onto the monitor. Another small step for telecommunications understanding! I feel that we are on our way but still have concerns when we attempt to link from our respective schools. We will practise at home, then haul our archaic equipment back to school. Each time we are using slightly different computers with slightly different configurations which I am afraid will be enough to create problems. Wouldn't it be wonderful, if I had two modems, one for home and one for school. I will work on this.

On Sunday night at 8:00 p.m. Paul and I will again meet electronically.

Sunday, March 21

should be relaxing

What do most families do on Sunday night? Modem! Again we met with the objective of sending files as we were able to connect through the modems yesterday and just chat. As usual many obstacles appeared. We still have not mastered the use of duplex - half, full or chat. Finally, we figured that if the buffer copy is on, then chat mode is best for the duplex. Otherwise, the screen duplicates letters or does not show the correspondence at all. Paul and I communicated and were able to send a file. Again too many choices of Ascii, Christensen, Dos, Prodos etc. All these forms are so confusing. Finally success as Paul received the file sent. Then, where do you put it? How do you name it? Which disk is it stored on? All these new questions need to be answered. My computer filing system is a jumble. I hope to sort out the files immediately so that I am able to find the appropriate files at the appropriate time. Paul has a U class on Monday so Tuesday night, same time and same place is designated to practise sending and receiving files.

Monday, March 22

I think it was nice

Today, my neighbour loaned me her old Apple Iic computer and I spent the evening setting it up. This was not successful as the keyboard was too stiff. I thought it had a built in modem but it has only the appropriate card and I still need the external modem. This whole process took several more hours and

ended in a waste of time so I packed it up again. The plan was to have 2 similar computers so that I could practise sending files but again this did not work.

Tuesday, March 23

warm and lovely at +19

Tonight, Paul and I simply planned the next few days activities from our monthly planner. We were too tired to really practise sending files as we need to prepare our filing system. We also have some different word processing packages files ready to send. These are at school so we decided to delay this part of the program and go on to the activities for this week.

Both classes are preparing Greeting Boxes. My students have had some wonderful ideas. Mandy made a snake, using school colours, out of the wool spool knitting. Catherine made a huge yellow school bus on which we put our pictures with our little faces looking out the windows. The students signed their autographs on the bus. It is adorable! Nena brought puff stickers, Michelle donated pencils, Christina brought fridge magnets. This should be lots of fun. We need to decorate the box and fill with some candy and other gifts. We will exchange the boxes on Friday and then actual transmission by the students will start on Monday.

This is Education Week and I have never felt so elated and excited about education. I am working in the present and participating in the future.

Wednesday, March 24

lovely but cloudy

Today was to be the big day! Modem connection between the two schools at 1:08 p.m. Everyone was gathered for the first across town transmission but this was not to be. What was the problem this time? I called Paul at 12:55 to say the launching was to be aborted as my modem would not work. I could not get the computer to initialize the modem. Everything seemed fine at home with the Apple IIGS but not the same at school with the Apple IIe. Of course, I tried every configuration known to man or woman and just failure. I re-wired everything and now feel I could wire a house. I tried every super serial card in all computers to make sure they were working. I learned a great deal and was able to open the unit, remove the cables, lift out the cards and replace in the slots. I had several computers opened with the inner workings exposed which seemed to impress some of the Grade six students! Maybe they were fearful rather than impressed. Everything inside with all cards in the correct slots, looked all right from my limited point of view. Paul phoned and asked if I had changed the black box on the super serial card from 'terminal' to 'modem'. We thought for sure that this was the problem but no, this had already been done. Finally, utilizing my new philosophy to be a proactor rather than a procrastinator, I phoned Microage for advice. I talked to Jim (whom I taught in Grade 3).

He felt I knew more about modems than he did. He kindly walked me through all the possible places where the problem might originate. I felt that the problem must be in the cable, perhaps that it was faulty. But my common sense told me the operator was the problem, rather than the equipment. Then I had a sudden thought! Was I using the wrong cable? Sure enough! I had been connecting the null modem cable rather than the Hayes modem cable. Both ends fit and I did not realize that the Hayes was a much larger cable. I looked at the pile of cords and cables in the cupboard and found one that looked just right. Finally, the connection was made and the main menu appeared on the monitor. Only a true "modemer" would understand the elation felt at this time. Three of my colleagues were still present at 4:30 p.m. They really did seem to care and sense my feeling of jubilation. Now tomorrow at 8:03 a.m. will be the bridging of east and west. Will there be success? Only time will tell.

Another frustrating evening trying to install the modem. One of my student's parents offered to loan me a modem for home use and then I wouldn't have to keep hauling the school modem back and forth. Each time that you connect and disconnect, you might leave a cable at home or you increase your chances of something going wrong. Again I was unable to get this modem to work even though it is supposed to be 100% Hayes compatible, which seems to be of extreme importance. This modem had been used for IBM and the old Apple is a different game. I was unable to get the modem to initialize. I was exhausted so will work on this again when my strength returns.

Thursday, March 25

snow forecast

Today, was to be the big day for the first Oldman River Crossing from the east to the west. All were gathered around the small computer monitor at 8:03 a.m. Finally after some unknown technical difficulty decided to right itself the familiar words appeared on the monitor "Hello, are you there?" These are the most beautiful words in the world when they appear for the first time across the screen. Some of those who were awaiting this momentous occasion had to go to their classes, but those who were there sensed my feeling of accomplishment. I was truly elated and proud that finally the modem had worked.

I had my class watch the first public transmission at 10:20. We were only able to dial one way; I had to contact Paul. I think there is a problem with baud rate. At least contact was made and we were at a loss for words. Paul had hooked up a large overhead screen so all could read our famous words.

"One small byte for man and woman and one giant leap for our future generations!"

My students were reading along and we had to type as quickly as we could. Mr. Fellner sent official greetings to Nicholas Sheran Community School and

said that we were looking forward to the two schools working together and looking forward to many more years of this type of cooperation. A wonderful day, as the students shared the excitement and anticipation of the project. A fantastic way to celebrate Education Week!

Friday, March 26

trying to snow

Today the students were to begin telecommunicating. First we had to finish packing our Greeting Box to send to Nicholas Sheran. What neat contents - the yellow school bus with our pictures and autographs, our pictures and autobiographies, book marks, fridge magnets, pencils, a wool snake, a computer banner, Park Meadows peas, Lethbridge pins, stickers, T-shirts and owls. Mandy had made each student a pine cone owl with 'Give a Hoot, Go Compute' on it. They were adorable. We sent a lovely box with a beautiful bow!

At 10:20 students started in pairs to 'talk with' their electronic pen-pals, randomly chosen. Again some problems with connections as too many people knew the school phone numbers as they were not truly dedicated lines. This caused hook up problems, especially at Nicholas Sheran School where it was not a dedicated line. Finally we were able to connect. We will teach the students later to dial as there still seems to be initial connection problems. My class was so good as I scurried about. They worked so quietly on other classroom work and were as cooperative as possible.

Once the students started, they were caught up in the excitement. They thoroughly enjoyed typing to each other and meeting the students. They certainly already recognize the importance of fast keyboarding skills. I had recognized the keyboarding proficiency would be a hindrance to the project but now the students realized the importance of *Type to Learn* and would like to have keyboarding practise at noon, which I will start as soon as I can.

I have a wonderful parent helper, Linda Neufeld, who volunteered to supervise the transmissions in case there were any unforeseen problems, but all went smoothly. All the rest of the students can hardly wait for their turns to come.

Just as we were in the Library for our regular class, the mail, including the Greeting Box arrived from Nicholas Sheran School. The students and myself were thrilled. We had to wait until Monday to open as that was part of the agreement. The box was yellow and black, Nicholas Sheran school colours, with two huge gold bows on the top.

What an exciting day and the project seemed to be off to a good start. The hours of modem practise had paid off. Now it is time to spend some work on the regular routines of the classroom!

Monday, March 29

chilly Billy

Same modem problems still unresolved as I can only dial to Paul and not vice versa but we do carry on. The kids are really enjoying this direct communication with Nicholas Sheran. Many of the other students in Park Meadows School are interested in the project and want to know if they will get a chance to have an electronic pen-pal.

Today was the day we opened the Greeting Box with the bright gold bows. The kids were so excited, as was I. I did take a preview look to make sure that the boxes were balanced and what we had given was equal to what we had received. The box contained two coal miner hats, a T-shirt, a poster, student pictures and stories, NS buttons, Pac person fuzzies, candies and a marble apple. Paul had sent me an apple for my apple collection which I just love. Thanks Paul! Our class seemed thrilled and enjoyed the stories which we shared, although they did complain about the handwriting of some of the students. The project is progressing smoothly. The students will start to prepare a short autobiography on the computer to send to NS on April 9th. This will keep us busy until then.

Wednesday, March 31

Andy's Birthday

As it is Andy's 18th birthday, we went out for supper to Moxies to celebrate. When we came home, I practised a little bit on the modem. This was also Deb's birthday, Paul's wife, so we did not practise between us.

Thursday, April 1

April Fool's Day

We practised but both seemed tired so mostly just talked back and forth describing the project and plans.

