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ABSTRACT

Computerized storybook maker programs can motivate young children to learn to read and write as they play. This study compared perceptions and performances of young children and adult students on the StoryBook Weaver program. Participants were 26 first graders and 23 preservice teachers. Both groups of students were asked to compose stories on a Macintosh computer with a storybook maker program. To investigate the impact of grouping on composing with the storybook maker programs, both children and adult groups were randomly assigned into individual groups and pair groups. The differences of the performance and outcome were examined through observation of how students proceed to complete the assigned tasks; how frequently students applied the story making elements in the program time they devoted to composing; and the quality of their final products. In addition, information about their final attitudes toward the product were collected. The differences between the adults and the young children are discussed in terms of motivation; approach; time spent; elements used and features tried; most enjoyed features; quality of finished story products; special needs; self-stated attitudes; and team group versus individual group. Young children were found to enjoy the storybook maker programs more than adult students. Five tables depict results. (AEF)

Paper

Comparison of Young Children's and Preservice Students' Performances in Using the StoryBook Weaver Program

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Abstract

Young children are naturally drawn to stories. Computerized storybook maker programs can provide a means to motivate young children to learn to read and write as they play. To compare the differences between how young children and adult students perceive and perform using the *StoryBook Weaver* program, 26 first graders and 23 preservice students participate in the study. The results of the study present significant differences.

Introduction

Young children enjoy learning in the story environment. They enjoy listening to stories and making up their own. Today's computer programs may facilitate an exciting learning environment to motivate young students to learning throughout story activities. Kinscher (1995) points out that interactive storybook software has many advantages and it especially allows students to internalize the story. Today's computer storybook maker programs can provide an even better means to serve the enlightening purposes. The researchers find that the storybook maker programs, as a step further beyond the interactive storybook programs, can encourage children to attempt more in reading and writing activities, and become more strongly motivated because these programs can promote not only the receptive skills but also productive skills. Thus such rationale posits a need to infuse the storybook making technology into the elementary

curriculum and to involve preservice students in using the storybook maker programs to develop potential instructional materials.

The storybook maker programs are the software programs that provide users the tools to compose on a computer with graphics, text, sound, and speech capabilities. For example, *My Own Story* (1994) and *StoryBook Weaver* (1992) by MECC, are two of the most popular storybook maker programs. According to the manuals of most of the storybook maker programs, these programs intend for users to bring imagination to stories with graphics and text. They also encourage teachers to develop stories and share them with the students as role models. This sounds very exciting at first, however, when we tried to develop instructional story materials for young children with the program, we learned of a big gap between ideal situation and reality. To further investigate how these programs can be integrated into the curriculum, this study intends to explore the following questions:

- How do young children differ from adult students in using the storybook maker program in terms of working approaches or styles, appreciation of the program, creativity, and quality of the products?
- Are the storybook maker programs suitable to serve as a tool for teachers to develop good instructional materials to teach young children?
- Under what circumstances can the storybook maker programs be used to teach young children effectively?

Subjects and Grouping

The subjects of the study, as shown in Table 1, are 26 elementary first-grade students (ages 6 and 7) in Lincoln Elementary School at Whitewater, WI, and 23 college preservice students majoring in elementary education at the University of Wisconsin-Whitewater. Both the children and the adult students were not familiar with the *StoryBook Weaver* program prior to the study. The adult students have a little experience in using computers for word processing and graphics tasks on IBM computers while only a few children had slight exposure to computer games. Both groups of students were alerted that they would be composing stories on a Macintosh computer with a storybook maker program one week in advance.

To investigate the impact of grouping on composing with the storybook maker programs, both children and adult groups were randomly assigned into individual groups and pair groups.

