The Effect of Using Computers on Writing in Third Grade

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ABSTRACT

This study evaluated the impact computers had on the quality of writing in the third grade. This study was conducted over a six week period of time and took place in a regular education third grade classroom. The class consisted of sixteen students, ten boys and six girls. The students were required to complete two personal narrative writing samples. For the first writing sample, the students completed each step of the writing process using only paper and pencil. The second writing sample was completed using only computers. The students used the Inspiration program to construct a graphic organizer and Microsoft Word to publish the second writing sample. The results of this study show that there was not a statistically significant impact on the quality of my students’ writing scores because of the strategy I implemented. However, the results showed that male students benefited from the use of computers, with 80% of those scoring higher with computers being male.

INTRODUCTION

In my school, children are encouraged to write on a daily basis. However, learning to write can be a slow and difficult process for young children. Children should be given many opportunities to develop the skills necessary to become good writers. Lenski and Johns (2002) suggest, “Writing should include many different kinds of writing experiences, activities, and strategies”.

One of my school’s student achievement goals in the SIP (student improvement plan) is to increase proficiency in writing. Although the writing scores at my school are above the state and district average, they are lower when compared to the reading and
Computers and Writing

math scores. At my school, students are required to complete writing samples from a variety of genres. The required genres include personal narrative, persuasive, informational, and response to literature. These samples are evaluated using the county writing rubrics for each specific genre.

Since my school is incorporating more technology-based instruction, I was interested in determining if computers had any effect on the quality of my student’s writing. Research has shown that students will become more motivated and engaged in learning activities when using technology (Swan and Van ’t Hooft, 2005). Will the quality of my student’s writing improve with the use of computers? This study will address the impact computers have on writing in the third grade.

LITERATURE REVIEW

Over the past century, researchers have studied the academic gains associated with the integration of technology in the classroom. Technology use in the classroom has progressed from overhead projectors and tape players to computers and video cameras. Does the use of technology in the classroom improve student learning? Researchers suggest that increased motivation due to technology leads to increases in the quality and quantity of student work (Swan and Van ’t Hooft, 2005). However, Baines (2007) comments, “Apparently, after the novelty of a machine fades, so do claims that interactions with it will yield dramatic gains in achievement.”

Writing is a fundamental life skill which all students must develop to proficiency during their years in elementary school. In order to achieve proficiency, students must be provided many opportunities to practice and perfect their writing. Teachers should avoid assigning irrelevant writing topics to their students. Instead, students should be
encouraged to write about a variety of meaningful topics (Brashears, 2005). Culham (2003) suggests, “We must build curriculum that maintains a shared view of what ‘good’ writing looks like that remains constant throughout the school years, K to 12” (p. 13). In order to create good writers, teachers should tailor the writing criteria to fit the individual student’s strengths and weaknesses (Lentz, 2004). Therefore, writing instruction should be meaningful, consistent, and include a variety of techniques and strategies.

Technology can have the ability to increase student motivation and student engagement. However, the debate over its genuine effectiveness on student learning still continues. While most research shows conclusive evidence that technology, particularly computers, can increase student achievement in areas such as math fact fluency, the research supporting increases in the quality of student writing is relatively inconclusive. Some suggest that technology is merely a delivery system and does not benefit students in any other way (Burner, n.d.). However, one study conducted on the use of laptops with writing showed that students were able to write in a “greater amount of diversity and formats” and writing submitted by these students was of greater quality (Warschauer, 2006). Warschauer also reveals the three main factors contributing to this increase in quality: support tools, feedback and revision, and formatting. Computers, when used with writing, can also offer students reinforcement when receiving feedback. Instead of seeing a paper covered with corrections, the computer offers a less personal way to offer critical feedback (Ramirez, 2007). Using computers during the writing process also offers students the opportunity to create authentic pieces of writing in an electronic format, thereby, allowing students to store, revise, edit, and reflect on their writing
(Little, 2006). Coley (1997) claims, “Students also learn more and like their classes better when their classes incorporate computer-based instruction.”

Although technology can provide people with an alternative means of accessing, presenting, and utilizing information, many teachers are unsure about their own technological capabilities. Students are introduced to a technology-rich environment from the day they are born. However, many teachers are not effectively integrating technology into the curriculum. According to Tancock (2002), “For technology to be effectively integrated into any curricular area, the teacher must use great judgment in combining technological know-how with an understanding of the prescribed curriculum and of the students’ knowledge and skills” (p.2). It is up to educators to determine the extent to which technology will and can be used with regular classroom instruction (Cramer, 2002).