Monday, April 5

Park Meadows School 11th Anniversary
big snowflakes

As it was Park Meadows School Anniversary and Nicholas Sheran had an Operetta presented to the students, we did not have the students transmit on the modem. They were rather disappointed but they do seem to adjust when changes need to be made.

Nevertheless, that night, Remie and I had to practise, practise, practise. I took about an hour to prepare files and format data disks. I needed to have clearly labelled data disks with some sample files on Appleworks, *Bank Street Writer* and *Children's Publishing and Writing Center*. Then it is easier to know what you are sending and receiving. Remie and I practised and had some success. I now know that if I load a file, send it by Ascii, the exact file will appear on

both screens simultaneously without him being in Receive mode. This was a wonderful revelation! I could see the application for our students as the transmission is so direct. Also, when the file appears on the screen, the students are able to visually see the text, rather than just putting the information onto a disk. There is a sense of gratification and also provides positive reinforcement that something is truly happening.

A major problem was encountered as I was unable to even load the *Children's Publishing* file onto my *ProTerm* disk to send. The software would not read the disk. This is of major concern as all of my students have prepared their autobiographies using this software. We may end up by sending them through the inter-school mail! Heaven forbid!

I will have to make a few phone calls to see if this major stumbling block can be rectified. Otherwise I will have to send some old legends that the students did using *Bank Street Writer*.

I also was able to send *Bank Street Writer* files and load them on a disk. Remie was also able to send and me receive. I felt a sense of satisfaction after 3 hours on the modem. This is so time consuming but once you have learned through trial and error, you know what you are doing!

Tuesday, April 6

fresh and cool

This morning, I phoned Tom Wilson at Lakeview to inquire about sending files using graphics. In his project with AT&T Network he could only send text. I asked how he had the graphics appear on his students' documents and he said that he added those afterward to dress up his project. I was discouraged.

I also phoned Microage for further advice. Steven, who is a technician there, also was not sure of the program that I was using so suggested that I phone the publisher direct in Phoenix and ask if their material could be sent by modem. He said that some characters in their program may conflict with the character designations in the *ProTerm* software. He did know that it was possible to send graphics as they did it for work purposes all the time. He also said that *ProTerm* was the best telecommunications software and there was not any point in trying something else.

Next, I contacted Frank Isaac at the University. He said that the files could be sent! I felt relieved as felt that it was possible but I just didn't know how. He said that I should use 'Binary Method' and that would be successful. He suggested I read my manual (one more time) and wished me luck! I hope this works.

Paul and I made contact to practise sending files as usual. First we tried to send directly without him using Receive Mode. The file that I sent appeared directly

onto his screen as it was lifted from the data disk. This was amazing and we felt happiness. Paul has a major transfer problem as he has only one disk drive and must keep changing disks and when to do this is the problem. We had more difficulty in reversing the process. When he tried to send me files directly through ASCII, they appeared on my screen but not on his. He only knew if the file had been sent by watching the lights flash on his modem. We fiddled with the duplexes and read all the defaults and could not find the problem. This took all night. Tomorrow we will try to send files using Prodos and load them onto files. Again I can see a problem with only one disk drive. We are slowly but surely making gains in the area of telecommunications.

Wednesday, April 7

cool and snow is gone

Today the students 'talked directly' without any hitches in connection. They are enjoying communicating with their telepartners. Handling the hardware is also getting easier, as there are fewer problems. I am not called on to troubleshoot as much so there are less interruptions with my regular class.

Tonight, I wanted to try loading the *Children's Publishing* file using Binary II. I was rather excited to try and hoped for success. First I loaded exactly as the modem said using the instructions for Binary files. Surprise! Surprise! Something loaded. At least this was an improvement from last night when I did not have success. On the second try I was able to send a binary file and something was received. I am not too sure exactly what was received as the IBM does not have the *Children's Publishing* software to read the file. But the computers said the send was successful!. This is complicated but important in the history of telecommunications. I sent a binary file! This is as momentous as a 40th birthday and should not go unrecognized.

After successfully sending files from one computer to another at home, Paul and I began practise. He had gone to the school to save hauling it home. Paul's wife must get so tired of the struggle and time spent. She is a saint!

Our objective was to send Appleworks files from disk to disk. We had a few snags when he sent to me as he has only one disk drive. This did not cause the delay. We had major errors when I tried to send to him. We changed duplex many times. We also learned the exact name of the file is of extreme importance so will keep them very simple. Finally the files would send OK but the message said "Ack mismatch" and many errors but the file would arrive. We will still need to work on this. I will again read my manual to see which mode to use for sending. There are too many choices and Remie and I use the same one and it works fine (Xmodem DOS). Paul and I tried Xmodem Prodos which should be just right but something is wrong. I cannot believe the time that it takes. My students want their Social tests back and I haven't even started to mark and I am exhausted. I learned at least that we can send simple

files and will try to solve our mismatch problems. Well it is 9:00 o'clock and Paul and I have finished practising for the night. Good night.

Saturday, April 10

lovely spring day

Although it is a holiday and 10:00 a.m., Paul and I are carrying on with "modemming." My family is going to Waterton for the day at 11:00 so that gives us an hour. Paul, punctual as ever, phones me just before the appointed hour. I was busy trying to load a newly created file from the *ProTerm* Editor without success. I could not get it to go to my data disk as it only wanted to go to the write-protected main disk. This is another problem to solve but today this is not the major concern.

Paul and I logged on and practised sending files. We are now masters at connection and this gives us a sense of pride. But there are still problems to overcome. I am able to receive Appleworks and Beagle Writer files from Paul but not able to send them to him. Many errors are shown and often the file send fails. "Ack failure" appears on the screen. After reading the manuals, we realize that there is one prompt missing in our codes. Where do we find it? This is the question. Paul is to check his online parameters as will I. They do have a mind of their own and keep changing. We are to try again Monday morning at 10:00 a.m.

April 11, Easter Sunday

rainy and chilly

Today, Remie is helping me find the error. We are able to communicate with each other at home so this helps a little. I feel the problem is related with something on the receiver end when trying to connect with Paul's computer. We have read many complicated manuals to try and alleviate the problem. When trying so many solutions, we are at least eliminating some of the possible areas of error.

Monday, April 12

cool but nice

Today was a mammoth day for "modemming." Remie and Andy were to leave at 9:00 for the Ostrich farm and Paul and I were to make contact at 10:00 with the objective of getting the files sent. Remie was still here so I postponed until 10:30. Finally we started but my mother and brother from Edmonton arrived for lunch. At least they had the leftover turkey lunch with them. I just kept "modemming." Paul and I kept getting 'Ack Failure', whatever that means. We tried a multitude of combinations of duplexes and checking and rechecking our hardware installation.

Finally, with the company from Edmonton, I did take a break. I cannot stop for anything when in modem mode. Paul and I resumed at 1:00 with still no luck. Trial and error with little breakthrough. Finally at 2:30, I felt we were getting nowhere and that we had exhausted all possibilities. I told Paul that I would make a few phone calls to some authorities to get some assistance.

I first phoned Microage and talked to Steven. Jim is no longer there and he always was my contact but Steven was more than willing to help. He really had no concrete advice as he was unfamiliar really with such archaic equipment. He did offer to phone Apple Canada in Toronto and ask the experts there. As helpful as they tried to be, they too could not make any concrete suggestions as they had not been trained on such old equipment.

Next, I phoned Frank Isaac at home. He had helped me before and he is the computer wizard at the U of L. I was getting desperate as Paul and I had all these files and the project hinged on the modem working. I knew that this was the crucial step and the one I had dreaded from the outset. Frank offered a few suggestions about timing as he felt that this seemed to be the problem. I thanked him for the advice but neither of us were convinced that the magnitude of the problem would be solved by this obscure adjustment.

Then I decided to be proactive and looked up the hotline number for the *ProTerm* software. There was a number in Phoenix, Arizona. I gave them a call to ask questions. At first, they were not too pleased to help as I had not registered my software when I had purchased it. They did ask for the number on the disks and I was able to prove to their satisfaction that it was not pirated and was able to speak to Jerry Kline. We went through the whole process but he assured me after much discussion that it was not the software as not that many things could go wrong. As long as the baud rate was the same, files should transfer and they were not! He believed that it could be in the hardware although that it was possible to transmit between an Apple IIGS and an Apple IIc. After eliminating possibilities and I think proving to him that I had sincerely put in much time and effort and knew the program inside and out, he was willing to help. With his assurance of it not being the software, I felt that we could work on the problem. He had suggested phone line interference, but when I told him I had tried for three days solid and the same number of errors occurred and that we had tried many different types of files he became more convinced. Finally I felt I knew the problem too was in the Apple IIc as I could receive files but Paul could not. I also was able to exchange files with Remie on his IBM so knew that this was possible. Jerry suggested that the disk drive in the Apple IIc might be running too slow and that the dealers in the United States had put in a new card in those machines. He suggested taking the serial number and phoning a dealer as they had lists of the defective machines. I thanked him and he left me to believe that this was a one time help without the required blue registration card. I felt that his advice was helpful and we had some other options to try.

