WRITING INSTRUCTION AND TECHNOLOGY


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**Writing Instruction and Technology**

Writing is a skill that transcends the curriculum, and as educators, we want our students to write--and write well.  I have examined available research regarding the efficacy of the use of technology in the *process writing* approach and their combined effect on writing assessments. Given the explosive growth of personal computers and related technologies in the past ten years, most of this research is dated.  In my personal experience, I have observed improvement in the writing abilities of my students who use computers and digital technologies in their writing.

During the past twenty years process writing, developed by Donald Graves, Lucy Calkins, and others, has reformed the way students are taught to write.  Until this time, traditional writing curricula consisted of teacher assigned topics and final drafts which were corrected mainly for mechanical errors.  Most instruction revolved around grammar, spelling, and punctuation skills. Process writing completely changes writing instruction; we move from teacher-centered instruction to student-centered learning.  The students are in charge of their writing from topic selection to final draft and teachers are only one of the facilitators of the learning process (Tompkins, 1999, pp.15-17). In most states, standards have been implemented which cause process writing to become the cornerstone of standards-based writing instruction (Reeves, 2000, pp.16-17). California kindergarten standards for writing composition begin with dictation to parents or teachers and progress to writing simple sentences to tell their stories (O'Malley, 1999, p.43).  This worked well in the unit my group devised on *The Frog Prince* fairy tale.  The kindergarten students in Mrs. Hine's class wrote and illustrated original stories to rewrite the

ending and then they were published using *PowerPoint*®.  California second grade standards for writing composition expect students to write clear coherent paragraphs using the stages of process writing (O'Malley, 1999, p. 78.).   In my second grade lesson, students were to prewrite their new ending, spend time drafting, conferencing, revising, and publishing their work using the computer.  Although I was unable to teach the full unit, my experience is that process writing is a way to approach writing instruction that is beneficial, providing instruction for the students as well as an enjoyable classroom experience.

The research I have found on the benefits of using computers in the writing process is mixed and dated.  Studies from Snyder (1993), Hass (1989), and Greenleaf (1994), show no beneficial connection between computers and writing.  Trends from this research show poor typing ability, the type of word processor used, classroom context, organization of the curriculum, and lack of computer skills as negative factors in computer assisted writing.  One significant problem area is the lack of computer skills; if students are not familiar with the computer and software, they will spend more time trying to use the computer than actually writing (Owston & Wideman, pp.1-2). An essential activity is to teach keyboarding skills early. In the research opposing computer use one overwhelming factor was the correlation of a lack of keyboarding skills to a lack of improvement in compositions. The word processor is the champion of the young writer allowing them to revise at the touch of a key (Simic, 1994). The word processor allows for ease of document correction, formatting and revision, but students can become frustrated when they think faster than they can type.  However, in 1993, Bangert-Drowns' meta-analysis of computers and writing found computer use increased writing quality

in two-thirds of the papers assessed. These students had access to computers and instruction in computer usage. Research has shown increased skill in technology assisted writing in the junior high through college age students (Owston & Wideman, pp.1-2). One of the problems primary age students have with writing composition is handwriting.  It is laborious for young children to print their stories over and over.  I have found this to be true in my second grade classes. Students were able to dictate to a parent elaborate, well developed stories, talking so fast the typist could not keep up. When those same students were asked to write using pencil and paper, they wrote shorter stories and resisted revision. All of these factors point toward the efficacy of computer use in process writing.

Owston and Wideman's 1996 study followed third grade students from third through sixth grade.  They compared students in a high computer access school to students in a low computer access school during the three year period.  The analysis compared students on general writing development, sense of audience, purpose for writing, story quality, structure, logical flow, and ability to share feelings.  The findings showed a positive motivation toward the writing assignment at the high access school; students were better focused and this continued during the three years of the study. Students in the low access school made minimal changes from first draft to final draft, had difficulty with penmanship, and informal collaboration rarely happened.  The results of the study showed that students with greater access to computers gained more skill in writing competency (pp. 5-7).  I believe students and teachers benefit from the use of  the computer for writing development. Not only is the word processor a primary writing source, software like *Kid Pix*®, *Kidspiration*®, and *Inspiration*® allows students to make graphic

organizers for prewriting and to graphically produce illustrations.  Some interesting multimedia based writing software products for primary grade students are *Clicker 4* and *The Writing Trek*. *Clicker 4* has a talking word processor and *The Writing Trek* employs genre-bases projects for exposure to many forms of writing.  Two new software options are *Journal Zone* for prewriting, journal composition, tutorials, and reflection and *MediaWeaver 3.5* for prewriting, peer review, and tutorials both are for third through eighth grades (Kennedy, 2002).  In my lesson, the prewriting activity did not go well.  After reflection, I chose to add a story web from *Kidspiration®* to enhance the brainstorming and prewriting activity.  I worked with a group of students to test the revised lesson; this one addition to the lesson enabled the students to be better prepared to write their story.  Julie Wood (2000a, p. 4) suggests that teachers can also use digital pictures and scanned images to serve as motivation for prewriting activities.  Integration of computers, software, and digital media into the curriculum increases student motivation and focus in process writing.

