

M E R I D I A N

Stories About Children and Teachers as They Create Multimedia Documents in a University Influenced Small City School and a Large Inner-city School

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Abstract

This paper presents a series of stories about students. Each story was written by a different researcher. Together, the stories represent what one might expect children to experience from a project-based teaching strategy. In general, the results indicate that children are very motivated by these projects. In some cases, they learn how to cooperatively create a product. They refine their technological competence through applied use of computer tools. These computer tools allow the children to be creative in the generation of their products.

If you would like to get a feel for the kind of products that children created as part of this project (though for anonymity reasons, not the specific ones described in this paper), then click [here](#).

"The key concepts from motivation are the six C's of Turner and Paris (1995)—choices, challenge, control, collaboration, constructive comprehension, and consequences."

Project-based Education and Motivation

We have found, along with others, that it is difficult to discuss project-based methods without discussing motivation (Blumenfeld, Soloway, Marx, Krajcik, 1991; Fan, 1996; Orey, Fan, Zhao, & Crenshaw, 1995). From our perspective, project-based methods of learning can be framed by a combination of the ideas from cognitive apprenticeships (Collins, Brown, & Newman, 1989) and motivation (Turner & Paris, 1995). The key concepts from cognitive apprenticeships are scaffolding, coaching, and modeling. While there is much more to cognitive apprenticeships and the parallel idea of legitimate peripheral participation (Lave & Wenger, 1991) such as the importance of context, these three concepts are well suited to our project-based methods.

The key concepts from motivation are the six C's of Turner and Paris (1995)—choices, challenge, control, collaboration, constructive comprehension, and consequences. A description of these perspectives will follow the individual researchers' stories.

Project-based Education

Project-based education has reemerged as a popular instructional approach. The roots of this approach date back to Dewey's (1938) notion of experiential education. Dewey demonstrated his method by involving a group of students in the first-hand construction of a building. In the process, the students could learn such diverse topics as geometry, construction, management, cooperation, mathematics, and language arts. Once the building had been built, however, the question became "what do you do next?" The current answer may be to build metaphorical buildings using computer technology. For our purposes, these buildings are the documents created by children using a variety of materials including photographs, video clips, graphics, charts, audio clips, and text. The buildings can be social studies reports, science reports, creative writing pieces, or any other document that a student chooses to construct.

The Foxfire approach has used this method for years (Wigginton, 1985). The building created in the Foxfire program was a book, written and edited by students, then sent to a

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was a book, written and edited by students, then sent to a publisher. There have been more than ten of these books published over the years with topics centered around the culture and heritage of the students in the classes—the Appalachian mountain communities in northern Georgia. A characteristic feature of this approach is that students write about what they know very well and have the additional motivation of knowing that their stories and articles will be read by many other people. This long-range goal remains a consideration throughout the duration of the project and results in students taking greater care in editing and finally completing their documents.

Katz and Chard (1995) suggest that the process learners go through as they participate in a project approach includes planning, research, and generation. With the strong emphasis on publishing, the learners will also focus on editing and formatting. In addition, because our approach includes the use of technology, strategies are needed to help learners with the technology, or at least to minimize its complexity. One of the outcomes of this approach is that a knowledge of multiple disciplines is required for project completion. While technology is a definite part, other disciplines such as science, social science, mathematics, art, and language arts are often necessary for success.

Besides the integrated curriculum, the project-based teaching method has other conflicts with traditional curriculum. Scott (1994) found that standard class periods, standard curricular goals, and traditional time requirements are impediments to a project-based approach. In a traditional forty-minute period, once students have planned the day's goals, set up equipment, and/or made arrangements to collect data, classroom time has been reduced to approximately twenty-five minutes. The project-based method is an immersive activity, which usually requires longer class periods.

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A parallel to the project-based approach is the problem-based method employed by the medical education field (Barrows & Tamblyn, 1980). The problem-based method emphasizes an application orientation to medical education that has been largely missing in recent years. Medical educators have complained that many doctors are beginning their internships with very little ability to apply the knowledge they have acquired in their formal schooling. In an effort to facilitate the application of school knowledge, medical schools have widely adopted the problem-based approach. In this approach, traditional knowledge is acquired in the context of problems, which are presented via cases. Diagnostic methods are employed to gain information about the patient, while a knowledge of medical procedures, anatomy, medicine, and other

apparent."

relevant knowledge is required in order to solve the problem. As with many problems, there is no one correct answer, but many possible solutions.

The Cognition and Technology Group at Vanderbilt (1990) have linked the problem-based approach to the literature on situated cognition. One of the most important results of this paradigm is that knowledge learned in one context often is not readily transferred to another context. For example, knowledge learned in school is often not transferred to real life situations. This seems to be what is happening in medical education. The knowledge that medical students gain in traditional classrooms is learned in a way that can be efficiently retrieved during tests, but not so easily accessed in an applied medical situation. One of the classic examples of situated cognition is one taken from Lave (1988). In this case, there was a man who was involved in a diet program. He was trying to cut his intake of food by three-fourths. One of the menu items was a two-thirds cup of cottage cheese. Instead of selecting the appropriate school-learned algorithm and performing the calculation, this man used a somewhat unorthodox approach. He measured a two-thirds cup of cottage cheese, emptied the contents of the measuring cup on the counter, shaped the substance into a circular (pie-shaped) figure, cut it into quarters, and removed a one-quarter section (Lave, 1988).

If school knowledge were learned in the context of solving "real" problems, then perhaps the application of this knowledge would be more readily apparent. This can be as true for learning to communicate using the latest technologies as it is for using concepts from mathematics. If knowledge is applied while it is being learned, then the learner may be organizing this knowledge in a way that it can be applied later. Cognitive apprenticeship is the instructional model that has emerged as a consequence of the data collected on situated cognition (Collins, Brown, & Newman, 1991).

One of the main strategies of this model is scaffolding. Essentially, the idea of scaffolding is to provide supports to the learner in the context of their learning in such a way as to allow them to perform beyond their abilities. During this performance, they are actually acquiring the knowledge. For our efforts, we developed a set of job-aids that could show the learner exactly how to put photographs, video clips, and audio clips into a word processing document. The learners needed to have a basic knowledge of typing and the word processor before beginning the project. Further knowledge could be gained while they engaged with the project. Therefore, most of their time was devoted to designing and developing their project, and not spent

on formal instruction in how to use technology. In fact, no formal instruction was provided except when specifically requested by the learner.