Next, I phoned Paul and told him all my conversations and I asked him if he would like to borrow my Apple IIe modem cable for his old computer, (he had the super serial card needed) and try with a different computer, not the Apple IIc. He said he would buy the cable if Microage had one in now. They did and he raced down to get it before closing. We would reconvene at 8:30 p.m.

Meanwhile, I had to go to school to look for the blue registration card to send to Insync who makes *ProTerm*. I couldn't find it and Jerry suggested that I photocopy the actual disks and send that. I did that and got the letter away.

Paul modammed me at the appointed hour as usual, with his new equipment setup. I admire his dedication and promptness. He has a family and today I certainly had monopolized most of his time. We fired up the modem and Voila! We were able to send files with no errors!! Another modem miracle had occurred! We were thrilled as now we knew the project would succeed. We were even able to send graphics from *Children's Publishing* and then entire disks. Once the program worked we made great gains and now were able to move onto the next step. We want to speed up the baud rate to 2400 and also must pair up our pen-pals. We also need to decide how to send our students files as the process is very slow even for one short story. We have 24 to send and 22 to receive and they are much longer. Some revised dates need to be set, although, I feel we are generally on target.

As we were closing at 10:00 p.m., the modem was being paged. My brother was 'calling' from Edmonton on his modem. He was the one who had been in Lethbridge for lunch and now had returned home. On the second try, we were able to connect! During the first attempt, I was still talking to Paul and that was the only reason connection was not possible. We conversed for a while. He is going to set up a bulletin board for our family as we all have modems, Reg and Jude in Toronto, Trude and Kent in Vancouver, Rand and Carla in Edmonton and Remie and I here in Lethbridge. This project is growing by leaps and bounds. I am learning so much I can't believe it. I can look at the modem manual and understand much of it. It even is looking a little worn around the edges. An exhausting but rewarding day with all the problems resolved for sending basic files. Now onto the next!

Friday, April 23

rainy

Today was to be a marathon modem day. This was the day to teach the students how to send the disks containing their *Children's Writing and Publishing* stories. Paul and I had loaded their stories from each students' individual disks on another disk containing five stories to send. This is time consuming as each time I needed to reload the student work and save on my disks. I have learned that I must have all the students identify their stories using a similar code; otherwise, I am looking on their data disks' directories and am not sure of the name given to the document. Next time the title will be more

uniform and contain the student's name as well. This may sound confusing but is of great importance to save time and frustration.

The connect time between schools is usually easy although Paul has to run down to the library, while I am just across the hall. Again if doing a project like this, your own dedicated line, in your classroom makes life bearable. At least I am close to the library and it is a dedicated line.

In summary, Paul and I were able to send the disks without too much hassle. Sometimes as many as 10 errors were shown on the monitor but the transmission was successful. Also, one disk said transmission failed but the entire disk arrived safe and sound. In all we sent our 24 stories and received his 22 stories. This is time consuming as each disk takes about 7-8 minutes of actual transmission time plus the time to load, set and check. We do return to the screen each time to chat. Paul had his students in the gym for a band concert so was available. I had two classes in the library but they were doing centres. Trish, our library assistant, sure helped keeping all the other students busy while I am using the modem intermittently. The other students, not at the keyboard are so good and just look but do not touch. I am delighted with their cooperation. Even students from other classes show an interest. I do try to explain the procedure and allow them to participate in reading the conversation and showing the disks and even running the files onto the printer.

Our students are slowly learning how to upload and download files and this will be their next objective, to load their own files and send each day, like a daily journal. They will use Ascii files so they can see the print appear on the monitor as it is received.

This was a rewarding day, as the first objective had been met to send the autobiographies. This has been an incredible amount of work, for both teachers and students alike. Getting all that typing on the computer is monumental for the students.

We have just started to create our files on 'Endangered Species' using the newspaper format. The print is much smaller and will require much more work in creating the stories. We are trying a variety of stories, riddles, questions and poems. I do not think we will meet our deadline of transmission by this Wednesday, as these are lengthy.

All in all, the project is proceeding quickly and fantastically!

Monday, April 26

cool

We started the week by printing the Nicholas Sheran autobiographies. Each student read the information provided by his/her telepartner. This was a great deal of fun as they shared with their classmates.

Today, Paul and I were to have the children exchange Ascii files through the modem. I had Tim and Todd create a file telling about their weekends and the class activities. They each saved a file on *Bank Street Writer* and were ready to send at 10:20 to Nicholas Sheran School. But low and behold the plan had to be aborted as I could not load these files through Ascii. I thought I had done this before but no luck.

Tuesday, April 27

still cool

Last night, I practised but still could not load these files and send through Ascii so that they would appear directly on the NS monitor. I changed the files by using the software, Appleworks for today. Paul and I, as usual, made contact at 8:00 a.m. All went well and the files were sent. Tomorrow two more students will prepare files and also receive files. This saves the cumbersome wait while the students type in their messages but it also is less personal. It is surprising how much personality appears when communicating through chat on the screen. The files were successful. Each day we gain more confidence and know that the project is worthwhile.

My students are busy working on their Endangered Species reports. My class has been phenomenally cooperative. When we go to the library to connect with Nicholas Sheran School, they seem to work quietly on the other assigned tasks. They really are independent workers. Sometimes, they are not all that interested in the actual modem workings but take it for granted.

They have put a tremendous effort into producing their reports. Surprising, they are very extensive and accurate. Two students are a little slower and will need extra help in completion. The others are really able to manipulate the software package and have a lovely presentation. I am now realizing the amount of work that will be involved in getting the students' stories into perfect format as there always seems to be errors to fix when you are doing 24 pages. Today, I just ran a preliminary copy for each student so they could see the layout. Most are progressing beautifully. We will not be able to send the disks tomorrow as originally planned, but will need at least another week.

Both Paul and I have decided to utilize do the novel "Owls in the Family", commencing on May 3. Hopefully, we will be able to exchange some kind of written work regarding the novel. Nothing concrete is planned. While I was golfing on the weekend at Picture Butte, I was more interested in gathering owl

pellets from under trees rather than my game. I will send a surprise package to Paul and I am sure he will be surprised as the pellets look like droppings!

Tomorrow we will again send the files through Appleworks and Ascii and Trish has agreed to supervise. There will be less class disruption. The project is definitely educational and well worth the time and effort.

Saturday, May 8

rainy

I have not felt the need to record in my journal for many days. The reason for that is that all is going so well. It seems that you only record when there are times of trouble. I feel so pleased with myself for the project. The success has been beyond my wildest dreams.

Our classes have successfully been exchanging files on a daily basis. That is, two of my students prepare an electronic chat with his or her pen-pal and save on the disk. The next day, the students send these files and also receive two files. This eliminates the time spent waiting for the students to type in their correspondence as in the direct chat mode. I thought they would enjoy this more but most students prefer the direct communication.

Most of the students are able to send and receive files. We are using the Ascii format so that what is sent appears on both screens simultaneously. It does appear so fast that we do need to print a hard copy.

Park Meadows students have almost completed the Endangered Species reports to send. This has been a monumental task for them as the reports have used the Newspaper format of *Children's Publishing* which requires alot of keyboarding. Also many students are putting in poems and other creations. They love being able to decorate their reports with the graphics. Many students do not mind staying in after school to work on their reports. The problem is that they must be error free if they are to be published in my project publication. The students are not as fussy as I am about spelling and spacing. This is more my agenda. The students have not complained about working on these reports over such a long period of time. They certainly have learned to manipulate the software package very well. I am proud of them.

Now Paul and I are both doing the novel "Owls in the Family." This just developed simultaneously and we will again do something through the modem but I am not sure exactly what. Perhaps we will prepare questions or stories or both. There are many possibilities.

Trish, the library assistant, has been terrific helping the students to send files. It really does take two to teach the kids and to make decisions if I am teaching and not able to be there, which is the usual case. I am also proud of how my students will wait patiently if I am called out to the modem.

All in all things are going well and already the project is a success.

Wednesday, May 19

warm and lovely

I do not write in my journal as much as I should. The difficulties are more of annoyances rather than problems. The students are just finishing sending the inter-school files. My prediction was not totally accurate from the outset. I thought the students would prefer to prepare a file and then send so they would not have to wait for the actual tedious typing to occur. This has not been the case. The students, I believe liked the personal contact that is immediate. The responses are much more fun and a sense of humour enters into the dialogue. When they must prepare the files, the students have more trouble of thinking of what to say and the conversations become stilted and boring. This has been a bit of a surprise to me.

Also, Paul and I have found our enthusiasm has waned for running to the computer to make contact each day. Our days are so busy and we have many interruptions. The students are somewhat able to send the files but often there are technical difficulties that make a teacher's assistance necessary. One day the phone line was not plugged in. Another day his class was called to an assembly. He often has just children operating the modem and he is far away in his classroom. When problems occur, they are very time consuming to fix. Trish, the library assistant is usually in the library to help. We have been sending Ascii files which are easy and appear immediately on the screen. Today was our last transmission of this kind.

