

What Happens When Students Use Their Reading, Process Writing, and Creative Design Skills to Create Multimedia Presentations?

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Abstract:

This teacher research inquiry looked at how elementary school students work with one another to access and process information, reflect on what they are learning, develop and use creative design skills as they research a topic to present their report in multimedia format. The teacher researchers found that when their students use technology as tools for learning while working in partner groups interactions occur that demonstrate a variety of literacy skills as well as cooperative learning skills. The use of technology appears to enable sharing to take place easily (via computer monitors) and that the experience of students working in a student learning team environment also helps foster positive relationships and enhances self-esteem.

In 1995 the Commonwealth of Virginia's Department of Education adopted new Standards of Learning (SOL's) in four academic areas: English, science, mathematics, and history/social science. In addition, SOL objectives in technology were also introduced. Using search strategies to retrieve electronic information through databases, CD-ROMs, videodiscs and telecommunications and communicating through application software such as using word processing and publishing programs are considered minimum skills that the state expects students to acquire by the end of grade five. All of these skills involve the use of multimedia which is the standard for communication in the business world of today (Young, p. 58).

Papert (1980) and Pea (1985) saw computers as having tremendous potential to create change and redefine the meaning of knowledge and intelligence in our culture. Papert in particular saw the computer as the "ultimate tool for children to use to create their own knowledge and to introduce them to the process of intellectual inquiry" (Berg et al.) Michael Young, the director of Cognition and Instruction at the University of Connecticut also views multimedia as an important tool used by the "communicators and problem solvers of tomorrow." (Young, p. 58). He explains that the use of multimedia in the classroom not only allows students to take in information but they apply their knowledge to solving problems, all necessary skills in the work force. Young also believes that they also develop social skills as well. He points out that cognitive science research findings indicate that children's thinking is inherently social and situated in the

context in which it occurs. When multimedia is used to enable students to work together to problem solve and learn in a multi-sensual manner, they are truly being prepared for the future workplace.

At our technology focus elementary school, we recognize the importance of allowing our students to work together to problem solve and learn in a multi-sensual manner. In most cases, our students work in student learning teams to research information, plan and produce presentations that convey content material they have learned. They are "intellectually engaged, encouraged to share their new ideas with others, and guided to take control of, and reflect upon, and evaluate their own learning.

The Inquiry

In order to learn more about what happens in our school's technology-focus environment, members of our teacher research team structured a study to look at how our students learn through inquiry and reflection, how they engage in collaborative learning, and how they relate information. We wanted to know, "What happens when students use their reading, process writing, and creative design skills to create multimedia presentations?" in a student learning team environment.

In our study, our teacher research team looked at how our students demonstrate the ability to work with others to access and process information, reflect on what they are learning , and how they develop and use creative ways to share their knowledge through their multimedia projects. We did not do a comparative study, but rather an exploratory "what happens when" inquiry. We wanted to know what happens when our students have opportunities to interact with one another, using technology as "tools for learning", and how the interactions related to literacy and social development.

The Method

The particular form of collecting data used for this study was methodological triangulation. This method involves consolidation of data from multiple data collection sources such as participant observation, interviewing, and document analysis (Stainback & Stainback, 1988). The data included researcher journal entries based on observations and student interviews, transcribed videotapes of student interactions, and attitude surveys completed by the student participants.

In order to add structure to our data collecting, we focused on what happens when:

- Students use language to connect new information with previous known information

- Students discover something that is personally interesting to them? Do students initiate behavior that extends their learning?
- Students engage in projects that provide choices or options
- Students interact with one another to talk about their ideas. (when others ask them questions, they begin to see themselves as experts)
- Students express how they feel about working collaboratively with a partner to complete a project.