While cognitive apprenticeships inform some aspects of what we were doing with project-based education, further insight is provided via the paradigm of goal-based scenarios (Schank, 1990). This paradigm suggests, in part, that people store information in the form of stories (Schank, 1990), an important element for the present discussion in two ways. One, this memory structure is quite relevant to the project. That is, all of the knowledge components acquired through participation in the project are organized around the story or stories learned in the context of its design and development. The second aspect of this theory revolves around the methodology employed in this experiment. The qualitative data will be reported in the form of stories. The fundamental unit of analysis for this study is the story.

Goal-based scenarios are grounded in the idea that all learning occurs in the process of trying to meet a goal. For a toddler learning language, verbalizing a grammatically acceptable sentence is not a goal. Rather, their goal is to communicate with parents and siblings. As a consequence of this goal, the child learns to speak in coherent sentences. The former goal is one typically found in traditional education, while the latter is a goal that is internal to the learner. Another aspect of these two goals is that the latter is achieved in an efficient and effective way by all those who have this goal (with the exception of some mentally handicapped individuals), while the former is difficult to achieve and often is forgotten long after it has been achieved. The mission of goal-based scenarios is to prompt learners to internalize their goals and facilitate learning as the consequence. While some of these goals can be artificial (like creating a new animal based on existing animals), it is most important that the learner internalizes the goal. In our context, the learner's goal is to create a multimedia document that will be published on CD-ROM or on the World Wide Web. The learning that occurs as a consequence is technology literacy, planning, and all the content that is inherent in their particular project.

Schank (1990) suggests that curriculum ought to be changed to three primary emphases—communications, human relations, and reasoning. These are the three kinds of knowledge competencies that we should expect of people in our society. Again, the project-based approach that we are proposing here focuses on communicating the ideas in their project. The project itself is so large and complex that it constitutes a problem requiring complex reasoning. Finally, because the projects revolve around

groups, it requires learners to gain competence in human relations.

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Methods

The basic idea of this methodology is to make the reporting of anecdotes more explicit and to treat the anecdote as data. While this is an unusual approach, we feel that it captures the essence of what has been done by the children who have worked on projects over the past three years in three different middle schools. Most of the stories are about children from a middle school that is located in a small city in the southeast that is largely influenced by a university in that town. There are two stories that come from two different large inner city middle schools. Two of the authors of this paper wrote two of the stories and each of the other authors wrote one. The authors wrote their stories as masters or doctoral students, a teacher, or a professor.

Participants

The stories in this paper were written about children that were in either an advanced seventh grade language arts class, a special needs class for children with behavior/emotional disorders, or an at-risk language arts class from a university influenced small city (population 80,000). This school is interesting in that it has an inordinately large gifted population (20 percent) while it also has a large poor at-risk population (over 50 percent qualify for meal assistance).

In addition, two of the stories were about children in a regular language arts class at two inner-city schools. The population of each of these schools was nearly 100 percent African-American and more importantly, 100 percent poor.

Materials

At the two inner-city schools, four computers were set up in rooms adjacent to the regular classrooms for the purpose of giving 6th grade students experience in project-based education. Participating students were to create multimedia documents in ClarisWorks, choosing their own topics and incorporating text, graphics, sound and/or video to tell a story or create a report. The four computers were 486-25 PCs with 170 megabyte hard drives each equipped with sound card, CD-ROM drive and a

video capture board to capture stills and video. The resulting documents were to be published on a University of Georgia (UGA) web site.

At the small city school, we had several different configurations. In one setting we had two computers in the back of an advanced language arts classroom. In another, there were five computers in the back of the room (the following year). In another, there were six computers in a separate classroom (mini-lab). Finally, there were two computers in a separate classroom. The computers were mostly configured the same as above (with the addition of a couple of Macintosh computers in one setting). In the mini-lab, we also added HyperStudio in the last year of the project.

Besides the computer setups, we also created a set of "cheat sheets" to help students develop their multimedia documents. No large class instruction on how to use the computers was provided. The students learned as they went about creating their documents. A set of planning sheets were provided at the beginning of the project and participants were not permitted to begin their projects until their plans were clearly articulated as judged by their teacher or assistant.

Procedure

We asked all students to write on a sheet of paper their perceived knowledge and experience with computers and camcorders. Additionally, we asked them to specify with whom they might like to work. From this data, we were able to select groups of two and three students. We went back to the classes with these groupings and asked each group to work together to write a proposal describing their intended project, the only constraint being that it be "appropriate" for the classroom. From these proposals, we selected the first groups to participate. This selection was based somewhat on the teacher's perceived judgment of the students' ability. We hypothesized that the higher ability students were likely to be successful, and their documents could then be used as models for later groups. In order to be equitable, all students in each of the two classes participated at some point in the study.

On the first day of the marking period, we asked the participants to complete the pre-testing or post-testing (depending on whether they were starting or finishing). This took approximately one hour. We then spent the rest of the week helping the students to plan their projects. The last five weeks of the marking period were spent in completing the project. The

researchers tended to be more available towards the beginning of the project and less towards the end. We averaged about one day per week. Our visits served two purposes: to assist the students and to make observations of them as they completed their projects.

Analysis

The qualitative data was analyzed in terms of Schank's idea of stories. Because he believes that the story is the fundamental unit of memory that is of most interest, we decided that the story would be our unit of analysis in this study. We found that early on, when asked about the project by friends and colleagues, we tended to tell stories about the participants in an attempt to characterize the learning experiences of this approach. We have chosen to make this the formalism for our analysis. Therefore, we will include a set of stories about the individual groups to demonstrate what went on during this experiment and provide conclusions based on these stories at the end.

The Stories

There are eight authors and ten stories that constitute the data for this study. Two of the current authors wrote two of the stories each (Orey and Fan). The remaining six stories were told by the other six authors. These authors are or were either doctoral students who were assigned to work at the middle school (Hogle), doctoral students who volunteered to work at the middle school (Thuma and Tzeng), or masters students who volunteered to work at the middle school (Robertshaw and Scott). In addition, one story was written by the seventh grade advanced language arts teacher from the small city school (Crenshaw). You can link to each of the stories below.