My class has almost finished preparing their 'Endangered Species' reports. What an incredible amount of work. I have been busy editing to fit my agenda. We are reading them aloud in class. The project has lasted forever. This has been very time consuming. The class only goes to the computer lab on Wed and so the actual printing has been challenging. The students have persevered and love mixing the graphics with the text. The finished product is super. We are going to publish a book to be left in the library. The students love their work and I would do the project again.

Paul and I have made arrangements for the final party. We have been invited to Nicholas Sheran School on June 2 so that the electronic pen-pals may meet face to face. We will go over at recess in the morning and make bark crafts together. Then we will tour the school, have lunch in the park together and then go swimming at the NS pool for an hour. The students should have a ball. This has been such a fantastic project if I do say so myself!

Wednesday, June 2

drier than yesterday

Today was the day we met our 'electronic pen-pals'! The students had waited for this day to arrive for several months. Paul and I had a big day planned. We had parents drive us over to the west side, leaving Park Meadows School at 10:00 a.m. When we arrived at Nicholas Sheran School, the 'greeters' wearing our Park Meadows School t-shirts, met us at the school doors and ushered us down to the classroom. The first reactions were to find their partners. Ten months had passed since the original photographs had been sent, so many students commented on how much older everybody looked! No one commented on how I had aged.

All 50 of us were crowded into one room. First, we had the students do an icebreaker activity where they had to find a Nicholas Sheran student who answered the description which allowed for mingling and chatting as we shared a welcome treat (a Freezie).

Next, the students sat with their partners to construct an Owl Bark centerpiece. Both classes had been studying the novel 'Owls in the Family' by Farley Mowat. This was to be the culminating activity. Everyone had brought bark (I had to go down to the riverbottom the night before), pinecones, dried grass, sticks, twigs and a multitude of other natural materials. They thoroughly enjoyed the activity despite many burns from the glue guns. The glue was so hot that many had blisters but no permanent damage was done. The room was a disaster as the bits of bark and debris became embedded in the carpet. The kids tried their best to clean up, but 50 kids in a crowded space and still with their bark creations didn't allow for much headway. Best to take the kids out and call for professional help. Thank goodness the caretakers had been forewarned!

One student from Nicholas Sheran was not able to be at school as she had had an asthma attack the night before and was still in the hospital. She was so upset and at first refused to even go to the hospital but she had no choice. The nurses gave us the phone number for the closest nursing station so that Jennifer, her pen-pal could phone her at the hospital. There are many methods of communication and each has its own use. After the phone call was made, we all went to the gym. My class had prepared a dance to share, which delighted our hosts. This was followed by a quick tour of the school. Park Meadows School and Nicholas Sheran School have the same basic floorplan, but it is fun to notice the similarities and differences.

Next, in our crammed schedule, we walked or raced with Mr. B. leading the pack, to the Nicholas Sheran Park to eat our picnic lunches. As children finished eating, they played on the equipment and loved every minute of it. Back to the school to pick up our swimming gear to walk over to the pool. As Nicholas Sheran is a community school, this swim was free to all as we were invited guests. After an hour swim the day was almost over. We had one more treat

of juice and banana muffins, which we ate on the lawn just before parents arrived to chauffeur us back to the north side school.

What a day! The culmination of the telecommunications project had been a huge success. The strong part of the whole process was the personal contact: If the connection had been across the country or world, perhaps students would not be as motivated. I know that I lose interest in writing to someone that I will never see. This personal contact was a real strength for this age level. The amount of time of 2-3 months seemed appropriate to sustain interest.

The project had come to closure!

Appendix L: Endangered Species — Reports



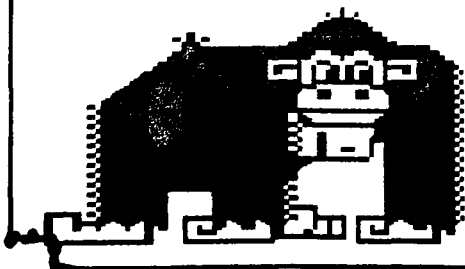
**ENDANGERED
SPECIES**

REPORTS BY

MRS. MELROSE'S CLASS

PARK MEADOWS SCHOOL

JUNE 1, 1993





DEDICATED TO

PRESERVING ANIMALS

FOR OUR FUTURE

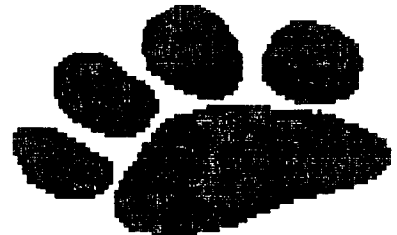
**"Empowering Our Future Generations
Through Telecommunications"**

**This book was created as part of a
telecommunications project between
Park Meadows School and Nicholas
Sheran Community School.**

ENDANGERED BEARS



BY
Christina
Brown



ENDANGERED BEARS

Bears come from different places like North America, Alaska, South America, Africa, Asia, Greenland, Europe, Australia and the Arctic Circle. Bears have very stubby legs. All bears can climb very well except one.

Bears need lots of space to move around. Sometimes people cannot move from the bears. Instead the bears sometimes attack. The brown bear and others are losing their habitats. Lots of North America's forests are becoming lost.

The polar bear lives in the Arctic with other wildlife. Some species are not found any other place in the world. The polar bear is the largest carnivore living on land.

Brown bears were once quite common in Northern Countries. Brown bears were once very rare in Europe. A few thousand brown bears are left in Europe.



NEXT IS A
RIDDLE!!!!!!!!!!!!!!!!!!!!

WHO AM I ?

I am the largest carnivore on land.



I live in the Antarctic.

I am the color white.

I live with snow.



I am an
**ENDANGERED
SPECIES**

because people are killing me for sport.

WHO AM I?

ANSWER (RAEB RALOP)

BY CHRISTINA BROWN



Bears in Danger

by: Nathan Brown



Some bears are in danger. Without protection some bears may die. The spectacled bear of South America is in danger. Hunters have killed too many. Others have died because the land they live on is being taken away. Farmers take the land to grow crops. When they do, they burn the trees.



They destroy the food that bears need to live. Then the land is good for farmers, but not for spectacled bears. In some places in the world it is hard for humans and bears to live close to one another. Some governments try to help the bears. They call these places National Parks. All animals in the National Park are protected. They cannot be hunted. Their land cannot be taken away.



Some bears like the polar bear need the help of many nations. The polar bear lives most of its life in the Arctic. The countries whose land borders the Arctic have agreed to protect the polar bear. Special laws stopped people from shooting adult bears or catching bear cubs. Special places where female polar bears go to have their babies also are protected by law. These places are called wildlife reserves.



Grizzly bears are also endangered. Today, there are still some grizzly bears in the Rocky Mountains of British Columbia and Alberta.

Who Am I?



I am a mammal.

I am fuzzy.

I am big and brown.

I am fat and I hibernate all winter.

I have sharp teeth for eating salmon.

I have sharp claws to dig roots from the ground.

I am a _____.

Who Am I?

I am a mammal.

I am fuzzy and white.

I have sharp teeth to eat meat.

I have sharp claws to catch food.

I am a _____.

Reference:

Rosenthal, Mark. Bears.
Childrens Press, Chicago, 1983.

Answers

1 Brown Bear.

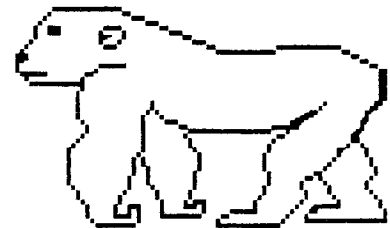
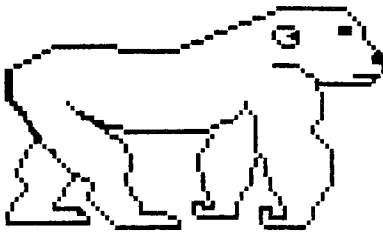
2 Polar Bear.

By Nathan Brown.

ENDANGERED ANIMALS

BY

JAMES CRABB



All about Endangered Species.

Whales are vanishing because of oil spills. The oil spills are causing death to most animals in the sea. The whales are dying because of their blubber. Some whales have teeth and some don't.

Pandas are endangered because man is wrecking the forests. Some pandas are small and some are big. Pandas eat bamboo and there is not much bamboo left.

Dolphins are endangered because of the oil spills. Many dolphins are dying because of the oil spills. Dolphins have teeth. Dolphins eat fish.

Gorillas are endangered because of man. Many forests that are the homes of the gorillas are being destroyed. Gorillas eat plants.

Manatees are called sea cows. Manatees are gentle not mean. They are North American animals. Some live in other places.



I hope all animals are alive in the future.



Clean Air

C is for Clean, always keep your desk clean.

L is for litter, put it in the garbage.

E is for environment, don't chop down trees.

A is for keeping air fresh.

N is for nature, we must not kill animals.

A is for acid rain falling from the sky.

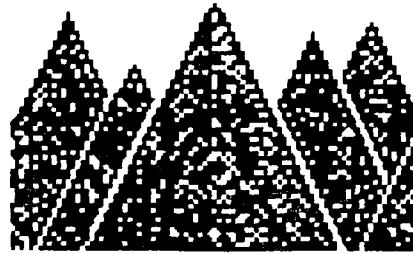
I is for important. It is always important to recycle.

