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9.5/10

Well done Susan; well written, with a good topic and appropriate justification.

Picture-to-Text's Impact on Writing Productivity for Three Students

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February 24, 2009

EDSE 842

Abstract

Can picture-to-text software unleash the writing potential of 3 young students at the brink of writing failure? What a difference it could make in the lives of these elementary students with writing IEP goals, if this assistive technology could mitigate the frustration already experienced and transform them into confident authors! A little emphatic, for an abstract To extend Hetzroni's (2004) ABAB single subject research, 2 boys and a girl in second and third grades will have access to software that pairs pictures and text to enhance pre-literacy skills. Written products completed by hand and others with the software will be gathered and assessed using a district writing rubric to determine which writing tools will result in a longer, more conventional and easily understood writing samples.

Use 1" margins, all around

Picture-to-Text's Impact on Writing Productivity for Three Students

The complex skill of writing is essential throughout a child's schooling and beyond (Beck & Fetherston, 2003). Students with learning disabilities often have difficulties and experience intense frustration with writing. When struggling with handwriting, spelling, and mechanics, often, the student's higher level thinking processes are impeded (McCutchen, 1995).

There have been various studies considering the effects of technology on writing products. Beck and Featherston (2003) compared written products of seven, eight year old students that were completed using paper and pencil versus using a computer program. Students with learning disabilities were included in studies by Zhang (2000) involving fifth grade students and Hetzroni (a doctoral student at Purdue, when I was there!) and Shrieber (2004) including three junior high students using computers for written products. The first two studies were done in small group settings and the third was in an inclusion setting, with typically developing peers. Whereas the students in the first study were just classified as reluctant writers, the students in the two other studies had been formally diagnosed with learning disabilities. All three studies concluded that the use of technology, for students with difficulties in writing, was positive.

In the Technology for Learning Disabilities Project Evaluation Report (2007), a two year study with pretest – post test design, student's ability to employ accepted writing conventions and organization components was assessed when students with learning disabilities had consistent access and used assistive technology. Although the group using technology scored significantly (p<.001 not necessary here) higher on all thirteen assessment areas, the teachers considered an even more important impact was the positive turn in student feelings about writing. A positive change in attitude was also noted as key, by Beck and Fetherston (2003) in their study.

Purpose

MacArthur (2000) described a variety of studies with results indicating the positive benefits of long term training in and use of word processors with special software, however, as he mentioned, research on assistive technology used for writing was limited. Studies involving the use of Assistive Technology caps? with young students, whose pre-writing skills are emerging, could not be found. Can teachers intervene before negative attitudes and frustration become entrenched and the inadequate skills of these students lag farther behind their peers? Therefore this research will extend the literature by investigating the use of word processors with picture-to-text software to develop writing skills in three students whose spelling delays are so severe that their attempts at writing, by hand or with a computer, cannot be interpreted by others.

The specific research questions to be addressed are as follows:

1. How will these students' writing skill development be affected when using Picture-to-Text software?

2. Using Picture-to-Text software, can these students independently type one or more sentences that express logical thoughts?

3. Will the Picture-to-Text software help each student expand the average word per sentence?

Method

Participants

The students in this study attend a elementary school in a small historic city, in a large metropolitan area with an enrollment of 250 students. Almost 71% of the students are African American, 14% are Hispanic, 2% are Asian Pacific, and 9% are Caucasian. The students were chosen because teachers were concerned that their writing skills were not progressing. Although their classmates are writing paragraphs, these students demonstrate frustration with writing assignments, have difficulty independently writing three letter words using conventional spelling, and cannot put

together simple three word sentences. All three students are receiving special education services. One, a Hispanic boy, aged 9 years 4 months, is repeating the third grade and has a documented Learning Disability and the other two are two African American second graders with the label Developmental Delay. One of the second graders is a girl, aged 7 years 2 months and the other is a boy, aged 7 years 11 months. Two of the students received free and reduced lunch. All three students have current IEP goals in written language that address combining words into a sentence and using end punctuation. All of the three use one or two fingers to type. They are not familiar with the keyboard but they do feel comfortable using a mouse to move the cursor. Better here to simply describe the necessary characteristics of participants, and state that you will collect other specific demographic data once participants are identified.