[Story One: The Beatles Project](#) - This story describes how five children working very well together, created a large scale and successful multimedia document.

[Story Two: The Movies Project](#) - This story describes how some groups did not work so well together.

[Story Three: The Video Games Project](#) - This story details how a not very popular student worked in a group.

[Story Four: The Dark Boyfriend](#) - This story describes a very interesting group who were able to restructure their entire project as a result of their misunderstanding of the technology.

Story Five: Mrs. Iyoshi - This story describes a much less open-ended approach to projects.

Story Six: The Colors Project - This story describes how technology problems interfere in the process and how a project can be more organic than planned.

Story Seven: Travius - This story describes the process of a project for an at-risk student.

Story Eight: Olympics - This story describes a partnership that did not work very well.

Story Nine: The Washington Story - This story describes a successful implementation of our project-based approach in an inner-city school.

Story Ten: The Carver Story - This story describes a failure in our implementation.

"The balance between teacher and student control is a very important one in our projects. In a traditional teaching approach, teacher control predominates. With the project-based approach, student control predominates."

Discussion **The Six C's and Our Approach**

Because we have conducted a series of studies using the same project-based approach, we will present observational data from the study in the context of this literature review. In this way, we can fully describe the treatment and review the literature at the same time. Again, we are using Turner and Paris's six C's of motivation to describe the project.

Choice. Choices seem to be a focus of our efforts. First, we allow the children to have complete choice in a topic for their multimedia project. We try to help support this decision by suggesting that their choice might fall into the category of research, opinion or narrative. These three categories can loosely define the diverse topics chosen by the children that participate in the projects. In addition to the choice of topic, we allow the children to choose the development tool they use for their project. The choice was between HyperStudio (which in the Windows version with our current computer setup allowed the students to use sounds, photos, graphics and links) or ClarisWorks (which would allow the students to include sounds, video, photos, and graphics). As a prelude to the C for consequences, we informed the children that we would convert ClarisWorks documents to HyperText Markup Language (HTML) and put their documents on the World Wide Web. The HyperStudio projects would be placed on a CD-ROM and

stored forever in the media center. As a consequence of this choice, we also told the students that none of the material in a ClarisWorks document could be copyrighted material, whereas, the HyperStudio documents could include copyrighted material that was owned by the school (since it would not be seen outside of the school).

Another choice that the students could make was which planning method to use. We gave them a choice between creating a web of ideas, a cluster of main topic/supporting ideas/details, or a traditional outline. However, we required that they complete one of these. We found in previous research that structuring the planning process was necessary because of the students' lack of planning knowledge and because it facilitated later collaboration. We also required that they define goals, audience and conclusions as part of the planning process. In addition to these choices, there were myriad choices throughout the project with regard to layout, color choice, image choice, font choice, etc. Choice was a key attribute to the project-based approach that we followed.

Challenge. The second C is challenge. Like the story "The Three Bears", the key to challenge is to have the level of challenge "be just right." Because of all the choice that was available to the children, challenge was a key issue in topic selection and planning. If the topic were too easy, the children would not be able to remain interested in the topic for six weeks. Guidance was provided in helping the children choose a topic and project that would provide just the right amount of challenge to the children. We tried to minimize the challenge associated with the technology by having a set of "Cheat Sheets" available to help children "capture" photographs, video and audio (Fan, 1996). Another aspect of challenge is the fact that we give the children six weeks to work on their projects. While some people in the school expressed an interest in these projects, the fact that they only gave their children a week or two to work on the project really minimized the challenge in the project.

Control. The third C is control. This seems to overlap with "choice." Because the students had control over topic selection and project implementation, they also had control over these parts of the project. Because we "required" the students to plan their projects, this part of the project always seems to be the least motivating phase. Perhaps this result is because the students do not have control over this choice. However, in working with seventh graders in this middle school for two years, we have found that without the planning phase projects are not as good and cooperation seems to be hindered. The

balance between teacher and student control is a very important one in our projects. In a traditional teaching approach, teacher control predominates. With the project-based approach, student control predominates. We have used teacher control to eliminate "inappropriate" topics, to require planning, and to maintain appropriate behavior in the classroom (generally, behaviors seem to be louder, though these behaviors are usually the result of enthusiasm toward the project).

"A second aspect of collaboration is that complementary skills could result in something that was greater than the sum of its parts."

Collaboration. The fourth C is collaboration. We have followed a collaboration model from the outset of our partnership with the local middle school beginning two years ago. In our first year of this partnership, we varied the group size from two to five. Based on our informal observations, we found that the optimal group size was two. With two people, we were able to make sure that each child got to spend time on the computer. Further, we found that partners and groups worked out very well. They could pool knowledge and experience. A key aspect of these projects has been that we only provided a minimal amount of computer instruction. These projects have taken place largely in language arts classes and we did not want to take up language arts instructional time with technology skills learning. A consequence of the collaboration between learners was that the partners could usually figure out how to do things themselves.

A second aspect of collaboration is that complementary skills could result in something that was greater than the sum of its parts. If, for example, one partner had good language skills and the other had good visual skills, the resultant product was enhanced because of the integrated perspective. Also, as a consequence, the student with better language skills would model good language usage for the student with poorer language skills.

Constructive Comprehension. The fifth C is constructive comprehension. It is not enough to just work in collaborative groups, but the groups need to engage in the construction of meaning. That construction can be in the form of crafting a story (for example, [Big Heads](#)) or it may be in the form of making meaning of a particular content area (for example, [Prejudice in the School](#) or [The Most Popular Shoe in School](#)). In each case, the task was open-ended. It required the students to not only find answers, but also to formulate the questions.

In the case of stories, the children seemed to feel fairly at ease with the idea of crafting the story. However, each of them then struggled with the idea of integrating other forms of media into their documents. In many cases, the media was an after thought (now that we have the story written, how can we use media). In one case, the intent was to create a video story. Only later did they realize that video was too costly in terms of disk space and that they needed to rethink how a multimedia document might be done. In the end, they chose to include their script as the text of the document, use still images from the dramatic enactment, and record the dialogue directly into sound files (this was The Dark Boyfriend project).