R is for re-use. Always re-use cans.

created by James Crabb
Grade 3

RAINFOREST IN DANGER

By Wally Crabbe



Some selfish men that only care about money and themselves don't care about the animals who live in the rainforest! These men don't have any feelings. You probably want to know what a rainforest is?



Imagine walking in a quiet, dark forest with huge trees stretching high into the sky, with their leaves right at the top. The air is very warm and sticky and raindrops are dripping from the leaves above you. That is what a rainforest is like. Rainforests are in danger from men who cut the trees down for timber and good furniture and ship the trees to different countries. There they make the beautiful furniture.



Golden Lion Tamarin

This tiny monkey lives in the rainforest of Brazil. It stays in the trees, feeding on fruit and insects. Golden lion tamarins are now in danger because their forest home is being cut down.



I WISH PEOPLE WOULD CARE!

by Wally Crabbe

Reference:

Hadden, Sue. Rainforests.
Wayland, England. 1991.

Who Am I?

I belong in the cat family.
I live in the jungle.
I have fluffy hair around my head.
I hunt my victims.
I am endangered from men who want my fluffy fur.

Who Am I?

My cousin is the tiger.
I sometimes go to the forest.
I have short fur in the back.
I am the king of the jungle.
Can you guess who I am?

Who am I? _____

R is for Recycle, keep the earth clean.

A is for air, we must keep it clear.

I is for important, to take care of our environment.

N is for nature, we must not kill it.

F is for forest, it should stay nice and tall.

O is for ozone, that could give us skin cancer.

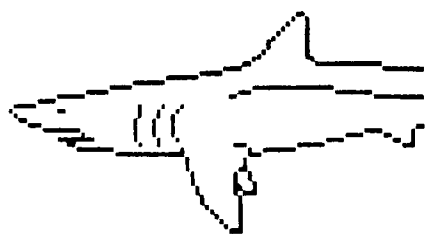
R is for rain, it shouldn't be acid.

E is for environment, we should keep it clean.

S is for sky, it is a beautiful blue.

T is for trees, they should be brown and green.

written by Wally Crabbe



Killer Whales at Risk

By Jarod SEIFERT

Killer whales are killed for their blubber. Poachers kill them for sport. When poachers see their white marks they shoot them.

WHERE THEY LIVE

Killer Whales live in the cold waters off the Northern Pacific and Atlantic Ocean. Many of them are seen off the western coast of North America near Alaska and British Columbia.

WHAT THEY EAT

Killer Whales are fun to watch but they can be very deadly. As few as five and sometimes as many as fifty Killer Whales hunt together in packs. They attack all kinds of fish. They also eat other animals like seals and penguins that are found in icy regions where the whales live. If they see a penguin on an iceberg, they ram their bodies against it. When the penguin falls off, the whale eats it.



By Jarod Seifert

RIDDLE

WHO AM I?

- I'm kind of fat.
- I live in Africa.
- I am endangered.
- I live on flat land.
- I have a horn.
- I am ugly.
- Who am I? _____

Answer: RHINO



Reference:

Palmer, Sarah. Killer Whales.
Rourke, Vero Beach, Florida.

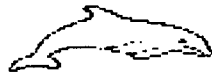
Whales!



by
Michelle Singh

WHALES!

People have hunted whales since prehistoric times. People ate meat, melted down whale fat for fuel, and carved whale teeth into buttons. Most modern whalers kill to sell them. Most of the whale oil is used in soap, candles, and machine oil. Whale meat is used in pet food and other pet things. Whale hunting has changed so much. Whales are endangered but people are still killing them.



When people whaled the old fashioned way, it was very risky. Whalers would go out in small boats and hunt the whales. Whalers used harpoons to hunt whales. If whalers hit the whale, the whalers would go on a dangerous ride.

When people whale the modern way they have an easier time killing the whales. People have killed one-fifth of all whales.



There are two groups of whales: the baleen whales and the toothed whales. The Greenland right whale and the finback whale are baleens and so are blue whales and humpback whales. The humpback whale is about 40 feet (12m) long. It weighs around 29 tons. The blue whale can grow up to 98 feet (30m) long and it can weigh 130 tons. This is as much as a whole herd of elephants!



WHALE

W is for waves in the water.

H is for hear; I can hear the shells.

A is for Africa; whales live near Africa.

L is for lake; a lake is like a pond.

E is for endangered; whales are endangered.

created by Michelle Singh

Riddle

I am an animal.

I am black.

I hibernate in the winter.

I love to eat.

WHO AM I? _____

Answer: Black Bear

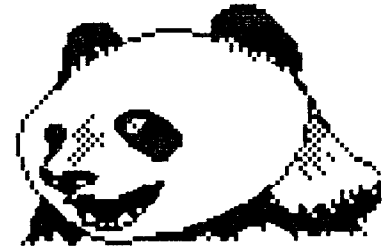


Reference:

Asimov, Isaac, Why Are Whales Vanishing? Stevens Children's Books, Milwaukee, 1992.

ENDANGERED: PANDA BEARS

By: Nena Vo



GIANT PANDAS

The giant panda is one of the best known animals in the world. It is also one of the rarest. In 1990 there were only about 1000 giant pandas living wild in China, and only fifteen in zoos outside of China.



Pandas prefer to be cool and damp. Pandas are famous for eating bamboo. The giant panda is an endangered animal because the pandas need alot of bamboo. Life in the zoo is much easier for pandas than life in the wild.

WHY ARE PANDAS SO RARE?

Giant pandas have probably never been common anywhere. There are several reasons for this. They do not produce many babies. As we have seen, they can only live in cool bamboo forests.



SAVING THE PANDA:

Although pandas are in danger from hunting, the main threat to them is the loss of their bamboo forests. Reserves were created to protect the pandas and the bamboo forests they need.

BREEDING PANDAS

Every big zoo still wants to keep giant pandas. Of course, one reason for this is that pandas always attract crowds of visitors. But another reason is that zoos around the world are trying to save pandas from extinction.

I HOPE PANDAS ARE AROUND IN THE FUTURE.



Who am I ?

I look like a bear but I'm not.

I live in China and I eat alot of bamboo everyday.

I am black and white and very fuzzy, big and kind.

I'm a slowpoke and climb tall trees.

I'm endangered because people are cutting down bamboo.

WHO AM I ? _____

Who am I ?

I'm in the bear family.

I live in Australia.

I eat only eucalyptus leaves.

I am soft and cuddly. I keep my babies in a pouch.

WHO AM I? _____

Answer 1. panda bear
2. koala bear

Reference:

Standring, Gillian. Pandas.
Wayland, England, 1991.



ENDANGERED FALCONS



BY: TIM
CALLAGHAN



Falcons have a number of characteristics that make them different from other birds of prey. They are slim birds with a small head and long thin sharp pointed wings that almost reach the tip of the tail when the bird is resting. Peregrine falcons are fully protected in Alberta and Canada since 1971 by the Alberta Fish and Wildlife and many other facilities. Unfortunately some birds are shot so Peregrine falcons may be killed.

Peregrine falcons are noted for their speed and are perhaps the fastest bird of prey. Peregrine falcons were well known and commonly admired for over 3,000 years. Adult falcons don't



really build a nest, they simply scrape out a shallow bowl shaped area in loose soil sand or gravel on the ledge of

a nesting site. Adult peregrine falcons are known for capturing a variety of live birds. Once the prey is dead, peregrine falcons strip away most of the feathers, then tear off the meat. Also weather may cause the death of some peregrine falcons.



THE END

(C) 1993

Reference:

Canadian Wildlife Service.
Edmonton, Alberta.

FALCON

- F** IS FOR FALCON, AN
ENDANGERED SPECIES
- A** IS FOR ACID RAIN, WHICH
POURS FROM THE SKY
- L** IS FOR LIFE, WHICH ANIMALS
WANT
- C** IS FOR CROCUS, WHICH GROWS
ON A MOUNTAIN
- O** IS FOR OZONE, WHICH IS THE
AIR ABOVE THE EARTH
- N** IS FOR NATURE, WE MUST
CARE

(c) 1993 BY Tim Callaghan

WHO AM I?

I glide through the air like a
plane.

I have a cousin that is the
provincial bird of Alberta

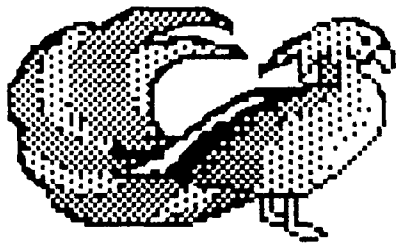
I burrow. I am very small.

I am an Endangered species
because of pesticides.

Who am I? -----

ANSWER (BURROWING OWL)

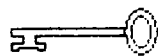
RAIN FORESTS



BY Tania Choudhry

Welcome to the rainforests. Rain forests are the richest places on the earth! Rainforests are rich not with diamonds or gold but with life. Rainforests cover just six percent of the earth but they are homes to more than half the species of plants and animals in the world!

Rainforests are full of mystery and promise. We have much to learn about them and to know them. Scientists have just started to unlock the mystery and secrets that wait there for discovery. At the same time we are destroying them at an alarming rate!



