

Why, How, and For Whom We Need to Use Talking Word Processors

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Synopsis: Research has shown novice writers of all abilities teach themselves basic writing skills as they learn to communicate in print using talking word processors.

1. Introduction: Why Use a Talking Word Processor?

Learning basic reading and writing skills with a talking word processor is a revolutionary process that was not possible before the mid-1980s, when Dr. Laura Meyers, Dr. Teresa Rosegrant and I (working with our publishers) invented, tested then marketed our Apple II and IBM-PC talking word processors.

It was only a couple of years earlier that easy basic-level word processing had become available through the Bank Street Writer from Broderbund and Magic Slate from Sunburst/Wings for Learning. Many of us now take for granted that children will be able to use word processing during their K-12 schooling process to enhance their reading and writing skills learning process. But too many educators are still unaware that talking word processors add a markedly different ingredient to that learning process - the power to experiment auditorily with the formation of the written language.

1.1. The difference between talking and non-talking word processors

While a non-talking word processor gives a child the ability to increase writing skills through its great ease of editing, versus typewriters or pen/pencil tools, editing is a higher level skill than basic word construction. To get the greatest benefit from using a non-talking word processor, the

learner must already know something about the written language: how words are spelled and how sentences are put together. Therefore non-talking word processors are most often used by students in the upper elementary grades, as a way to make their writing products neater in appearance and clearer in message.

The talking word processor, on the other hand, allows learners to construct words from scratch, so to speak. The learner types a letter and the computer not only places the letter on the computer screen, but says the letter out loud. When several letters are typed together and the spacebar is pushed, the computer tries to turn that sequence of letters into a word. A learner can experiment with the written language with such a tool. It is possible for individuals to create their own unique intrinsic understanding of the system of the written language through such experimentation.

Auditorily 'constructing words from scratch' with a talking word processor is an excellent example of a learning process referred to by some researchers as "informal learning," (educators Charles Wedemeyer, et. al.), by others as "self-discovered learning" (psychologist Carl Rogers's term), and in my work since 1983 as "interest-driven learning." Through the continued experimentation with word formation using an appropriate talking word processor, very young children can continue the natural acquisition of their native language without interruption, moving under their own initiative first through comprehension, then production of the spoken language, and then, without even stopping to think about what they are doing or being directly taught in any set curriculum, right into writing and reading the words and sentences of their spoken language.

1.2. Revolutionary Process - The Current Research Record

Experimentation with the written word using a talking word processor is a truly revolutionary process for the novice reader/writer. The experimentation process it makes possible distinguishes the talking word processor in kind from any other writing tool. Not just a word processor, its bridge between speech and print provides an arena for self-directed and concrete learning of written language -- a language system considered by Piaget to be abstract, to be learnable only through direct teaching.

Dr. Laura Meyers, who invented the first simple talking word processor to use in her research on the aural and written language development of children with Down Syndrome, states it clearly: "...the keys to effective computer use by children with language disabilities are to implement the computer both as an access tool and as a personal meaning tool; that is, to use the technology to provide access to speech and text, link it to their personal meaning systems, and thereby allow them to participate in the natural processes of language learning." (Meyers, 1994, p. 272)

Dr. Teresa Rosegrant, who invented a talking word processor to use in her work with children with learning disabilities, describes: "...a research project in its fourth year which has attempted to use the microcomputer as a means of supporting learning disabled children in their efforts to acquire the basic skills of reading and writing....The twelve students observed ranged from 6 to 10 years in age. All were 'behind' in reading by several grade levels. A look at what they could read aloud indicated none were reading at a first grade level...." However, after working with Rosegrant's "talking textwriter," all of the children improved markedly: "During the six months of this project, all twelve of the children

showed substantial progress in their reading and writing strategies....their writing had improved in terms of length, word choice, punctuation, and the use of more complex meaning units.