Another important part of the learning process of constructing their own multimedia products was that each child needed to struggle with copyright laws. In one instance, a group was engaged in a document about the Galapagos Islands. They were able to find much information about the islands from a multimedia CD-ROM owned by the school. From this CD-ROM they were able to find photographs to weave into their document. It was our understanding that as long as we owned a legitimate copy of the CD-ROM and we only used the data within the school for educational purposes that this was within the "Fair Use" guidelines of the copyright law. However, soon after learning how to copy the photographs and put them into their document, these children then copied text and put it into their document. It was at this point that these students needed to examine the copyright law and plagiarism more closely.

Consequences. The final C is consequences. Perhaps the biggest consequence for participation in this project was that their final products were either going to be placed on a CD-ROM and kept in the Media Center for perpetuity and/or placed on the World Wide Web (assuming that they had not used any copyrighted material). This fact was used as a constant reminder to the children as they worked on their projects. This also aided them in keeping an "audience" in mind throughout the development process. It may be worth noting that when we started these projects three years ago, we told the students that we would not only press a CD-ROM, but we would press multiple copies and try to sell them much like the Foxfire series of books (Wigginton, 1985). Throughout the projects several students expressed their concern/interest in any profit from selling their products. Unfortunately, the projects used a great deal of copyrighted material and we never attempted to market a CD-ROM and in fact, now we have a web server that demonstrates the products without cost or profit.

Conclusions

There are several things that we can conclude about projects implemented in middle schools using off-the-shelf software for multimedia document creation. They are:

- Overall, students found these projects to be quite motivating. This was partially due to the fact that new technology always has that kind of impact on children. However, it was so common an outcome that we believe that it is a natural outcome of these projects. Orey, Hardy, Peng, Tzeng, Robertshaw, Hamilton, Thuma, Scott, Fan, and Crenshaw (1997) used Turner and Paris's six C's of motivation to explain this phenomena and it seems to fit quite well.
- Having a teacher or assistant that buys into the idea of project-based methods is a key to success. In one of the inner-city schools, there was no advocate and it failed.
- Children gain technological competence. These students were clearly engaged in the use of these tools and they enjoyed using them. There was no large learning curve. The use of technology can be easily integrated in to regular curriculum areas without a huge amount of time spent on teaching the technology.
- More structured activities are less motivating. The reason for this is easily explained through Turner and Paris's (1995) six C's. Without choice and control, you have really cut into the six C's. Structured activities remove both choice and control.
- Projects are effective with at-risk students and students identified as having behavioral and emotional problems. In fact, these stories suggest that the projects allowed these students to get more involved in their own learning. This increased motivation and that motivation spilled over into other academic areas.
- Because we generally used groups of students in these projects, the projects provided the opportunity for students to engage in collaboration. At times this collaboration led to conflicts, but that is almost always true in collaboration. Therefore, the students had the opportunity to learn how to be more collaborative. The risk to not being collaborative is a failed project and students did not want this to happen.
- School became so engaging and interesting that students came to school on their days off, before school started and after school. This is a problem that I wish everyone would introduce into the schools. The problem of

children struggling to find extra time to get into school.

Summary and Comments

The purpose of this paper has been to describe the projects that we have conducted over the past three years at a local middle school. Besides benefiting the students in that middle school, these projects have resulted in two doctoral dissertations. In addition, the authors of the current paper include doctoral students who wanted to see children learn from technology in the school to begin to frame research ideas, to get research experience, or just to work with some students who were thoroughly engrossed in a learning experience. Similarly, several of the current authors are masters students who wanted to see technology in the schools while they were taking classes that talked about how technology might be used in the schools. They came away from the experience more knowledgeable and also inspired about how the use of technology and project-based methods can engender a high level of motivation in children.

The partnership started between one of the current authors and a local middle school. That partnership has enriched the lives of the children in the school, the teachers in the school, the students at the university and the professor who formed this partnership. We believe that other faculty at other universities, if they were so inclined, could do the same thing. The result would be that the colleges of education around the country would be more influential on the shaping of schools and schools would be more influential in shaping colleges of education as well as the field of education.

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Stories About Children and Teachers

Story One: The Beatles Project

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This project was created by a group of five seventh graders, three boys (John, Adam, and David) and two girls (Sarah and Beth). As they mentioned at the beginning of their documents, "we hope that you enjoy our multimedia project as much as we have enjoyed making it." They enjoyed creating this project, and they expended intense effort in order to complete a 26 page document that included many photographs and sound files.

The most significant component in the Beatles project was the well-organized structure. They started with an explanation of why they chose the topic, who they were, the basic information about each member of the Beatles, how the Beatles were formed, the great success of the Beatles' appearance on the Ed Sullivan Show, an introduction to the Beatles' most famous albums and hits, the reason for their break up, and how the three living Beatles members are doing now. Lastly, they interviewed their classmates in order to gain a better understanding of what seventh-graders thought about the Beatles. Readers can get a very clear picture of the Beatles after reading this project. Of special interest was the fact that they properly inserted various sound files to make the project more attractive. This project has successfully established an exemplar model for a biographical report in the multimedia format.

With a group of five, the management skills became the most important issue. They assigned roles to group members after conferring during their initial planning meeting. Since the boys dominated the discussion during this meeting and seemed to know more, the boys assigned themselves the most vital roles, such as: manager, designer, camcorder operator, and typist. The two girls were assigned the roles of writer and evaluator. John, the manager, wrote the letter to get the copyright

permission from the publisher and was the person who took charge of all the audio recording. The other two boys, Adam and David, operated the camcorder to shoot the video, connected the camcorder to the computer, and used the "VidCap" program to put these photos in the computer. After David finished writing one paragraph, he asked who was the typist. (Adam was the typist.) When the researcher suggested letting the girls do the typing task, (thereby, giving the girls time on the computer), all the boys responded, "They type very slow." However, the boys finally realized that they did not split the tasks evenly enough, so they started to give the girls tasks, such as typing and writing.

The students took pride in what they were doing. For example, the researcher told them that they needed to write a letter to the publisher to obtain permission to use their materials in the project. The very next morning, John stood up immediately and showed me the letter he had written at home, printed on a laser printer. It appeared very neat and professional. However, David had accidentally signed his name in the wrong place on the letter. This made the rest of the team members angry, especially John, because he wanted this letter to be perfect. In addition, when they tried to record some audio for the project and their classmates were talking, they yelled at them, "Be quiet! We have work to do here."