The Findings

Cross-Age Student Learning Teams:

During the 1998-99 school year, three fifth grade classes and two sixth grade classes were paired with five first grade classes to provide a cross-age student-learning team environment in the computer lab. One to two first graders were paired with one "older" buddy to engage in the development of a media project. The programs they used to create their projects were KidPix or Claris for Kids Paint and Write applications. The objective of the activities was for the younger students to show what they had learned several different curriculum areas. Some examples of the activities were: 1) draw a tree and label its parts; 2) draw and write about a holiday tradition from around the world; 3) draw and label land forms; 4) draw and label the food pyramid; 5) create an A-B-C book matching pictures (symbols) to letter sounds; and 6) write and illustrate a rhyming poem involving color words.

In October and November, the older buddies were interviewed to determine their perspectives about working with their younger buddies. Comments generally fell into three major areas: 1) comments relating to literacy skill development; 2) comments relating to computer skills development; and 3) comments relating to social interaction.

1) Literacy Skills (reading, writing and creative design skills). The comments in this area were generally very specific. Most older students told how they helped their younger buddy learn something new, but in a few *cases, they also told how the younger child helped teach or reteach a forgotten skill to them. Some of the interview responses were:

(Sounds to symbols)

- I helped my buddy save and figure out some pictures for the letters.
- We had the letter S and we made the pictures school, soccer and slugs.
- (Spelling Skills)
- I feel good that I helped them spell words and think of ideas.
- I helped them with pointing to letters and pictures, sounding out words also helped.
- Today I taught Robbie how to spell his brother's name.

- I taught my buddy that knife doesn't start with -n.
- I helped him learn the computer by helping him spell parts of a tree and how to use the tools in KidPix.
- They know what was going on. *They even helped me when I was lost, like trying to spell something. I was wondering about how to spell moth. Rachel tapped me on the shoulder and said m-o-t-h. Now I know how to spell it.

(Drawing Skills)

- I taught him how to make a circle and square rainbow colors.
- I taught them how to use tools in KidPix and to make pictures. It was really fun.
- I taught my buddy how to make trees with the crazy paintbrush.
- I taught my buddy how to type the parts of a tree and where to label them. I also taught her how she can make a stamp a different color.
- I worked with Bethany. I like working with little kids. Bethany taught me about KidPix. I enjoyed helping her. She helped me make a tree.

2) Computer Skills. The comments in this area addressed learning general features of a software program and computer handling skills such as naming and saving files.

- I also taught them how to save their work and quit.
- I taught him how to write his name with out using the stamp letters but using Type Text.
- I also helped a first grader to get into their tree puzzle. I taught one of the first graders how to go into Goodies, the title of a group of things that you can change different items.
- I helped him by telling him where to get stamps.
- I liked working with my buddy because it helps me remember how to draw and save on KidPix.
- I liked working with my buddy because it helps me remember how to draw and save on KidPix.

3) Social Interaction. The majority of comments in this area addressed how the buddies felt about working with one another. In quite a few examples the older students expressed what they learned from the experience such as learning to work with younger children, developing patience and "both" learning from the experience:

- I think we had a good time. They learned a lot and I learned how to work with a younger student. It takes hard patience to work with someone so young compared to me.

- I liked working with the first graders. They listened very well to my suggestions about their ABC book. I have decided to be a first grade teacher.
- I like working with them because they were willing to learn and they look up to you.
- I like helping because it is nice to know I helped someone and my buddies treat me like the big kid.
- I like working with my buddy because I get to make a difference in Katie's life. I want to be her partner again.
- I think it is good we help them because it shows that we know about computers.
- I like helping them so they can be smart and help other people when they grow up.

The data from the interviews told us that pairing the older students with the younger students as computer buddies not only gave the younger students individualized attention when learning literacy and computer skills, older students benefited in terms of "refreshing" forgotten skills such as "sounding out words to spell" or relearning the drawing features of the programs. But most important, the students revealed the importance of the social interactions in terms of enhancing self-esteem and learning from one another.