Table 1: The percentage of the children and the college students

	N	%	IBM experience	Mac experience	Storybook experience
First graders	26	.53	5	3	0
College students	23	.47	23	4	0

Design of the Study

To investigate how the *StoryBook Weaver* programs were used, the researchers carefully examined the differences of the performance and the outcome between all groups of students by observing how students proceed to complete the tasks; how frequently students applied the story making elements in the program time they devoted to

composing; and the quality of their final products. In addition, information about their attitudes toward the program were collected. Before and after students' exploration of the program, they were surveyed for their perceptions about the usefulness of the storybook maker programs. When they finished their stories, they were also asked to rate their satisfaction with the program on a one through five scale.

Both adults and the children were introduced how to use the Macintosh computer, the *StoryBook Weaver* program, and the *SmartVoice* speech program (1994) for about fifteen minutes. They were then encouraged to try out the program on their own and compose stories on the computers. The researchers maintained a reflexive journal based on the persistent observations.

Results of the Study

Both adults' and children's performances of composing stories on a computer are described as follows.

Adult Group's Performance

After the adult students were shown how to use the program on a Macintosh, instead of trying out the features on the computers, most of them started by thinking and engaging an extensive conversation talking about possible story topics. Soon after they began to compose, they became frustrated since they were forced to re-adjust their story ideas due to the limited choice of graphics for the scenery, sounds, and objects. They tried the computer speech and were not too amazed at the quality. They tested the sound association with the objects and decided not to use too much in their stories. They completed their stories at random and quit soon. Most of them finished within an hour.

Children Group's Performance

The young children group showed a stronger degree of excitement. Nearly all of them started their journey by exploring the scenery selections and object graphics. Very soon they became occupied by the graphics features of the programs such as moving, resizing, rotating, and inverse. They showed strong enthusiasm and kept on trying to find the possible matches for their imagination. They loaded many character objects and figured out how to modify the object. They played with the sound association and applied different sounds to all the objects on the computer screen. Although the computer speech was of lesser quality, they turned the speech function on and enjoyed listening to the computer speech. They were curious about how computer synthetic speech was generated. After they were finished with their own stories, they loaded other example stories and played with the stories. They also exchanged stories to show off what they had accomplished. After nearly two straight hours, they did not show any sign of fatigue, and some of them asked for even more time.

Young children's performance obviously differs from that of the adults in their approach, appreciation, and creativity. Most young children's works reveal their creativity and their eagerness to explore and to express themselves. Regardless of the contents, their stories are exciting. However, most of the original stories developed by adult students are of poor quality and cannot be used as effective instructional materials to enhance young student's reading ability. Some of their stories are awkward to read because of mixed styles of text (such as all-italic, all-caps), misspelling, tiny print, poor selection graphics, poor screen design, and inappropriate choice of words for the scripts. The detailed comparison between children and adults' performances are discussed below.

Analysis of the Differences Between Adults and Young Children

Motivation

A great many of adult students act hastily as if they were pressed for time to complete the assigned task as a duty to fulfill the course requirements. All the young children, on the contrary, seem to explore the program for fun. According to Brown (1980), there are two different kinds of motivation: instrumental and integrative motivation. The way that adult students rushed to finish their task may be characterized as having instrumental motivation while the children's performance may be characterized as having integrative motivation—they learn with eagerness and enjoyment. Learners with the integrative motivation tend to perform better and achieve more.

Approaches

Adult students in this study seemed to organize their stories following a rigid strategy. They started with some ideas for the story before they proceeded. They intended to compose stories based on the given ideas and story structure in their minds. However, they soon became frustrated because of the limited choices of sound, scenery, and graphics. Young children, on the contrary, started with exploration of the features and elements in the programs such as scenery, graphics, sound, and graphics manipulations. They quickly tried out the combinations of the scenery, sounds, and object graphics and organized the best combinations before they began to worry about the text content of the stories. Young children seemed flexible, and maintained high levels of curiosity and enthusiasm when they tried out the *StoryBook Weaver* program.

Time Spent

Adults spent an average of about 40 minutes exploring the program and creating their stories. Young children spent an average of 120 minutes continuously working on the computer. Some young children even begged for more computer time during recess.