Today rainforests are only found in South and Central America, Central Africa and in South-east Asia. Rain forest trees are enormous compared with most other trees in the world!

Moder technology has endangered rain forests people. New roads are built through rain forests to clear trees, to create land for farming or to build new settlements!



The GOLDEN LION TAMARIN lives in tropical forests on the Atlantic coast of South-east Brazil. It is in endangered because of us cutting down the trees it is used to climb. The population where it lives is less than 100 animals.

Toucans are endangered because of people picking all the fruit to sell in grocery stores. People are destroying the rainforests for houses. Now toucans hardly have any where to live!

HOW YOU CAN HELP!!

YOU CAN HELP BY PLAYING YOUR PART BY:

1. Talking to your friends or relatives about rainforests and telling them why they are so important to us.
2. Above all, you can help by joining an international conservation organization!

PLEASE SAVE THE RAINFORESTS!!

RIDDLES

I am made out of bunch of trees.
I only cover 6 percent of the land
I am a home to more than half
the species.
I am a beautiful place!

WHO AM I?

I am big and hairy.
I come from China.
I eat bamboo.
I am not a bear.
I am becoming endangered
because people are cutting down
bamboo!

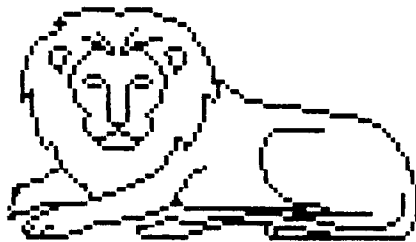
WHO AM I ?

ANSWERS: (1) Rain forest
(2) Giant panda

REFERENCE:

HADDEN, SUE. RAINFORESTS.
WAYLAND, ENGLAND ,1991.

THE JAGUAR



by
**Todd
Fanter**

In the year 1500, an explorer (Amerigo Vespucci) thought he had found leopards in South America. He found large spotted cats. As it turns out they weren't leopards at all. Other explorers started calling the cats 'el tigre' but they weren't tigers either. The explorer had actually discovered jaguars, now one of the world's great meat eating animals.



The jaguar's cousins are the cats such as the leopards, tigers and lions. The jaguar's closest cousins are the leopards. Leopards are spotted and have similar bodies like jaguars.

Jaguars and leopards are very hard to tell apart. But jaguars' bodies look stockier than leopards. Jaguars have very muscular bodies, a thick neck and short stout legs. A jaguar's spots are sort of circular with a black dot in the middle of the circle. These spots are called rosettes. Circle spots on leopards don't usually have a dot in the middle. A male jaguar weighs from 120-200 pounds. One record sized male weighed 350 pounds. Females average 80 to 100 pounds.



Jaguars live throughout much of South America, Central America and Mexico. They used to live in small numbers in Arizona. Their favorite home or habitat is a dark, wet, tropical forest. If the river has a swamp it's that much better. But they have also been

found in the mountains of Peru and Bolivia. The jaguars of Western Mexico and the Southwestern United States live in desert conditions!

The End

RIDDLE

WHO AM I?

I have big floppy ears,
I sometimes work in the circus,
I am very fat,
I live in a zoo,
I am grey and have a long nose.

Who Am I? -----

(I am an elephant)

RECYCLE

R-is for reuse, to reuse our garbage.

E-is for endangered, we must save our animals.

C-is for clean, clean our earth.

Y-is for yes, yes we will clean the earth.

C-is for cheetah, some cheetahs live in trees, so don't cut them down!

L-is for lack, we need a lack of pollution.

E-is for energy, we need lots of energy from the earth.

Reference:

Stone, Lynn. Jaguars.
Rourke, Vero Beach, Florida, 1989.



BENGAL TIGERS

BY BRANDON HOUTHUYS



Rain Forests cover a tiny amount of the Globe, but they contain most of the earth's vegetation, and about one half of all animal species.

This is home for the grandest animal in the jungle.

THE BENGAL TIGER.



Everyone admires its fiery orange coat, jet black stripes and COOL GREEN EYES.

There are muscles rippling under its glorious fur. It roves the rainforest, afraid of nothing - Except Man.

People have hunted tigers as trophies and for their fur for hundreds of years. Now man is threatening their survival by cutting down their forest home for timber, farming and houses.



Zoos help preserve endangered animals, and increase their numbers by breeding them in captivity. This program has worked well for the TIGER.

THE END

By Brandon Houthuys .

Reference:

Whyte, Malcolm. Zoo Animals. Troubador Press, Los Angeles, 1989.

RIDDLE!!!!!!!!!!!!!!

Who am I?

I'm in the Cat Family.

I live in the Rainforest.

I have Jet black stripes on me.



I have a fiery orange coat,

I have cool green eyes.

Who am I? _____.

ANSWER: Bengal Tiger.

TIGER!!!!!!!!!!!!!!



I'm a tiger,
Orange and Black,
Stripes on my Front,
Stripes on my Back.

I'm a tiger,
Hunting at night,
Looking for my supper,
I'm ready to fight.

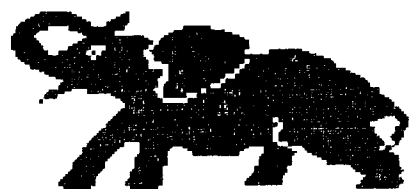


By Brandon Houthuys
and Michael Ziebert



Elephants

Crystal Levenne



There are not very many elephants left. There are some differences between African and Indian elephants. African male and female elephants have tusks but the female of India doesn't have tusks. The Indian elephant has ears like the country India. The African elephant has ears shaped like the the country of Africa.

The elephants are endangered because people kill the elephants. People kill the elephants for their tusks and then leave the bodies of the elephants to rot.

Some of the elephants live in the rocky deserts or in rain forests. Some elephants live in high mountains. Many elephants climb steep hills and slide down.

Elephants are very strong animals. Their tusks are made out of ivory. Ivory is valued for carving. This is another reason why elephants are endangered.

There were many elephants before. There was little rain when there were lots of elephants. To get water the elephants had to dig up dirt with their tusks. Some times elephants push down trees to get leaves to eat.

Some female elephants are called cows. Male elephants are called bulls. Baby elephants are called calves.



Today in many places there are hardly any elephants. Many of the elephants' homes are destroyed. This report is about elephants that are endangered.

Here is a riddle!!

We are very strong.

We live in India or Africa.

We are endangered because people are cutting off our tusks.

We have very big ears!

Who are we?



The book I got my information for my report is from ...

Redmord, Ian. Elephants.
Wayland, England, 1990

HERE IS A POEM!!

C- is for clean, we should clean up.

L- is for litter, clean up the litter.

E- is for endangered, most elephants are endangered.

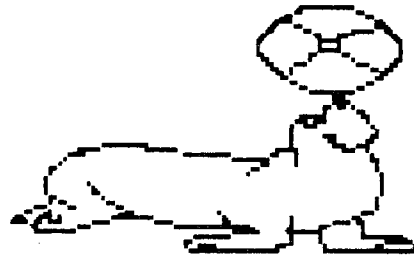
A- is for air, air is getting dirty.

N- is for neat, we can keep the earth neat and clean.

by Crystal Levenne



Seals And Sea Lions



Angela
Mayer

SEALS AND SEA LIONS

Seals, Sea Lions and Walruses all belong to the group of mammals known as pinnipeds. The flippers are shaped like paddles to help the animal swim through the water. All mammals are warm-blooded and need to breathe air to stay alive.

The fastest pinniped can swim at 25 kph. On land, movement is more difficult. When seals are on land, they get too hot. They cool themselves by flipping sand on their backs or dipping themselves in pools of water. There are 34 species of pinniped.

Walruses live in shallow parts of the cold Arctic. The tusks help the walruses to move about and to defend themselves against attacks by other walruses. As the ice melts in the summer, the walruses move North. In the winter, they move South.



About 30 000 walruses live on the Galapagos Islands, which are West of

South America. There used to be a population of the seals in Japan, but we do not know if any are left.

Leopard Seals are usually shy of Humans. However there are some frightening stories of them attacking divers.



Today some pinnipeds are still hunted. The South American fur seal is killed for its oil and fur. In Alaska, many thousands of walruses are being slaughtered just for their tusks. The Tusks are taken and the rest is

wasted. The walruses' ivory tusks are made into ornaments and jewelery and sold.

Fur seals often become tangled in plastic straps that have been thrown away. As the seal grows the strap becomes tighter. It cuts into the flesh and slowly strangles the animal.



We hope that people will stop polluting and save the Endangered Species.

Riddle



It is lovable,
Grey and Black,
Lives in the
Arctic,
It is Endangered
And it has whiskers,

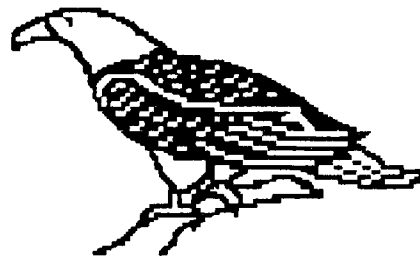
(seal or sea lion)

Reference:

Papastavou, Vassili,
Seals and Sea Lions.
Wayland, England, 1991.