Poetry Activity

During a poetry activity, the first grade students used Claris for Kids 1.0 so that the text could be highlighted and read back to the students. They first wrote two color words and tried to find words that rhyme with those words and turn them into a poem. It appeared when analyzing the videotapes, that the older peer buddies helped facilitate this activity in several ways. They provided:

- directions to complete the task as well as direction to stay on task
- positive feedback
- corrections with incorrect spellings/sounds used to spell words/rhyming
- teaching of specific computer skills such as learning to highlight words and going to EDIT-Speak to hear text spoken
- reinforcement in the use of the shift key to capitalize letters

Winter Activities

Using KidPix, the first grade students drew and labeled either winter scenes telling about their study of pine trees, or holiday celebrations scenes for their unit on Holidays Around the World. Older students helped teach computer functions and reinforced vocabulary, gave lots of praise and prompted the students in ways that allowed the children to rethink what they were doing and add more details to their project.



"That is a picture of a trolley. Do you know what a trolley is?" asked the older student. He then explained to the first graders what a trolley does.

Same Age Student Learning Teams

Videotaped observations were made of one first grade class, a third grade class, and a fourth grade class as students worked together to research information and create a draw document or a presentation such as a slideshow or a multi-card HyperStudio stack.

First Grade Landforms

Students were observed helping one another plan a project, spell words, and recall how to use the features of software programs. In this first videotaped example of student interactions, the students in grade one were observed making connections from the assigned task of drawing a landform and labeling its parts to prior experiences.



"I think our next field trip will be..." said the girl as the boy began drawing the mountains above a river.

"Rock climbing. We could go rock climbing!" interrupted the boy.

"Oh yeah, Canada! We can go rafting down the Colorado River!" the girl responded.

The conversation then focused on drawing their landform scene, but they appeared to add features of an area they had both seen on a family vacation, and in some cases, adding features of what they wanted to do on a vacation (i.e. climb some rocks.)

In another videotaped example, two boys were observed helping one another:

- recall the different landform features to put into their drawing.
- learn to spell the words needed to label the parts of the drawing by using an "available resource- a big book."

The boys also demonstrated the following cooperative learning behaviors:

- turn taking
- planning and executing the project to completion
- praising one another's efforts



"Look. Right there. We need paint right there. Right, that's good."

The boys worked on their land forms picture using KidPix, a drawing program. The boy on the right used the mouse to draw the features as his partner talked about the picture that was being drawn. When boy on the left reached for the mouse he said, "Here." The boy on the right gave up the mouse without saying a word and watched as his partner added a few details to the picture. After he made the adjustment he let go of the mouse and his silent partner took control of the mouse again. In this scene the boys demonstrated fluid, non-rigid assumption of roles. They appeared to be focusing on the essence of the process and seem to be operating at a very intellectual level. There was no discussion of turn-taking or conflict over control of the computer when these two boys worked together. They praised one another and attention to detail was quite evident.



"Tell me how to spell mountains. Look over there to see how to spell mountains."

In order to spell words to label the parts of the scene, one partner went over to the middle table and spelled the words to the other partner.



At one point the white-shirted boy came over to the big book to visually see for himself how to spell the word "mountains" and asked his partner to type the word while he orally spelled it out. Throughout the observation it appeared that the boy on the right was clearly the leader of the project since he made most of the leading comments. However, both partners appeared to equally engage in the tasks necessary to complete the assignment. The boys switched back and forth, taking turns with finding the spelling of words, typing in the words, and adding finishing touches to the landforms scene.

Third Grade Electricity and Fourth Grade Solar System HyperStudio Projects

One third grade class worked in student learning team pairs to research information about inventors, and batteries and bulbs related to their study of Electricity and created a five-card HyperStudio stack. The other third grade class studied insects and also made a HyperStudio stack. The fourth grade student learning team pairs researched the planets and created fourteen card HyperStudio stacks called a Journey Through the Solar System. A variety of research sources were used from tradebooks to CD-Rom and laserdisc information.