As the project proceeded, the group became "stuck" and seemed unable to determine the next step. They looked forward, rather than back, to see how the plan was proceeding. After the researcher suggested that they read what they had planned and written, the group created a list of outlines that they wanted to add to the project. During group discussions, they demonstrated again that they did not understand the planning process, as they seemed to become enmeshed in details and continually lost sight of the big picture. Therefore, proper advice from the teacher would be to remind them from time to time to keep to their plan.

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Stories About Children and Teachers

Story Two: The Movies Project

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The Movies project was created by a group of three students, one boy, Harry, and two girls, Katie and Linda. This topic could be very interesting to write about, but they seemed to fail to make the most of it. Compared to the Beatles project, the Movies project was loosely organized and much less comprehensive. Three boys in the Beatles project dedicated themselves deeply to the project; they assigned the tasks evenly between themselves and cooperated with each other in a harmonious fashion. Somewhere in the middle of the project, they realized that the two girls were not involved in the project to the same extent as the boys, so they started to delegate some tasks to them. Basically, every team member of the Beatles project was involved in their project and did their best to contribute their own efforts to accomplish their goals. One might argue that as the Movie team consisted of only three students rather than five, we should not expect them to create a project of a quality equal to that of the Beatles project. However, we believe that the poorer quality of the Movie project was caused by the constant complaints and quarrels between Harry and Katie.

At the very beginning of the project, Linda was very enthusiastic about the planning activities. She volunteered to document all their group's decisions. She even wrote an outline that listed all the contents of their project. This document became one important guideline for them throughout the project. Katie, who loves to sing, spent a lot of time singing with the microphone and paying no attention to their project. Katie also seemed more curious about what the other group was doing. Harry complained to us about Katie's behaviors which led to more conflicts between the two of them.

Harry was very interested in operating the camcorder and

computer. He learned very quickly and was able to capture the photographs and video by following the procedures on the job-aids that were provided to him. He always asked for more advanced skills after he had mastered the old ones.

Linda and Katie were quite fond of using a drawing program called PaintBrush, both of them spending a lot of time exploring its various functions. Harry could not do anything while they were playing with PaintBrush, so he just sat far away from the two girls. He thought Linda and Katie were doing something that was irrelevant to the project. Actually, the girls wound up using PaintBrush to create a colorful pie chart for their survey results later on. On the other hand, Katie complained that Harry was not cooperating on their project by not participating in the group activities. The misunderstandings kept growing and the quarrels between Harry and Katie never ended.

Harry did not like the idea of doing a survey on favorite movies; he thought that was a stupid idea, completely unnecessary. He also complained that his suggestions were not accepted by the two girls. He told us that he preferred to work alone.

The lesson to be learned from this project is that group dynamics can destroy any learning benefits. There seems to be several factors at play here. First, Harry seemed to want to proceed in a linear fashion, while the girls seemed to want to use a more organic approach. Either they needed to accommodate each other, or these two styles should not be mixed together.

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Stories About Children and Teachers

Story Three: The Video Games Project

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We will call the three students in this project James, Keisha, and Shanika. James was perhaps the most intelligent boy in the school. However, he was also not well liked by the other students. When we were forming groups, we asked people to list other people with whom they might like to work. Only one person listed James—that student being Shanika. We believe that she chose to do this because she realized that, given James' inclusion in a group, the project would be very good. She further knew that no one else would be vying for his participation. This strategy led one researcher to suggest that perhaps Shanika ought to be considered the most intelligent person in the school.

Their initial work with this project tended to focus on getting photographs of themselves and an audio clip introducing themselves into the document (this kind of experimentation with their images and voice seems to be one of the first things that students do with this technology). After this initial "play/learn" period, they began to immerse themselves in the task. James came up with a classification scheme that included High, Medium, Low and No Violence games. The group then got together and identified a variety of games that were popular for them and their peers. They classified these particular games into the categories that James had identified. Finally, after a short verbal explanation by a professor of instructional technology, Keisha went home and connected her game player through the VCR to the TV. As she played the games, she would press the record button on the VCR and came to school the next day with footage of actual interactions that they had identified in the games. These videos were digitized and integrated into their report as examples of the different categories.

Next, they decided to construct a one-item questionnaire on

whether their fellow students thought violence in video games was okay or not. They printed their questionnaire, copied it, distributed it to the entire seventh grade in their school, collected the data, and analyzed it. To analyze it, they entered the data into a spreadsheet program. After calculating totals and percentages, they selected a graphical representation that would best communicate the data (they had a pie chart). This chart and the data were integrated into the document (including the instrument as it appeared to the subjects in the study). Finally, they conducted interviews with people who had responded differently to the questionnaire. These interviews were integrated into the document with photographs of the individual respondents and audio clips of their comments. Within the context of this six-week project, these students applied social science methods and mathematical visualizations to their language arts activity. They learned how to use technology to express themselves. They worked in the mornings before school, in the afternoons after school, and at home to try and complete their project within the time frame provided to them. Finally, their work was published on a CD-ROM.

As you may expect, all was not perfect within this group. There was some tough negotiation on roles within the project. The girls wound up collecting the data, conducting the interviews, and videotaping. James seemed to do most of the writing and classifying of games. He tried to dominate the project, but Keisha and Shanika were able to prevent James from achieving this goal. This caused several conflicts throughout their project.

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Stories About Children and Teachers

Story Four: The Dark Boyfriend

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The last project narrated here was produced by a group of three girls: Heather, Keiko, and Stephanie. All three girls were "best friends" and requested to be grouped together. They agreed very quickly on a creative writing piece rather than an informational or biographical document, generally the preferred *genres* in this project. (It was later noted that while students were working in the pen and paper writing workshop group, they wrote creative pieces almost exclusively, yet when working in the computer groups, they preferred nonfiction.) The three girls wrote a plot synopsis of their story and submitted that as their project proposal. The writing piece involved two teenage girls who were close friends and attended the public high school. One of the girls met a teenage boy and was immediately attracted to him, primarily because he was "pleasantly unique." As the story progresses, it is revealed that the "boyfriend" was, in fact, a being from another planet and planned to harm the girls. Fortunately, the plucky young women were able to outwit the "dark boyfriend."