Endangered Species



There are many endangered species of Canada. One is the Piping Plover. This small bird relies on undisturbed natural shorelines to nest and raise its young.



Piping Plovers are small, stocky shorebirds which look like a washed-out killdeer. They are endangered because people playing on the beach can result in the eggs being broken. They are speckled and look like rocks.



Another endangered animal is the Swift Fox. It is endangered because men are tearing down its home and making factories.

Yet another is the Burrowing Owl. It is endangered because men are spraying pesticides in the fields where they live which kills them.

Another animal is the Ferruginous Hawk. The major reason it is endangered is the dramatic decrease in the amount of native grassland throughout their range.



I have very high hopes that we will see these animals in the future.

By:
Mandy Neufeld

Reference:
Alberta's Threatened Wildlife.
The Canadian Wildlife Service,
Edmonton, Alberta, 1990.

BANANA

P-is for Pandas eating bamboo in China.

A-is for Acid Rain, which falls on the land.

N-is for Nature, where the animals live.

D-is for Deer, running free in the parks.

A-is for Adventure in the wilderness.

Riddles !!



Who am I?

I am a member of the cat family.

I am not very cuddly.

I am black.

My name starts with a B.

Who am I?

I'm A _____

Answer: (I'm a Black Panther)

THE END

By: Mandy Neufeld

Endangered Species !!!!!!!!!

by JENNIFER

POYTRESS



The Largest and Most Magnificent of our birds of prey is the Bald Eagle.

Yet like all such birds the bald eagle may be doomed because it quickly accumulates pesticide in its body from the flesh it eats. The adult eagle is quite distinctive by virtue of its white head and tail.

The Bald Eagle is becoming extinct because of the pollution of streams and rivers. Bald Eagles are more often scavengers than hunters and consequently consume large numbers of the poisoned dead fish that are thrown up onto river banks and coastlines. These fish are contaminated with DDT and other pesticides originally sprayed on nearby trees and shrubs. The concentration of these poisons has a sterilizing effect on the eggs of the Bald eagle.



The female is usually 3-4 inches longer than a male and may grow to a length of 39 inches and sport a 7 foot wing span. The Bald Eagle returns to the same nesting area every year and adds on building material every time until the nest takes on proper proportions. The Eagle is sometimes just killed for pleasure!!!!



REFERENCE:

Stewart, Darryl. Canadian Endangered Species. Gage, Toronto, 1974.

HERE IS A POEM !!!!!!!!!

E-is for environment, that we should keep clean.
N-is for nature, which is where animals live.
D-is for dirty, the earth is getting dirtier every day.
A-is for animals, that no longer will live.
N-is for natural resource, that keeps us alive.
G-is for garbage, that we should pick up.
E-is for elephants, that are very big.
R-is for rhinos, that are becoming extinct.
E-is for evergreen trees, that live all year long.
D-is for dolphins, that will die out soon.

S-is for snakes, that slither around in the grass.
P-is for pandas, that have black and white spots.
E-is for earthquake, that sometimes erupts,
C-is for cheetah, that are endangered for its spots.
I-is for important, the world is important to us.
E-is for earthworm, that is very tiny.
S-is for snail, that is so small and slow.

created by Jennifer Poytress

ENDANGERED SPECIES

By Jolene Schweitzer



Manatees are vegetarians and eat only plants. Manatees only eat fish if it is mixed in with plants. A 10 foot long Manatee needs over 100 pounds of vegetation each day. Manatees are becoming endangered because men used to kill and eat them. The men kill them to get the blubber for oil.



Three hundred years ago the oceans of the world were teeming with whales. Whalers hunted one species after another until there were almost no whales left. The first whales to be hunted were slow-moving and floated when dead. They were named the right whales (as they were the right whales to catch.)



The Atlantic populations of right whales almost became extinct two hundred years ago. The whales are becoming endangered because people are killing them for food.

Pandas are becoming an endangered species because there is hardly any bamboo for them to eat.



There are more Pandas out in the Wild than there are in the ZOO. Giant Pandas are often wrongly called 'Panda bears' or 'bamboo bears'. They certainly look like bears.

WHO AM I ?

I walk around in the jungle.
I am very fat.
I eat all the time.
I have big ears.
I am endangered because people kill me for my tusks.



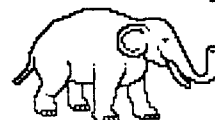
WHO AM I?

Reference:

Popastaurou, Vassili. Whales and Dolphins. Wayland, England, 1990.

Answer:

elephant



ENDANGERED RAIN FORESTS

BY KELLY D RIEHL



Acid Rain is destroying the environment. Acid gases are produced when fossil fuels are burned in homes and factories. Gases from smoke and fumes are often blown to other countries by air currents and fall as ACID RAIN.

Acid rain can effect our health as well as our environment. We can make a difference if we cut low on cars and ride bicycles and if we recycle because once is not enough.

Have you heard of acid rain? Many people are talking about it because they are worried about the effect it is having on the environment. All rain is slightly acid. It can slowly wear away or dissolve rocks into cool shapes.



When we put harmful gases into the air it is called pollution. Most air pollution is caused when we burn fossil fuels, such as coal and oil, and when volcanoes erupt. The gases that are produced can make rain acid. When we burn fuels, chemicals called sulphur dioxides and nitrogen oxides which can damage the environment are produced. Sulphur comes from power stations which make electricity. Most nitrogen oxides comes from car exhausts.



The wind carries these acids that are in the air to far away places. When acid snow melts, the acid water can harm plants and animals.

When trees are cut down and taken away, the soil can become more acid.

Osprey

The osprey is a large bird that flies over lakes and picks fish out with its claws. But ospreys are now becoming less common. When fish in the lakes are killed by acid rain, there is no food for ospreys.

Acid levels are highest when the snow melts in the spring. This is the time when young fish hatch from their eggs. If the water is too acid the young fish will die. Other water creatures will die too.

Canadian maple trees are being damaged by acid rain.

The Statue of Liberty in New York has been restored because of acid rain damage.

Acid rain has destroyed many churches in England.

Reference:

Sterling, Stephen. Acid Rain. Wayland, England, 1991.

ENDANGERED SPECIES

BY CZAR TOONE



ENDANGERED SPECIES

There are many endangered species. In my report I am going to tell you about the tiger, dolphin, panda, whales, and the elephant.

The big cats are bundles of muscles. The famous tiger is endangered because men kill them for their coats. They also kill for their sharp teeth.

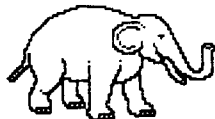
Dolphins are very intelligent creatures. They are learning how to understand man. They do tricks for people. Dolphins are an endangered species because there are oil spills and it poisons the water. Then dolphins drink the water.



Pandas are black and white and very cute. They live in China up in the mountains. Pandas eat only bamboo. That is why they are endangered. They are running out of food.

Whales are disappearing. One reason they are endangered is oil spills. Another reason is men kill them for their blubber.

Elephants are very large animals. They are also endangered. Men want to kill elephants for their tusks.



by Czar Toone!!!!!!

Who am I ?

I am a very large mammal.

I live in the ocean.

I eat little fish.

I have lots of blubber.

I am endangered because men have hunted me.

Who Am I? _____

(I am a whale.)



OZONE

O is for oil spills that pollute the water.

Z is for the zone that we should keep clean.

O is for oxygen that we breathe.

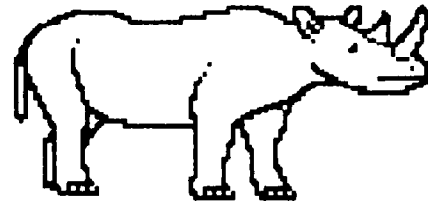
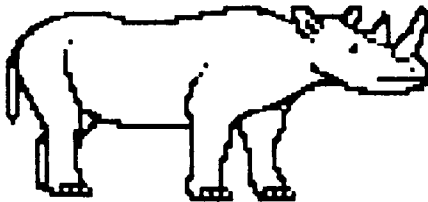
N is for nature that we should treasure.

E is for environment that we should keep clean.

by Czar Toone

ENDANGERED RHINOS

(C)1993 BY:KEVIN TURNER



People believe that the horn has medicine. All Rhinos eat plants, twigs, and sometimes fruit. They also need water to drink and to keep them cool. The black Rhino weighs 996-1,362 kg. The black Rhinos front horn is 50-135 cm long. The rhino often uses his horn for pulling down trees. The rhinos are endangered because the rhino poachers come at night and kill them, then chop off the horns and leave the rest to rot.

The poachers kill them because the horns are worth about 6,000 dollars. Sometimes there are guards waiting at night where the rhinos are. Then the poachers come and the guards are right there. Sometimes the poachers shoot the guards. Maybe the poachers kill the rhino and the guards catch him after he kills the rhino but it is too late, the rhino is dead.

In 1970, there were 19,000 black rhinos in Kenya. Now only 100 black rhinos have survived. In 1984, there were about 8,000 black rhinos in all of Africa. Now there may be less than 2,000 left. Now parks bought land and put fences for them, so the poachers can't get in. This idea is working very well. Now the population is going up. In the future I hope there are more black rhinos.