Elements Used and Features Tried

Since the *StoryBook Weaver* program provides many elements and features, the exploration of these items is crucial to reflect student's approach to completing the tasks. Most young children did not compose their stories with too many pages. Instead, they spent most of the time exploring possible combinations of the sound, speech, and graphics elements, etc. The adult students did not seem as interested in thoroughly exploring these elements and features as the children did.

Table 2: The average number of elements/features used in the story

Features/Elements	First graders (N:26)	College students (N:23)
scenes/pages	2.5	5.5
objects/characters	15	8
object resizing	10	3
object rotation	11	2
sound associations	12.5	5
frequency of using the speech	5.5	1

Most Enjoyed Features of the Program

Adults and children have different values about the program. Adults seem more concerned about the overall design of the program while children pay more attention to the detailed functions the program can provide. Adult students reported to have enjoyed the ease of use of the program and What-you-see-is-what-you-get (WYSIWYG) features the most. Young children reported to have enjoyed the graphics and speech functions the most.

Quality of the Finished Story Products

Based on the first grade teachers' experiences of young children's literacy skill, the researchers established some criteria and examined the finished stories and scored them on a one through five scale. The criteria and the rating for both children and adult students' stories are shown in Table 3. Young children's stories are more exciting than the adult students' works. Although most of the stories, by either adults or children, seemed not suitable to meet instructional purposes, we were astonished to learn that these adult students seriously lack the knowledge of using appropriate vocabulary or language for young children. Young children had limited vocabulary and needed help with some wording and spelling, however, they can still construct exciting stories.

Table 3: The mean score of the quality criteria in the stories based on a five-point scale

Number of elements	First graders (N:26)	College students (N:23)
Interesting plots	4.5	3.0
Meaningful content	3.5	4.0
Meaningful sequence	4.5	4.8
Screen design and paging	4.5	4.0
Appropriate vocabulary	4.5	3.5
Matching graphics/sounds with content	4.8	3.8
Serve instructional purpose	3.0	3.5
Average	4.2	3.8

Special Needs

The program is self-explanatory and easy to use. The fact that all young children were able to run the program without problem proves that further instruction or program help is not necessary. However, young children do not have good literacy skills and still need the adult's help with their spelling and typing.

Table 4: Distribution of students' self-assessed mean attitudes toward the program

Self-stated attitudes	First graders (N:26)	College students (N:23)
"Believe young students can benefit from the program"		
Before	4.5	4.0
After	4.8	3.8
"Enjoy the program"		
After	4.9	4.0

Self-Stated Attitudes

As shown in Table 4, young students seemed to have enjoyed the program more than adult students and held stronger positive attitude toward the program after they used the *StoryBook Weaver* program.

Team Group Versus Individual Group

Generally speaking, students working in teams performed better and enjoyed more than those who were not. The differences between the elements tried, quality of the story, and appreciation of the programs are shown in Table 5.

Table 5: Distribution of scores between individual groups and team groups

Items:	Y-T (N:18)	Y-I (N:8)	A-T (N:16)	A-I (N:7)
Elements/Features:				
scenes/pages	2.8	1.8	6	4
objects/characters	18	8	10	3.5
object resizing	12	6	4	1
object rotation	12	9	2.5	1
sound associations	13	11	5.5	3.8
frequency of using the speech	6.5	3	1	1
Quality of the Stories				
Interesting plots	4.6	4.3	3.0	3.0
Meaningful content	4	2.6	4.0	4.0
Meaningful sequence	4.5	4.5	4.8	4.8
Screen design and paging	4.6	4.3	4.0	4.0