Their reading sub-skills improved in terms of phonics and phonetics as strategies for decoding unfamiliar words. They also showed considerable gains in the numbers of sight vocabulary words that they could readily read. Overall, each child improved at least one year in reading level." Rosegrant attributes their progress to several aspects of the microcomputer learning arena, especially interesting to me being "the use of the microcomputer to provide visual, auditory, and motoric modes of support for learning disabled students....The support involved in the use of the speech synthesizer as it provides information about letter names, letter combinations, words, and how strings of words sound is the most significant form of help during early stages of literacy skill development." (Rosegrant, 1985, pp. 113-4)

Working with colleagues at the University of Hawaii Curriculum Research and Development Group, I tested the potential of merging the best whole language approaches (writing and reading power words, brainstorming experience stories, invented spelling, etc.) with the talking word processor as the writing tool for the beginning writer/readers - the kindergarteners. We worked with 10 kindergarten children in one big class with 10 first and 10 second graders. Their teacher, Carol Brennan, had a regular routine of developing interesting content through in-class activities with bunnies, fish, etc., then brainstorming, mind-mapping and eventually writing the stories with the children. She used flip charts to write the stories and some of the older children participated in entering the stories on the non-talking word processor, Magic Slate 20 column for the first grade and LogoWriter for the second. But she had not had her kindergarteners

writing up to the '87-'88 school year. She decided she wanted them to try using our Dr. Peet's TalkWriter, and agreed to help me do pre/post-testing of their written language skills.

We had each child identify five letters chosen at random, three times, first by pointing to the letters on the big ABC chart as Carol read them, second by saying five letter names out loud as Carol grabbed them from her jumbled letter box, and third by writing the five randomly chosen letters as Carol said them. Two of the children had a harder time with this task than the other eight. We decided to focus our videotaping sessions on these two, for the best chance at clearly recognizable growth.

All children had at least six directed sessions over the first semester (September-December), but several chose to use the talking word processor in their free time as well. Dawn made friends with the talking computer. Jeff was less thrilled, but we did see great gains in his ability to handle the written language. They were the two who had some trouble with the letter identification in the pre-test. But by post-test time in December, all of the children could easily identify all of the letters. We needed to do something else to document their progress. I decided we would time them writing a simple "I like ____." sentence, then compare the time it took them to enter the sentences with the time it took their first grade counterparts. We did a 'post-test' on both classes, asking each child to write one sentence with a known power word, e.g. "candy." and one with a new power word, e.g. "tyrannosaurus rex." We found that the first graders were just a little faster, averaging one minute per sentence to the kindergarteners two minutes. The astounding aspect of the research was the ability of the kindergarten children to find all the letters they needed to write both the familiar power words and the new ones they brainstormed with Carol on the spot. We have a great video clip of Carol working the power word out of Jeff, then

grabbing the dictionary and getting him to read out the letters with her as she wrote them down on his power word card for him to enter into the "I like ___." frame. He had to have that "tyrannosaurus rex!" He captured that monster with his talking word processor, taking about 1.5 minutes to find all of those letters, with absolutely no prompting from Carol. On the way, he had to stop to re-write the first 'n' in "tyrannosaurus." He entered it first as a 'u' but edited it immediately without prompting after hearing the computer say the wrong letter out loud. Jeff is one of the children who just NEEDED that auditory feedback.

2. Who Needs a Talking Word Processor?

This section is short and sweet, because in Meyers' words: "Further research is also needed to determine which other populations of children with language disabilities could benefit from the access methods used in this study...." Her access methods were similar to those used by Rosegrant with her children with learning disabilities, and to the methods Carol and I used with the children in Hawaii. There is one common thread between all of these children, however, which I believe may define the target users of the talking word processor most accurately: All were novice reader/writers. Meyers' children were also novice speakers of English, Rosegrant's had had some exposure to standard reading and writing curricula, but had not had success, attested by their less than first grade reading levels. Jeff and Dawn were novices simply because they were first semester kindergarteners, members of a group that seldom gets more than minimal introduction to the written word.