The End

(C)1993 By:Kevin Turner

ACID RAIN

A-is for air, that we breathe all day long.

C-is for clean, keep our environment clean.

I-is for important, to take care of our environment.

D-is for deserts, that are very hot.

R-is for rainforests, that are getting smaller.

A-is for atmosphere, that is above us.

I-is for important, take care of our Earth.

N-is for nature, which is all around us.

(1993) By:Kevin Turner

REFERENCE:

Penny, Malcom. Rhinos.
Wayland, England,(C)1991.

THE WORLD OF PANDAS



By, Shereen
Valin

Welcome to the world of pandas!!

The adult panda is white and chubby with four black legs, a black ring around his shoulders, a large white head with black patches around each eye. He is between 5 and 6 feet from nose to tail and when full grown will weigh 300 pounds.

The pandas main source of food is stems, leaves, and young shoots of bamboo, but they will also eat crocus, iris, small bamboo rats, birds, and they will go into a farmer's cornfield and bee hives to eat corn and honey.

A new born panda is pink and is almost furless. It is about the size of a stick of butter. At about a month old, the baby's eyes will open and it's warm fur coat is fully grown. The black and white markings will start to appear about a week after it is born. The baby will stay with it's mother until it is about 1 and a half years old.

In 1972 China gave the National Zoo in Washington D.C. a pair of pandas; a female, Ling-Ling and a male, Hsing-Hsing.

In 1970 the number of live pandas in the world was about one thousand and it is believed that the number is getting smaller. With more people in China the forests were cut and more farms were developed, making it harder for the pandas to go from one forest to another to get bamboo.



To save the pandas natural habitat reserves have been set aside so that all the bamboo forest area

will not be cleared and areas that have been cleared of trees will be replanted with bamboo. The panda is also protected against hunters from killing them. Rewards are

given to people who help save the pandas.



Pandas are of interest to many people. The arrival to

zoos and the birth of baby pandas make instant headlines.

The panda is an endangered animal but many people are working very hard to help them survive.

WWF



THE PANDA IS AN
INTERNATIONAL
SYMBOL OF
ENDANGERED WILDLIFE

Your bequest will help save the Pandas.

The Giant Panda is Probably the best-known and best-loved of all endangered species. It is also the symbol of WWF's worldwide conservation efforts to save life on Earth. Please consider making a bequest to WWF Canada to help save the pandas and the endangered species throughout Canada and the world.

WORLD WILDLIFE FUND CANADA

60 St. Clair Ave.E., Suite 201
Toronto, Ontario M4T 1N5
Telephone (416) 923-8173

REFERENCE:

Roger, Barbara Radcliffe.
Giant Pandas. Friedman Group,
New York, 1990.

Endangered Species



Rhinos by Tonya Victor

Endangered Rhinos!!!

Unlike other animals, the horn of a rhinoceros is not made of bone. It is made of hard, hairlike fibers that are stuck together. In China and other parts of the Far East, rhinoceros horns are considered very precious. People use them to make medicines.

People are trying to save the rhinos by cutting the horns off live rhinos instead of the hunters killing the whole animal and just cutting the horn off and leaving the rest to rot.

The largest rhinos in the world are the white rhinoceros. They stand over 6 feet high at the shoulder and are over 16 feet long. Elephants are the only land animal that are larger than white rhinos. White rhinos live in small herds on the African plains, where they feed on grass.



Another species of the rhinoceros lives in northern India. The Indian rhinoceros has only one horn. Its thick folded hide is studded with knobby bumps like a suit of armor. Indian rhinoceroses live in fields of elephant grass which grow up to 25 feet high.

The rhinos make tunnels through the tall grass. They have been heavily hunted and there are fewer than one thousand Indian rhinoceroses left alive. They are now protected and live on reserves in India and Nepal.



E- is for endangered species, so don't kill them.

N- is for nature, so keep it clean.

D- is for danger, and the earth is in danger.

A- is for acid rain, which should not be acid.

N- is for natural resources, that we should conserve.

G- is for garbage, that we litter.

E- is for environment, that we keep clean.

R- is for rain, that sometimes feels nice.

E- is for elephants, the largest land animal.

D- is for dogs, I have one too.

R- is for reuse, that we sometimes do.

H- is for H₂O, that means water.

I- is for important, our world is important.

N- is for never, never pollute.

O- is for ozone, that we pollute.

S- is for species, that are ENDANGERED.

created by Tonya Victor

REFERENCE:

Murray, Peter. Rhinos.
The Child's World, Ontario, 1992.

Endangered Cheetahs

By Catherine Ward



The cheetah is not a bird or a plane, but it almost flies. This big, spotted cat is the fastest mammal on earth. Its bursts of speed reach



70 mph. The cheetah's feet are actually off the ground for half the distance it races.

Unlike a horse, which can gallop up to 43 mph, a wild cheetah doesn't run for sport. A cheetah runs for its dinner.

A cheetah can run at top speed for only about three tenths of a mile. If it fails to catch the animal it is chasing, it must stop to get its breath. Later when rested, the cheetah will hunt again.

Cheetahs are endangered because people have killed so many of them for their skins. People are also using the land the cheetahs need to hunt for their food. Soon



there may not be any wild cheetahs left. Other animals are also endangered of disappearing from the earth for ever.

In faraway Africa, a cheetah cub licks its mother's face. Another little cheetah stretches after a nap. Now it is ready to play. The mother swats the cub with her strong front paw. It is a rough game, isn't it? But it helps the cub grow strong and learn how to hunt.

Among themselves, cheetahs can be very playful and friendly, but cheetahs are **Predators** or hunters. At hunting time, cheetahs



become deadly serious.

Cheetahs have excellent vision. They scan the plains for a likely victim. Unlike other cats, a cheetah does not sneak carefully toward its prey. It runs after its prey. The cheetah knocks the animal down and grabs it by the throat.

Cheetahs live their lives in the fast lane. Although most big cats spend a great deal of time at rest, cheetahs usually have to hunt every second or third day.

In the future we hope the cheetahs are still alive.

by Catherine Ward

Who Am I?

I am a mammal.

I can run very fast.

I have spots all over my body.

I am endangered because of my fur.

Who am I?

(Cheetah)



Reference

Stone, Lynn. Cheetah.
Rourke, Florida, 1989.

TIGERS

BY MICHAEL ZIEBERT

Tigers are found in India. Female tigers produce 2 to 6 cubs. Tigers have been among the favourite animal exhibit in zoos. The cubs learn to hunt for themselves after seven months. Tigers raised in captivity may live to be 20 years old.



Tigers have been heavily hunted in India. Other members of the cat family include the cheetah, the lion, and the leopard. These animals are just about gone. One or two cubs survive out of all of the cubs. There are fewer than 2,000 tigers left in India.

Tigers can climb-but not well. They are excellent swimmers and regularly they cross rivers. Like other big cats, the tigers can purr and roar. Tigers do not roar as often as a lion, but it may roar as a threat.



A tiger is a neat animal so please protect it.

By Michael Ziebert

RIDDLE



Who am I?
My cousin is an elk.
I live in northern Alberta

I eat shrubes and grass.
I have antlers.
I am
endangered
because
I am killed for
my antlers.



Who am I ?

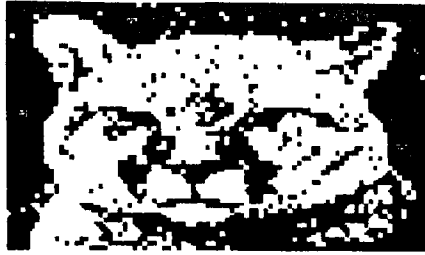
I am a -----

answer (caribou)

REFERENCE:

DUPLEX, NICOLE. WORLD GUIDE TO MAMMALS. CROWN, NEW YORK, 1966.

ENDANGERED SPECIES



BY
PAUL
MCMASTER

WHAT IS AN ENDANGERED SPECIES?

An endangered species is any kind of animal, plant, or other living thing that will become extinct if nothing is done to save it.



HOW MANY ENDANGERED SPECIES ARE THERE?

In Canada there are 220 species of birds, mammals, fish, plants, reptiles and amphibians that are either at risk threatened, endangered, gone from some places, or extinct.



ARE ALL SPECIES HEADED FOR TROUBLE?

No. Lots of plants and animals are in no danger at all. Animals such as the white tailed deer, raccoon, cardinals, and coyotes are in great shape. WHY? Mainly because they get along just fine in a world full of people.



WHY ELSE ARE ENDANGERED SPECIES IMPORTANT?

All species have the right to exist. They are beautiful or interesting to have in our world. Also other species may depend on them for food or shelter.

ARE SOME ENDANGERED SPECIES MORE IMPORTANT?

People seem to care most about the endangered species 'superstars' such as whales, elephants, giant pandas, and the whooping cranes. But then there are the 'nobodies' such as the insects, reptiles, fish and plants. These species get a lot less time and money spent trying to save them. The 'nobodies' are just as important as they may have other species depending on them.



Reference:

Ranger Rick, April, 1992.

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