An issue immediately arose when the school principal read the proposed story line, as the original plot called for the "dark boyfriend" to be possessed by the devil. The principal thought that this might be offensive to some (parents) and instructed the group to revise this one aspect of the story. Heather, Keiko, and Stephanie received the news very amiably, quickly conferred, and asked could the boyfriend be an alien instead?

The "Boyfriend" group was characterized by a spirit of camaraderie, cooperation, and determination. The girls chose to act out a series of scenes from the story, taking turns videotaping each other. They found suitable locations both inside the school building and outside on the school grounds to dramatize their piece. Heather appeared to be least satisfied with her role; she played the only male part—that of the

boyfriend—and made some initial remarks about her costume being unflattering. However, she shrugged off those sentiments and put intense effort into all aspects of the production.

After the text was typed into the computer, still frames (photographs) from the group's videotaping were captured and inserted into the document. It was then decided that all lines of dialogue would be read by the actor/group member, and audio files would be created for inclusion in the story. The group recorded in the afternoons after school. They somehow lost all of their first recordings and had to remain a second day after school to redo these. When the recording session was over, some time remained before their parents would pick them up, so the three girls experimented with their voices over the microphone. They took turns singing, both solo and in trio, harmonizing, and giggling.

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Stories About Children and Teachers

Story Five: Mrs. Iyoshi

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My first contact at the middle school was Mrs. Iyoshi, facilitator for the Social Studies program. She was enthused by having another graduate student help her and other teachers with multimedia projects. For the first three weeks, I assisted several students who participate in the gifted program. These students come to Mrs. Iyoshi's class for an accelerated curriculum. Mrs. Iyoshi has incorporated multimedia into this curriculum.

Mrs. Iyoshi told other teachers that I was available to assist in multimedia production and curriculum integration, and I soon began working with Mrs. Johnson-Smith. Mrs. Johnson-Smith wanted her students to create projects on the topic of vertebrates. Her organization of the entire project, not just the multimedia development, played a large role in the success of these students' work.

She first divided the students into groups of three and four, then assigned each group a category of vertebrates (mammals, reptiles, birds, amphibians, fish, animal adaptations). She then gave the students folders with the criteria for the projects, as well as some references from which the students could begin their research. Each group was responsible for teaching their topic, incorporating several activities. One of the activities was the multimedia demonstration.

As the students created their projects, there was concern over colors, fonts and some other graphical issues. I had given them storyboards to use as a guide during development, but had not set true standards about graphics.

For the second project involving topics on Russia, I gave another group of students storyboards and persuaded them to deal with fonts and colors toward the end. Students worked

well at incorporating video and audio files to their projects, as well as including basic information about their topic.

On the presentation days, I realized a different perspective of these multimedia projects for the middle school students. After being 'designers' and 'developers,' they became teachers, who referred to, and took pride in, their creations and new knowledge. Future students can refer to their work and/or get ideas from them, as they create their own projects. My two major concerns are (1) finding a way for students to keep their work, so possibly to have a portfolio of sort to show at the end of their middle school years, and (2) not setting too many standards or providing cookie-cutter templates into which students just drop information. Storyboards should merely provide guidance and serve as an organizational tool, not a template. With enough guidance and organization, I think it is possible.

My work with middle school teachers and students was a gratifying, learning experience.

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Stories About Children and Teachers

Story Six: The Colors Project

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Being a new doctoral student in Instructional Technology and trained strictly in the sciences, I was inundated with new terminology and ideas about education. Project-based learning was one that had a particular appeal to me. I was fortunate to be able to participate on this project because it gave me experience and a unique perspective about hands on learning. This perspective was formulated in large part thanks to two young girls with whom I worked. They taught me that hands on learning projects have a unique ability to bring out creativity and interest in learning.

From the start these two girls were a cause for concern. During the first couple of sessions when the groups were brain-storming and beginning to plan these two had no interest, focus, or ideas. The others were quick to decide, excited about their ideas, and jumped on the planning. These girls were both stuck before they even started. Both were intelligent—a fact that the teacher brought up when I voiced my concerns. One of the two girls reads at a level higher than the rest of the class and reads avidly. The other girl was shy and quiet. I would characterize both girls as introverted.

Together they lacked imagination, but they eventually had begun decide to do a creative essay. I was cautioned by the project leader that previous creative writing projects lacked the integration of multimedia presentation that HyperStudio enables and were marked down for it in their assessment. Fearing this might be the end result of their slow start and lack of steam, I challenged them to come up with a way to make it creative in an audiovisual way. I had them suggest ways to make it different. They suggested pictures, sound, text, animations, videos, even special effects.

Generally I solved technical problems for the teams and this

took a great majority of my time. This left very little time for me to focus on the two girls. I wasn't able to spend time with them while fixing technical problems because they rarely had them. This wasn't because they had better equipment. They simply didn't do very much in the beginning. They made a few cards, wrote some text, and played with the colors of both.

After the break for the holidays, I was able to examine what they had done. They had decided to do some creative writing and poetry about colors. I asked what they thought of their work so far. They said it was boring to which I suggested making it "un-boring." I asked them what the colors sounded like to them. I suggested they find music or create sounds that reflect how the colors made them feel. They also wanted to know if they could add pictures of objects that incorporated the colors they had written about.

They initially started adding pictures of the bean bag animals popular among the girls of this middle school. Between the two of them they had about 30 different animals of multiple colors. They used the video camera to frame and add the graphic to the card. This required some team work as the camera had to be held by one member and the capture button had to be pressed on the computer screen by the other member. It took some trial and error before they were able to coordinate their actions to achieve success, but these two girls that had barely communicated with each other initially were now working well as a team.

Eventually they added sounds from their favorite music. The music was mostly pop and rock, but it did include some instrumentals and classical. They even worked out navigating from the menu to each individual page and back again. They used the colors consistently with the color they were writing about and provided contrasting colors to highlight headings. They asked others how to do things while I was busy with technical problems. Eventually their project took shape.