Despite the claims that technology can increase the motivation to write, researchers are still unsure as to the increase in the quality of writing when using computer-based technology. Do computers merely increase student motivation or do they have an impact in the quality of work produced by students? This study will address the impact technology, namely computers, have on the quality of writing in the third grade.

**METHODOLOGY**

*Design*

I teach in a school, in a suburban area near a large southeastern city. The majority of the students in this school are from an upper middle socioeconomic status.
The purpose of this study was to determine if computers had an effect on the quality of student’s writing. This study compared the scores of writing samples completed using only paper and pencil to writing samples completed using only computers. I used a quantitative pretest/posttest design to analyze the data. The data compared the scores of the writing samples completed with the treatment to the writing samples completed without the treatment. The county narrative writing rubric was used to evaluate the writing samples.

Subjects

The classroom used in this study consisted of sixteen students, ten boys and six girls. The ethnic makeup of this class was 12.5% African American and 87.5% Caucasian. The research was conducted in a third grade classroom in a whole group setting.

Nature of the Data

Data for this research was collected in the form of writing samples. The writing samples were scored using the county narrative writing rubric.

Instruments

For this study, the county narrative writing rubric was used for data collection. The rubrics were designed to assess the following components of writing: focus, supporting details, character development, development/completeness, organizational pattern, chronological sequence of ideas, transitions, word choice, and audience awareness. I determined if the students exceeded the standard, met the standard, or did not meet the standard according to the county writing rubric. In order to compute a numerical assessment, I assigned a value to each assessment category. A student
received three points for receiving an exceeds standards in any of the components, two points for receiving a meets standards, and one point for receiving a does not meet standards. Therefore, each student had the potential to score between nine points and twenty-seven points.

Procedure

The data for this research was collected over a period of six weeks. The students completed two personal narrative writing samples during this time, one for each three-week period. I used the same procedure for both writing samples. The first three weeks were devoted to writing a personal narrative using only paper and pencil. The last three weeks were devoted to writing a personal narrative using only computers.

First three-week period

Week 1: Students began the writing process on a personal narrative, *My Winter Break*. They organized their data with a bubble chart, a graphic organizer that is created (on notebook paper) and used by the students each time they write. I held mini-conferences with each student to discuss the progress of his/her writing and answer any general questions. However, I did not offer any help with spelling, grammar, or content, as I wanted to obtain an accurate accounting of the quality of my student’s writing.

Week 2, days 1-3: Students completed their rough drafts on notebook paper.

Week 2, days 3-4: Students were encouraged to peer-edit their writing pieces. They checked for spelling, grammatical, and other writing errors in their classmate’s writing.

Week 3: The students had the week to complete the final copy of their writing. Students were encouraged, but not forced, to consider and, possibly, follow the advice of their
peers offered during the editing process. They also had the opportunity to have additional conferences with me if they had any general questions about their writing.

Second three-week period

Week 4: Students began the writing process on a personal narrative, *The Best Day Ever*, using computers. They organized their ideas with a bubble chart using Inspiration (they had already been introduced to this program previously). I also held mini conferences with each student to discuss their progress. However, as before, I did not offer any help with spelling, grammar, or content, as I wanted to obtain an accurate accounting of the quality of my student’s writing.

Week 5, days 1-3: Students completed their rough drafts using Microsoft Word on the computers (they had been introduced to this program previously).

Week 5, days 3-4: Students were encouraged to peer-edit their writing pieces. The students printed out their rough drafts and asked another student to offer suggestions regarding spelling, grammar, and content.

Week 6: The students had the week to complete their final copy on the computer. They were encouraged, but not forced, to consider and, possible, follow the advice of their peers during the editing process. They also had the opportunity to have additional conferences with me if they had any general questions about their writing. However, I only answered general questions about their writing.

After my students completed both personal narrative writing samples, I used the county personal narrative writing rubric to evaluate the samples. This rubric determines if the student exceeds expectations, meets expectations, or does not meet expectations according to the county writing standards. I compared the results of these criteria for the
two samples submitted by each student to determine if the use of computers on writing improved the quality of writing.