I would like to suggest extrapolation beyond these groups to ANY speaker of English who is not a reader or writer of English. This expands the target user group to non-literate prison inmates and seniors in our high schools who are about to be graduated, whether they can read or not, just

to move them along. I will personally be doing everything I can to make this technology available to every novice reader/writer. My experience over the past ten years, since we first started using the simple, one-line WRITE WORDS module of my prototype ABC Discovery, is that a very large percentage (perhaps 70-80%) of novice reader/writers is intrigued with and can find a large number of personal reasons to write with a talking word processor. Rosegrant's conclusions bear repeating here: "The support involved in the use of the speech synthesizer as it provides information about letter names, letter combinations, words, and how strings of words sound is the most significant form of help during early stages of literacy skill development." This is true for any novice reader/writer. It just makes sense.

3. How to Teach with a Talking Word Processor

This is in some ways the hardest section of the paper for me to write, and in other ways the easiest. It is hard because I have never personally done it, though I worked very closely with Carol Brennan and her Hawaii kindergarten in her modification of the curriculum I suggest in the teacher's guide to Dr. Peet's TalkWriter. It is easy because every activity suggested in the best whole language processes can be used to great benefit when the novice writers are using a talking word processor as their writing tool. This is especially true for the process called "invented spelling" or "invented writing." When you invent words with a talking word processor, you get immediate aural feedback for every step of your experimentation process, under your own control, without asking teacher. I met a five year old who had much experience inventing spellings for his power words. I asked him what his favorite animal was and he immediately started typing "h r s." No need for power cards here, thanks to his great teacher and her support for his invention. But the computer did not say "horse." It said "h r s." He looked at me. I looked at him. I

said "Do you want to try something?" We stuck one vowel after another in between the "h" and the "r" until we got "hors," which sounds like a "bad" word he didn't even know when the Echo synthesizer says it. Just for the heck of it, I suggested we add an "e" at the end. Then it said "horse" clearly and unequivocally. Though this little episode demonstrates the power of the talking word processor in the invention of words, it is not a perfect tool. The boy had me on his second favorite animal: "l f n." It was perfectly recognizable as the large pachyderm. I did not try to expand that one because it sounded good. The process there would be to read to him from Dumbo, Babar and Horton until he just had to take that long word to his talking word processor and type it in letter by letter: "e l e p h a n t," press the spacebar and hear a perfect rendition of his second favorite animal.

When you add either the prediction power of software like Co-Writer (Don Johnston, Inc. 800 999-4660), or the talking spell-checker power of talking word processors like Write Outloud! (Don Johnston) or Dr. Peet's TalkWriter, Macintosh version (by Hartley Courseware, order from Dr. Peet's Software, 800 245-5733), you add another level of auditory support for your personal, self-directed exploration of the written form of your most powerful spoken power words.

But there are novice writers with spatial, musical, and story-telling skills and interests who will be strongly supported by other talking word processing software with drawing tools (Kidworks II (Davidson 800 545-7677), etc.), musical support for letter exploration and initial writing efforts (ABC Discovery in Dr. Peet's TalkWriter, Kidstime(Great Wave 408 438-1990) etc.), and story construction (Storybook Maker(Hartley), WiggleWorks(Scholastic 800 541-5513), etc.). Again, the process is the same: good whole language approaches, building writing and reading experiences from the child

Culture, spoken Language, Interests, Experiences, personal Nature, and Thinking skills of each novice writer. I like to think of this as starting with the CLIENT (note caps in sentence above) of each learner.

Carol Brennan used good whole language process with her kindergarteners. She had each child first tell her, then write their power words. She helped them build a nice ring full of words by the end of the year, which they re-used in various writing efforts when they went beyond the power word stage. Carol also adapted my "BEEP Story" to her "W Story" and had every child write their own "Wizard Story" or "Wholphin Story," with every blank space filled in by the child with "w" words, brainstormed with Carol and added to their power word rings. The children had a great sense of support in their personal exploration of the relationship between their favorite spoken words and the written forms of those words, through their brief experiences with the talking word processor.

There were ten computers in Carol's classroom, enough so each K, 1, or 2 child could have their own computer during their class's computer time, but only one computer had the necessary Echo computer. This is no longer a problem for classes with Macintosh computers and talking word processors that use the software-driven Macintalk text-to-speech. Every computer can be a talking word processor. It looks like we are at a watershed, and none too soon!

References

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