These two girls that had started with very little excitement were still a little reserved, but they were greatly improved over day one. The computer was not a friendly tool for them though. It took both awhile to get started clicking and creating. To their credit, they learned how to do things generally on their own. They experimented and revised what they didn't like. They even began to excel a little over the others. Certainly they had a better graphical feel for their work and more creativity.

Unfortunately a computer error corrupted their file during an

attempt to save their stack and they lost everything. I thought it was all over for them. Both seemed completely heartbroken. Here they had come all the way from disinterested to interested and excited, only to have a computer glitch destroy their work. With only a week left and only three sessions left it seemed impossible that they would finish. They surprised me though. The next time I came back both wanted to see if they could redo their project. With a little bit of assistance and extra time on their part, they rebuilt their cards.

The lesson they both taught me is that when students find an idea they are interested in, it becomes a rewarding activity in which to participate. They turned around their slow start and brushed adversity off to complete that which only 7 weeks earlier they had no interest in what-so-ever. They each placed a piece of themselves into their work and they felt rewarded by their abilities. The project activated their interests, motivated them to learn, and encouraged self expression.

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Stories About Children and Teachers

Story Seven: Travius

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I worked with a class of students with behavioral disorders and a class of academically gifted students. It was the students with behavioral disorders that I enjoyed working with the most, because it was those students that I felt really needed me in the classroom for something beyond technical help. It was out of that group that one student in particular caught my eye, Travius.

Travius is the kind of student who would just sit in the back of the room and not say anything, and not even learn anything, unless you noticed him and got him involved. Travius was the one who didn't ask for a lot of help from me and it was Travius from whom I expected the least. It's amazing what happens with those from whom you expect the least. By the end of the project, Travius produced a viable multimedia piece of work and one that had quite a lot of information. What makes Travius come to my mind is not the work that I did with him, but the work that I saw him do on the computer. Travius really got into what the project was all about. To watch him discover the idea of putting sound into his project, or watching him put a picture just so, or even typing information showed me the real motivational power in the use of computers for some students.

What did I learn from participating in this project? Good question. I learned about the use of Hyperstudio and its various components. I learned about planning with students in the middle school and how crucial it is to do that planning. On the other hand, I also learned how crucial it is that the students get a chance to explore a new medium before they can successfully plan. A lot of the students didn't know the full capabilities of Hyperstudio and ClarisWorks when they were in their planning period. This seemed to be an inhibitor to some of the groups. The most asked question I got was "Can I do

this, or can I do that?" I also saw, with the students with behavioral disorders, how computers can help self-esteem and motivation. With Travius, who never vocalized what he had done, you could tell how proud he was of himself. You could see it in how he reacted to his project when you asked to look at it.

Overall I found this project to be a lot of fun. It was exciting to see the kids get into working on the computer and also to think about further possibilities.

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Stories About Children and Teachers

Story Eight: Olympics

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Nick and Alex were in the advanced writing class. Though they came to the computer laboratory in the last period of a school day, they were always energetic and appeared eager (at least they both looked so for the first five minutes) to work on their project. Nick and Alex share several things in common. They are of the same height; they both have curly hair; and both like to talk.

Nick and Alex quickly decided to create a multimedia project about the Centennial Olympic Games. After weighing the resources and the amount of time they had, they then decided to focus their discussion on Olympic souvenirs. (Nick did not want to miss the opportunity to show some of his more than 250 Olympic pins to others.)

On a typical lab day, Nick would start up the application and get everything ready for work. While Nick proceeded to work on their project, Alex would provide feedback and sometimes serve as an assistant. After working on their project for a short time, Alex would leave his seat to begin his conversations here and there or to play with neighboring groups. Undoubtedly, everybody in the lab loved to talk to Alex.

Without much contribution from Alex, Nick still managed to produce a good multimedia project. As a matter of fact, among twelve students in this section of the experiment, Nick was the first one who learned how to record sound, capture pictures, and create buttons in HyperStudio. It was obvious that as time progressed, Nick seemed to enjoy working on the project more and more. He would sing while working and would play the Olympic song he recorded on the computer again and again to express his sense of achievement.

My job as a research assistant in the study was to help students

organize their ideas, provide technical support for the operation of computers, and observe students' learning processes. In retrospect, I feel that I was more of an observer than a facilitator though I did answer two or three spelling questions and offer some suggestions. These students in the advanced writing class were bright enough to work on their own once they learned the basics.

There were, however, behavioral and motivational issues that are noteworthy. As a whole, these students were full of curiosity and tended to have short attention spans. Consequently, dialogue between group members often became an ongoing conversation among other groups. In addition, one group in this section of the study was unmotivated to work hard on their project owing to a lack of good partner relationships. Oftentimes, the girl in the group would lie down on a table after finishing her part of the work and the boy would read his novel or even throw pencils and clay to other students after he completed his part. I feel that to a certain extent the attitudes and behaviors demonstrated by these two partners did affect the rest of the students.

Despite the problems stated earlier, it is fair to conclude that the majority of students in this section of the study were motivated and worked hard on their projects. As for me, I am really glad to be a member of this research team for I have not only learned how to use HyperStudio but also had my first experience of working with public school students.

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Stories About Children and Teachers

Story Nine: The Washington Story

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At Washington, up to 80 students had access to the four computers. These 80 students were team-taught by three teachers: Ms. Watson, Ms. Jones, and Mr. Black. When the computers were first placed in Washington, we requested that 8 students from each homeroom (a total of 24) would be involved in using the computers to produce multimedia documents. This was to allow teams of two students per computer to create documents during each grading period. The time allowed for each group of 24 to create their projects was not specified, but the time was initially assumed to be one grading period.

The four computers at Washington were set up in a narrow resource room located between the classrooms of Ms. Watson and Mr. Black. This resource area was fairly secure to prevent theft and misuse of the equipment, and was accessible only through a locked door or through the two adjacent classrooms. Locating the computers in this resource room allowed relatively easy access to the equipment by the students and teachers.