Appropriate vocabulary	4.5	4.5	3.7	3.1
Matching graphics with content	4.8	4.8	3.9	3.6
Serve instructional purpose	3.2	2.6	3.7	3.1
Attitudes:				
"Believe young students can benefit from the program"				
Before	4.6	4.2	3.9	4.2
After	4.9	4.6	3.9	3.6
"Enjoy the program"				
After	4.9	4.9	4.1	3.8
**Y-T: Young team group				
Y-I: Young individual group				
A-T: Adult team group				
A-I: Adult individual group				

Implementations and Recommendations

From the findings of this study, we realized that young children don't need good computer skills or literacy skills before they can compose on a computer. We also learned that simply putting ideas and materials onto the computer does not necessarily make a good story. The storybook maker programs seem to meet the needs for young children. Young children undoubtedly enjoyed the storybook maker programs more than adult students. They showed greater appreciation and spent long hours playing with the program. Most adult students were frustrated by the programs while young children were actively exploring the programs with enthusiasm. Young children may actually benefit more from using the program to improve their computer and literacy skills since they have strong integrative motivation and they view the storybook maker programs as both a tool and a toy. As shown from the results, cooperation and collaboration among students proved to be a successful strategy in engaging students to use the storybook maker programs. We should encourage young children to learn to share their ideas and to express themselves through the programs.

One major difference lying in their approaches to composing between adults and children is that young children tend to construct their stories by organizing graphics first to construct the content of the stories, while the adults tend to organize the ideas or the contents of the stories before they work on the picture objects.

An interpretation about the performance differences between children and college students may be related to the fact that college students hold different attitudes toward technology. On September 20, 1995, David Frazier commented to the ED-TECH listserv discussion, "I have had more experience with college students and have found most to be anti-technology. They have to be forced to use computers at all. This is contrary to the high school students I have worked with, who usually seem much more eager to dive in to new technology." The finding of the differences between adults and children

in this study also matches the Barba and Mason's research finding (1994) where they stated that young children view technology differently than adults in that they view technology as part of everyday life, as part of many careers while adults view science and technology as being an undifferentiated meld.

Creating meaningful stories with the storybook maker programs is more difficult than what the manuals of these programs suggested. Many adult students did not feel comfortable composing on the computer, especially with the *StoryBook Weaver* program. We come to know that developing a meaningful story requires true understanding of the story structure, good ideas, efficient problem-solving strategies, sufficient choices of graphics and sounds, meaningful scripts for the stories, and good strategies to tell the stories (e.g., making good use of graphics and sound for the story presentation, and relating story contents to young children's prior knowledge). It also takes patience to compose a good story. We should define the necessary elements such as scenery, colors, graphics, sounds, video clips, text, and speech features which may be essential to successful development of stories by adults. We can then examine if these crucial elements are missing from the current programs for successful composing of meaningful stories. Finally, we should also form story-composing strategies that adults can employ to produce good stories using these programs, and establish certain criteria to differentiate good stories from bad ones.

Preservice students differ from young children in appreciating the *StoryBook Weaver* program. Young children maintain a high degree of curiosity about the mechanical process of the program as well as the best approach to choose pictures to construct more meaning settings for the stories in their minds. However, unfortunately, the adult students, neglecting the true value of using the program for better story telling and communication, concentrate very much on the mechanical process of retrieving and manipulating images in the program to complete their missions in the assignment. The storybook maker programs have provided a great potential to help young children turn imagination into stories, communicate in a more significant way, and become strongly motivated to learn to read and write better. Preservice students should be more frequently exposed to the computer-enhanced learning environments, and be systematically introduced to appreciate the value of good learning materials and to learn effective uses of the existing computer technology for instruction. Other similar application activities should be integrated in the current teacher education programs to help the preservice students establish proactive attitudes and performances.

Future studies investigating the relationship between the storybook maker programs and young children's thinking patterns and learning styles are highly desirable. In order to generalize the findings of this study, similar studies should be performed with larger samples of children and adults. Other studies are also desirable, such as the comparison of effects between different storybook maker programs, as well as comparison between the electronic and the printed versions of stories, or the colored and non-colored version of stories for children.

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