In all the classes students were observed helping one another:

- locate information for the report portion of the project.
- spell words
- define word meanings
- restate ideas or reread text to make their writing clearer
- ask questions about what they thought should be included in the text
- decide what should be changed in terms of graphics or text information
- fluidly take turns drawing intricate detailed drawings (i.e. how batteries and bulbs work and portraits of famous inventors related to the study of electricity.)



"How do you spell electricity?" asked the third grader on the right. Her partner (pictured in the middle) looked at a book and read the word to her as she spelled the word.



The fourth grade partner on the right read back what her partner on the left typed, proofing and helping to revise and edit text.

Attitudes of Students Working with Partners- Third Grade Students

The students were also asked to respond to questions designed to determine how they liked working with a partner, as well as to determine what was easy and hard about the assignment. The written responses of the students appeared to indicate that the majority of partner groups enjoyed working together to conduct research and create a HyperStudio stack. The most common positive comments were:

- Working together meant we could get different ideas from one another
- It was more fun working with someone than working alone.
- We could help each other find facts.
- We could share typing the information.
- We could get our work done faster than working alone.

When asked what was hard about working on the project, the students made these comments:

- It was hard reading our research cards and typing (keyboarding was an issue)
- Finding the information we needed (information was limited on the climate that butterflies need in order to live as well as types of caterpillars and how they were helpful and harmful to the environment)
- It was hard drawing and labeling diagrams

Discussion

Our study appears to indicate that students who work collaboratively with students to plan, research, produce and share multimedia presentations in partner groups use literacy skills in a number of ways. Across the grade levels we found numerous examples of students:

- Using interactive oral language to clarify new concepts and to connect new information with previous experience.
- Expressing excitement about being about to choose their own topic and project design.
- Interacting with others as "experts," not only in terms of teaching computer-related skills but also in using literacy skills such as reading, writing and creative design.
- Evaluating their own performance in such ways that were constructive in nature (i.e. some students suggested that they expand their research next time to include additional information about their project).
- Expressing very positive feelings about working with a partner because they felt they learned from their partner and were able to accomplish more than they would have accomplished working alone.

Implications

Using technology as tools for learning with students working in student learning teams (i.e. partner groups) appears to foster interactions that demonstrate a variety of literacy skills as well as cooperative learning (i.e. project planning, development and follow-through). The use of technology enabled sharing to take place easily (via computer monitors and projected images on the television screen). We saw children sharing their work informally with others (students were often attracted to another group's computer screen and showed interest in what they were doing) and in formal sharing sessions where the children were most positive and interested in what their classmates had produced. But most importantly, the student learning team environment enable students to share knowledge, technical expertise, creative design skills and develop new ideas. Student learning team environment also helped to foster positive relationships and enhanced self-esteem.

Because of the overwhelming success of older fifth and sixth grade buddies with younger first grade buddies in terms of literacy and technical skill building as well as the bonds of friendship that took place, we may want to expand our program to include all first grade classes next year. Students worked well in same-age partnerships as well. Careful consideration to setting up partner groups needs to be made, however, as demonstrated in those few cases where children found it difficult to share time on computer and "pull their own weight" to complete the project.

Reflection

The integration of technology into the curriculum has brought opportunities for learning that extends beyond the classroom. It has also brought opportunities for collaborative learning that was hard to foster in the traditional classroom. In today's technology-integrated classroom, no longer do students work all day at their individual desks, on tasks that are only theirs to complete. In our technology-based student learning team environment students learn to work together, share ideas, learn from one another. This type of educational environment appears to prepare students for the world of work, where students will work on project development teams to research information, plan and execute projects. Establishing a student learning team environment through the use of technology in our schools seems to also foster relationships among people, as well as respect and appreciation for the talents and ideas of others, with each student treated as a valued member of the community of learners.

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