The structure of 24 students per marking period was not adopted by the teachers at Washington, nor did the teachers embrace the idea of allowing student groups to create their own multimedia projects. The teachers instead incorporated the computers into their established teaching styles and used the computers to enhance those methods. For example, before having access to the computers, students made travel brochures using cut and paste, paper and pencil methods. With the computers available, students used a CD-based encyclopedia to locate information (text, maps, and other graphics) about the areas chosen for their brochures. Students selected by the teachers then used the software program

ClarisWorks to assemble text and clipart used in the brochures. Details such as the country's name, types of businesses, local language, common animals, etc., that were contained in the brochures were highly structured and outlined by the teacher. Students were allowed to design their own documents, but the design was within the constraints mandated by the teacher.

In another example, the students wrote poems about being African American. Students who wrote the "best" poems were assigned to transcribe their poems into ClarisWorks after the poem was written out longhand. Students then used the video camera to take individual pictures of themselves, and placed the video pictures in their ClarisWorks documents with their poems. The final documents were printed and taped up along the 6th grade hallway for display.

Students at Washington were not getting much experience in self-directed project-based education, but they were gaining computer skills, and most of the students (as well as the teachers) were gaining exposure to the possibilities of computers in the classroom. Whenever there was a break in the coursework or when students finished assignments before the rest of their class, they were allowed to use the computers, often to transcribe what they had just finished in class into a text or graphics file. Some students also learned how to display math problems using the spreadsheet and graphing functions of the ClarisWorks software.

The students at Washington were initially interested in games on the computers such as the solitaire card games, but as the school year progressed, they seemed less inclined to play the card games in their free time and instead explored ClarisWorks or the CD-based encyclopedia. For example, one student opened up ClarisWorks and discovered the "assistants" or templates for making commonly used documents. On her own, she decided to make an invitation for her mother's birthday party from one of the ClarisWorks templates, and proceeded to change the clipart, the fonts, and the wording on the template to make a custom invitation. Three other students in the room saw what she was doing and they made their own versions of invitations, showing each other how to find the clipart and how to change the template so that it could be customized, and then printed in the proper orientation.

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Stories About Children and Teachers

Story Ten: The Carver Story

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At Carver, 24 participants were chosen from about 50 students taught by two team teachers, Ms. Mabry and Ms. Evers.

In the fall, a group of 16 students were chosen to work in groups of two children per computer. 8 students were assigned to the morning group, and another 8 students were assigned to an afternoon group. In the late winter, another 16 were chosen to work in similar groups, but the students refused to work cooperatively in groups. Since the students only worked on the multimedia projects when someone from UGA was with them, the winter group was soon reduced to 8 students in order to allow equal access to the computers. 4 students were to work in the morning and 4 in the afternoon.

Both fall and winter groups were told that they could choose any topic they wished to write about. The fall group chose the following topics: "the ultimate video game" (5 boys were in this group), "dance," "black on black violence" (three groups chose this topic), and "peer group pressure." The winter group chose topics such as "famous people of the 90s" (musicians), "famous songs of the 90s," "famous singers of the 90s," "dance," "shoes," "dealing with violence," and "baseball cards."

At Carver, the computers were originally set up outside the team-taught classrooms, in an open area which provided no security for the equipment when the classrooms were unattended. A more secure resource room adjacent to the classrooms and the open area was discussed as an alternative set up location, but use of the resource room would have required some modifications which never happened.

Around November and December, the classrooms were moved down the hall to allow re-tiling of the floors. The computers remained where they had been originally set up. When the

classrooms returned to normal, the computers were moved to the media center. Three of the computers were set up in a room off the media center, in an area not directly visible to the media specialist, Ms. Goodwin. The fourth computer was set up in the main room of the media center, directly in the view of the media specialist.

It was hoped that placing the computers in an area of higher security and somewhat increased supervision would increase the time spent on the projects. However, the time spent by the 6th grade groups on their multimedia projects was not affected by the move to the media center. The computers were used mostly by students not associated with the project after being moved to the media center, since Ms. Goodwin encouraged students from different classes to explore CDs such as "Grandma and Me" and "Where in the World is Carmen Sandiego?" In addition, the computer that was within Ms. Goodwin's view was connected to the Internet via modem in April. This computer came to be used almost constantly while the media center was open, either for Internet exploration or for reading CDs.

No one in the fall or winter groups at Carver completed their projects due to lack of time on the computers, sabotage of files, and abused equipment. The fall groups working on dance and video games came close to completing their projects, but the ClarisWorks files containing their work were all emptied of the contents and re-saved as empty files. The manner in which these files were deleted was suspicious and almost certainly sabotage.

The fall dance group worked exceptionally hard to gather information and videotape examples of dances for their project, but their documents were deleted prior to completion. The fall video game group also showed considerable effort, but it became clear after a few weeks of work that the effort was not distributed evenly among the group members. Several drawings of villains and heroes were hand-drawn for the game, but little other work was evident as far as structure, accompanying text, or other organization.

In an effort to avoid some of the organizational problems found in the fall group, the winter group members were taken aside on the first days of work on the project and shown some basics in idea mapping and organization. However, this seemed to lead to misunderstandings about the type of product the students were expected to produce. Even after seeing examples of documents made by students at other schools, the winter group seemed unable to visualize how to put their

projects together.

The students in the winter group focused on two ideas: (1) reconstructing the organizational "idea map" from a paper representation to a computer version (they mistakenly believed the organizational tool was actually their final product); and (2) the students spent a great deal of time writing personal introductions to accompany their idea maps. Only one of the students was able to come close to organizing and assembling a document. Several students rewrote their introductions every week and never completed or moved past that element.

The student who came close to producing a project was still unable to fully conceptualize what she was to do with it. She filled in text with accompanying video capture pictures of "famous people of the 90s" (musicians), but the text was mostly nonsense and was copied out of context from magazine sources. The text that did make sense was written for her by an older friend from another class.

In addition to the deleted project files, equipment sabotage became another problem after the computers were moved to the media center. Mouse balls were stolen at least 3 times, along with the locking rings that held the balls in place. A cable and battery from the video camera were also stolen, although the battery was eventually recovered.

General abuse of the computer equipment was also observed, as when students expressed frustration with the software by throwing keyboards to the floor or striking the sides of the monitors with their fists. Stated one student when told not to treat the equipment in this manner, "What's in this school belongs to me. I can do what I want with it." Another student added, "My dad says anything doesn't work, give it a good smack." Three of the computers were removed before the computers were damaged beyond use. The Internet computer was left in the care of Ms. Goodwin.

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