Data will be collected on the demographic information (e.g.,…) of the adults in the research setting. If

Design

As an extension of Hetzroni's (2004) study, the ABAB single subject research design will be used with a training phase between Phase A1 and Phase B1. Each A and B phase will continue until stability is established in that phase. The two to three session training module will be presented after Phase A1 to ensure that the students become familiar with the software program and are able to use it appropriately (Kazdin, 1982; Kratochwill & Levin, 1992). When the students can demonstrate the use of the basic features, choosing a word, erasing a word, choosing punctuation, and activating the speech component, the next phase will begin.

Materials

All phases will be held in the small resource classroom with six desks and a long computer table with three computers. A group activity will be introduced with a script that will include the manipulation of two props. There will also be a writing prompt based on that activity. In both A

phases students will write using pencil and paper for the writing task. During both B phases, each

student will have access to a HP Desktop computer with a mouse, head phones, and Pix:Writer

picture-to-text software.

Procedure

All the components of this study will be sent to the Human Subjects Review Board (HSRB)

of the University for approval. The School District's HSRB will be contacted for approval. The next

step is to get permission from the principal, school personnel, parents, and students. After the consent

forms are signed by the district administrator, school administrator, teachers involved, and parents,

the potential student participants, identified by teachers, will be approached, interviewed, given a

description of the study, and if willing, will be asked to sign an assent form. Each session will be

preceded by the described small group activity. Students will brainstorm words, ideas, and concepts

pertaining to the activity, each word will be printed as a student mentions it. Words will be printed in

5 columns to indicate parts of speech starting with nouns and pronouns used in the subject part of a

sentence, action words, articles, adjectives, and nouns used at the end of a sentence. Students will be

given 15 minutes to write about the experience and will be encouraged to use the words written

during the brainstorm session. A prominently placed visual timer will display a red area that

decreases as the 15 minutes pass. The writing products will be collected and analyzed for number of

words per sentence, punctuation used, and quality of writing using a district grade level writing

rubric. This will continue until the data becomes stable, which as Kazdin (1982) suggested is when

the data from three consecutive sessions remain within 10% of the mean of every session in that

specific phase.

During Phase A1, a baseline will be established as the students brainstorm about the group

experience and the words are printed on the board as a student mentions them, followed by paper and

pencil writing. Training happens after baseline has been established and then during Phase B1 as the

students brainstorm the words are typed on the computer into a pallet in the Picture to Text software called Pix:Writer. Students will be expected to choose the items on the pallet with pictures, words, and punctuation marks, to create sentences about the experience. This will happen until the data points again become stable. As students begin Phase A 2, the computers will have a "problem" and will not be available for use. Brainstorming on the board and writing with paper and pencil will continue while the stability is reestablished followed by Phase B 2.

Data Sources

Dependent variables will be determined for each product: the number of words written/ typed, the number of words per sentence, and the scores based on the district rubric. The writing samples with technology will be compared to the same student's writing, by hand. The independent variables are the writing tools that the students will be using. In the A phases, the comparison, students will be using paper and pencil. In the B phases, the treatment, the students will be using an HP computer with a mouse, head phones, and Pix:Writer 3.0. Visual Inspection of the data will be considered and the Percent of Nonoverlapping Data (PND; Scruggs & Mastropieri, 2001) will be calculated and randomization tests (Kazdin, 1982) performed (but this would require random assignment to implementation times, which you did not describe). A survey to determine social validity will be sent to participants at the conclusion of the six week intervention.

~~Reliability or~~ Fidelity of Treatment

Adults involved in the research implementation will have a minimum two hour training session to learn the procedure of the study. Some of the topics covered will be a review of the software features, sources for the writing prompts, materials to be used, computer trouble shooting, directions for the placement and use of the visual timer, practice of the specific direction scripts for the activities for the writing prompts, collection and security of writing products, directions and

practice for completing the grade level rubric. Each writing sample will be assessed by two different educators for inter-observer/inter-rater agreement.

Anticipated Results

It is thought that while the students are using the Picture-to-Text software, their writing skills will expand, they will be able to combine words to create sentences that are understandable by others, and that are longer and more complex than sentences they write by hand. Are you concerned that some of the effects (e.g., # words) might simply be due to use of keyboard rather than the program?

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