RESULTS

Purpose

The purpose of this action research project was to study the effects of computers on writing in third grade.

Results

The data collected consisted of two narrative writing pieces completed over a six-week period of time. The first narrative writing piece was completed within the first three weeks of the six-week period. The students were only allowed to use paper and pencil to complete this writing assignment. The second narrative writing piece was completed within the second three weeks of the six-week period. The students were only allowed to use the computer to complete this writing assignment. For this study, I compared the scores of the first writing piece, as assessed by the county writing rubric, to the scores of the second writing piece as assessed by the same county writing rubric.

The results of the two personal narrative writing samples for each student are displayed in Table 1. This table shows the score for each student, the gender of each student, and the difference of the two scores for each student.

<table>
<thead>
<tr>
<th>Student #</th>
<th>Gender</th>
<th>Paper and Pencil</th>
<th>Computer</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Boy</td>
<td>18</td>
<td>18</td>
<td>Same</td>
</tr>
<tr>
<td>2</td>
<td>Girl</td>
<td>16</td>
<td>18</td>
<td>Increase</td>
</tr>
<tr>
<td>3</td>
<td>Boy</td>
<td>16</td>
<td>12</td>
<td>Decrease</td>
</tr>
<tr>
<td>4</td>
<td>Boy</td>
<td>14</td>
<td>12</td>
<td>Decrease</td>
</tr>
<tr>
<td>5</td>
<td>Girl</td>
<td>17</td>
<td>17</td>
<td>Same</td>
</tr>
<tr>
<td>6</td>
<td>Boy</td>
<td>17</td>
<td>17</td>
<td>Same</td>
</tr>
<tr>
<td>7</td>
<td>Boy</td>
<td>10</td>
<td>12</td>
<td>Increase</td>
</tr>
<tr>
<td>8</td>
<td>Girl</td>
<td>21</td>
<td>16</td>
<td>Decrease</td>
</tr>
<tr>
<td>9</td>
<td>Boy</td>
<td>13</td>
<td>11</td>
<td>Decrease</td>
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</tbody>
</table>
Table 1: Results of Personal Narratives

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<thead>
<tr>
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<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Boy</td>
<td>9</td>
<td>10</td>
<td>Increase</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Girl</td>
<td>17</td>
<td>17</td>
<td>Same</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Girl</td>
<td>18</td>
<td>18</td>
<td>Same</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Boy</td>
<td>8</td>
<td>16</td>
<td>Increase</td>
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<tr>
<td>14</td>
<td>Boy</td>
<td>15</td>
<td>13</td>
<td>Decrease</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Boy</td>
<td>16</td>
<td>17</td>
<td>Increase</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>Girl</td>
<td>16</td>
<td>16</td>
<td>Same</td>
<td></td>
</tr>
</tbody>
</table>

Out of sixteen participants in the study, 37.5% received the same score on both writing samples, 31.25% received a better score on the writing sample with the treatment, and 31.25% received a better score on the writing sample without the treatment. These comparisons are shown in the figure below (Figure 1).

Figure 1: Comparison of Pretest and Posttest

With a significance of 0.93, as shown in Figure 2, there was not a statistically significant difference in my students’ writing scores because of the strategy I implemented.
Because the results showed the same percentage, 31.25%, of increase in performance as decrease further evaluation was necessary. After comparing the students’ scores based on percentage of increase and decrease, I found that 80% of the students scoring better when using only paper and pencil were male, as shown in Figure 3. Out of the student numbers displayed below, 3, 4, 9, and 14 were male.
In addition, the results show that 80% of the students scoring higher when using only computers were also male, as shown below in Figure 4. Out of the student numbers displayed below, 7, 10, 13, and 15 were male.

![Figure 4: Students Scoring Higher Using Computers](image)

I also compared the results of the students scoring the same on both writing samples, as shown in Figure 5. Out of the 37.5% scoring the same on both samples, 66.66% were female. Out of the student numbers displayed below, 5, 11, 12, and 16 were female.

![Figure 5: Equal Scores](image)
Based on these results, I can conclude that using only computers when writing does not statistically impact the quality of writing in the third grade. However, it may be beneficial for some students to use computers when writing.