Revision is an important step in process writing.  From a 1977 National Assessment of Educational Progress (NAEP) report, revision meant correcting spelling, grammar, and punctuation; rarely did a student change or add to their paper. Research on revision and computers has not conclusively shown a great change in the length or quality of the paper.  It is up to the teacher to concentrate on composition, not the mechanics of writing, before revision becomes an integral part of the writing process (Lehr, 1995).  Peer and teacher conferencing is an important part of revision.  Owston and Wideman, found that students in the high access school frequently collaborated, informally and formally, on assignments providing immediate

feedback to the writer.  Students were not concerned about first drafts, but openly enjoyed the writing process. Teachers at the high access school were able to conference on deeper levels of writing, while teachers at the low access school spent more time on the mechanics and more often directed the flow of the writing (pp.12-14).  The neatness of computer generated text makes mechanical errors easier to detect, thus making it easier for the teacher and student to look past those mistakes to delve into the narrative. Peer conferencing, teacher conferences, and editing are all enhanced by the use of computers.

One of the ways to publish student work is through the use of computers. Publication can be a great motivator for student writing. Students who have an audience and an authentic purpose for writing, write better (Wood, 2000b).  After my students complete their dinosaur research project, they beam with pride while presenting their work to the parents and guests at Open House.  This is one project that employs the computer as a source for research as well as writing and publication.   Presentation software, like PowerPoint® and HyperStudio® can be used, but the word processor is most often used.  From creating newspapers, to stories, to books, children can write for that real audience.  Publishing on the school's web page, in on-line student magazines, and web sites can motivate the child to produce work not achieved by writing just for the teacher (Wood, 2000b).

Stephen Marcus (1998) offers these suggestions for teachers to improve writing skills using computers: computer access should work in the teacher's schedule, printers and peripherals should be plentiful and in good working order, teachers should be trained on the

software and hardware, pre-teach the computer and software to the students before writing

begins, and cluster students for problem solving and collaboration.  He believes both process

writing and computers require expertise and dedication.  In my experience, the teachers who

most often use technology have technology at home.  They are already comfortable with the

word processor and are not concerned about potential problems the students might encounter

with hardware or software.  The success of classroom writing and computers has an

unmistakable correlation between student access and teacher access.


We are left to consider the question of writing assessments for students who are taught

using process writing and computers. With the state standards, state mandated writing

assessments, and high stakes testing, we must ensure that our methods are giving students the

tools to succeed.  Not only do our students have to write for us, but they are expected to

complete writing assessments that involve composition, not merely to answer grammar, spelling,

and punctuation questions. By looking at the content of student writing, these assessments

confirm the need for instruction in process writing (Tompkins, p.22). But, does process writing

improve content in a writing assessment?  In 1992, the NAEP found that process activities

related positively to writing proficiency.  Preplanning, drafting, defining audience and  purpose,

and using outside resources were strategies that correlated with increased scores.  The more

strategies used in class, the higher the score on the assessment. This evidence shows support for

process writing strategies and defines it as the best method for instruction (Goldstein,1996).

In 1998, the NAEP gave writing assessments to students in grades four, eight, and twelve. Evidenced in the study again was the support of process writing for students. "By reflecting on their writing, students become better writers" (Greenwald, 1999, p.1). Students were asked to write narrative, informational and persuasive passages. The results of the testing and interviews show the following practices to have a positive affect on student writing and test scores: teacher conferencing, saving work, drafting, preplanning, defining purpose, and computer use (Greenwald, 1999, pp. 85-99). Obviously, both the writing process approach and computer use have shown themselves to be effective tools for instruction and are benefitting the student where it counts most–in the public eye.

Technology enhances process writing and increases student achievement on writing assessments. Each step of process writing can be enhanced by the use of technology. Current research provides a strong base from which to encourage the continued implementation of technology into the writing curriculum, enabling students to write better and increase performance on the writing assessments. Additional research is needed to determine the most effective ways to align technology and process writing. We must acknowledge the earlier studies which show a lack of availability of and familiarity with computers can have a negative affect on student achievement. However, I believe that the increased availability and integration of computers into the curriculum that has taken place in schools during the past ten years has dated these studies. Students have greater access to computers at home, providing another opportunity for computer usage and practice. Keyboarding has also become a part of school curricula beginning in many second grade classes. Teachers increasingly receive staff

development in computer use and are provided appropriate hardware, software, and time for computer implementation. As our learning environment has been changed through the proliferation of technology, continued research into the correlation between technology, process writing, and achievement is required. We must ensure we are meeting the needs of students and that the benefits for students and teachers are growing as technology use and writing assessments become more prevalent in today's schools.

A meta-analysis of the effects of computers on student writing published in February of 2003 shows continued growth in student writing achievement when using computers/ word processors. The analysis of fourteen studies completed by Goldberg, Russell, and Cook (2003) looks at three major concerns for student writing: quantity, quality, and revisions. Student support factors such as keyboard training, technical assistance, teacher feedback and peer editing were identified and found to have no effect on the results for the quantity of student writing. Significant improvement in the quantity of student writing was found in the electronically produced student work when compared to pencil and paper writing. The positive effects were higher for middle and high school students. The quality of work in the electronically produced writing was also significantly higher for students in middle and high school. Elementary student's results were not as significant in comparison. For quality of writing factors such as keyboard experience, student achievement, school setting, and grade level could have significant impact on student achievement. With regard to revision, only six studies met the analysis criteria and did not produce a significant amount of results to analyze. Overall, this meta-

analysis concluded that computer/word processing use for student writing does increase student achievement.

While this analysis and new studies do show positive trends toward the use of computers for student writing, it was noted, and I agree, that there remains the need for good instruction on the part of the teacher in the writing process described in this paper. Computers must be integrated into the writing curriculum as an integral part of the entire instructional package.

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