CONCLUSIONS

After completing my research, I have concluded that computers do not have a significant impact on the quality of my students’ writing. However, I do feel that using computers as part of the writing process can be beneficial to students. I did notice that my students enjoyed using the computers when writing; they seemed more motivated and enthusiastic about writing. I also observed that my students benefited from using the Inspiration program to create graphic organizers. The graphic organizers created on the computer were more organized and easier to read than the ones created by hand.

Despite the increase in motivation, there were some possible limitations to this research. Some students may have had a more positive response to one of the two writing topics. Keyboarding can also be a difficult skill for many students to master. Students are introduced to keyboarding in first grade, but do not focus on this skill until the third grade. I did notice that students required more time for publishing when using computers. Because of this, publishing on the computer may be a distraction for some students. I did notice a degree of confusion when students were to use the tab key or when the spell check function would automatically underline words with a red or green line.

Despite the results of my research, I would like to conduct the same study over a longer period of time. I do not feel that six weeks is enough time to determine if computers impact the quality of writing. I would also like to see this study conducted in
various grade levels, especially the upper grades. Although the results of my study did not show a statistically significant impact on my students’ writing, I will definitely continue to use computers with writing in the future, as I do find them to be useful to many students.
## Appendix

**Georgia Grade 3 Writing Assessment: Scoring Rubric**

### NARRATIVE WRITING

<table>
<thead>
<tr>
<th>Domain 1: Ideas</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Component</strong></td>
<td>Does Not Meet Standard</td>
<td>Meets Standard</td>
<td>Exceeds Standard</td>
</tr>
<tr>
<td>Focus</td>
<td>Little or no evidence of focus, purpose, or point of view</td>
<td>Generally consistent focus; some evidence of a purpose and point of view</td>
<td>Sustained focus on the narrative purpose; consistent point of view</td>
</tr>
<tr>
<td>Supporting Details</td>
<td>Details and descriptions are limited and may be irrelevant</td>
<td>Includes some relevant descriptions and details</td>
<td>Relevant details and descriptions are included throughout the paper</td>
</tr>
<tr>
<td>Character Development</td>
<td>Character(s) are named or listed rather than developed</td>
<td>Begins to develop main character(s) through action and dialogue</td>
<td>Develops main character(s) through action, dialogue, and/or description</td>
</tr>
<tr>
<td>Development/Completeness</td>
<td>Insufficient information to tell a story</td>
<td>Sufficient information to tell a story</td>
<td>Complete information; the events of the story are well developed</td>
</tr>
</tbody>
</table>

### Domain 2: Organization

- The degree to which the ideas are arranged in a clear order with a beginning, middle, and end.

<table>
<thead>
<tr>
<th>Component</th>
<th>Does Not Meet Standard</th>
<th>Meets Standard</th>
<th>Exceeds Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Organizational Pattern (Beginning, Middle, End)</td>
<td>Little or no evidence of an organizational pattern</td>
<td>Contains a beginning, middle, and end; one part of the paper may not be as strong and the others</td>
<td>Clear narrative organizational pattern with a strong beginning, middle, and end</td>
</tr>
<tr>
<td>Chronological Sequence Of Ideas</td>
<td>Little or no evidence of sequencing</td>
<td>Ideas are generally presented in a chronological sequence</td>
<td>Chronological sequencing of ideas within and across parts of the paper</td>
</tr>
<tr>
<td>Transitions</td>
<td>Little or no evidence of transitions</td>
<td>Transitions are used but may not be varied</td>
<td>Transitions are used consistently and effectively throughout the paper</td>
</tr>
</tbody>
</table>

### Domain 3: Style

- The degree to which the writer controls language to capture the reader’s interest.

<table>
<thead>
<tr>
<th>Component</th>
<th>Does Not Meet Standard</th>
<th>Meets Standard</th>
<th>Exceeds Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Word Choice</td>
<td>Language is simple, repetitive, or imprecise; little or no interesting language</td>
<td>A mixture of simple, ordinary language (e.g. descriptive language, sensory details, strong verbs)</td>
<td>Sustained use of interesting language (e.g. descriptive language, sensory details, strong verbs)</td>
</tr>
<tr>
<td>Audience Awareness</td>
<td>Little or no awareness of audience</td>
<td>Some attention to the audience; some sense of the writer’s voice</td>
<td>Attention to the audience in the beginning, middle, and end; writer’s voice is clear</td>
</tr>
</tbody>
</table>
References


