

Writing Issues and Assistive Technology Solutions

Writing is a complex issue. If assistive technology is required to help with writing the complexity of the task increases significantly. In order to determine AT needs, writing can be broken down into two major areas. The first is the physical aspect of the writing process. Can the consumer use pencil and paper effectively for the tasks needed? The second is the writing process. Can the consumer use correct grammar, syntax, spelling, and organizational skills to complete the required writing tasks? This article will briefly look at several alternatives for each of these two areas by using two case studies.

Case #1: The first case describes a young girl who because of physical limitations cannot complete schoolwork with pencil and paper. Here is her case:

1 Name: Sally Age: 8 Gender: F
Primary Disability: Cerebral Palsy
Secondary Disability: ADD
Strengths: Normal intelligence, can physically access mouse and keyboard but not pencil and paper, age appropriate reading skills

4 Community Partners Contacted:
1. School Special Education department
2. GPAT- Training

3 Skills needed for assistive technology (acquired or training required):
1. Able to access keyboard/mouse (acquired)
2. Does not need auditory feedback during writing (acquired)
3. Spelling strategies for using with Co:Writer (training required)
4. Basic knowledge of Mathpad features/ navigational tools (training required)
5. Scanning forms/software skills (training required)
6. Knowledge of Alphasmart maintenance and infrared use (training required)

2 Problem Areas:
1. Can't complete written work without a scribe yet speech is impaired so unfamiliar people can't understand or scribe for her.
2. Ambulatory but awkward- makes carrying a laptop unlikely/difficult
3. Needs constant cueing to stay on task.

2 Solutions consumer (parents) suggested/want:
1. Laptop computer
2. One-on-one parapero
3. Kurzweil 3000

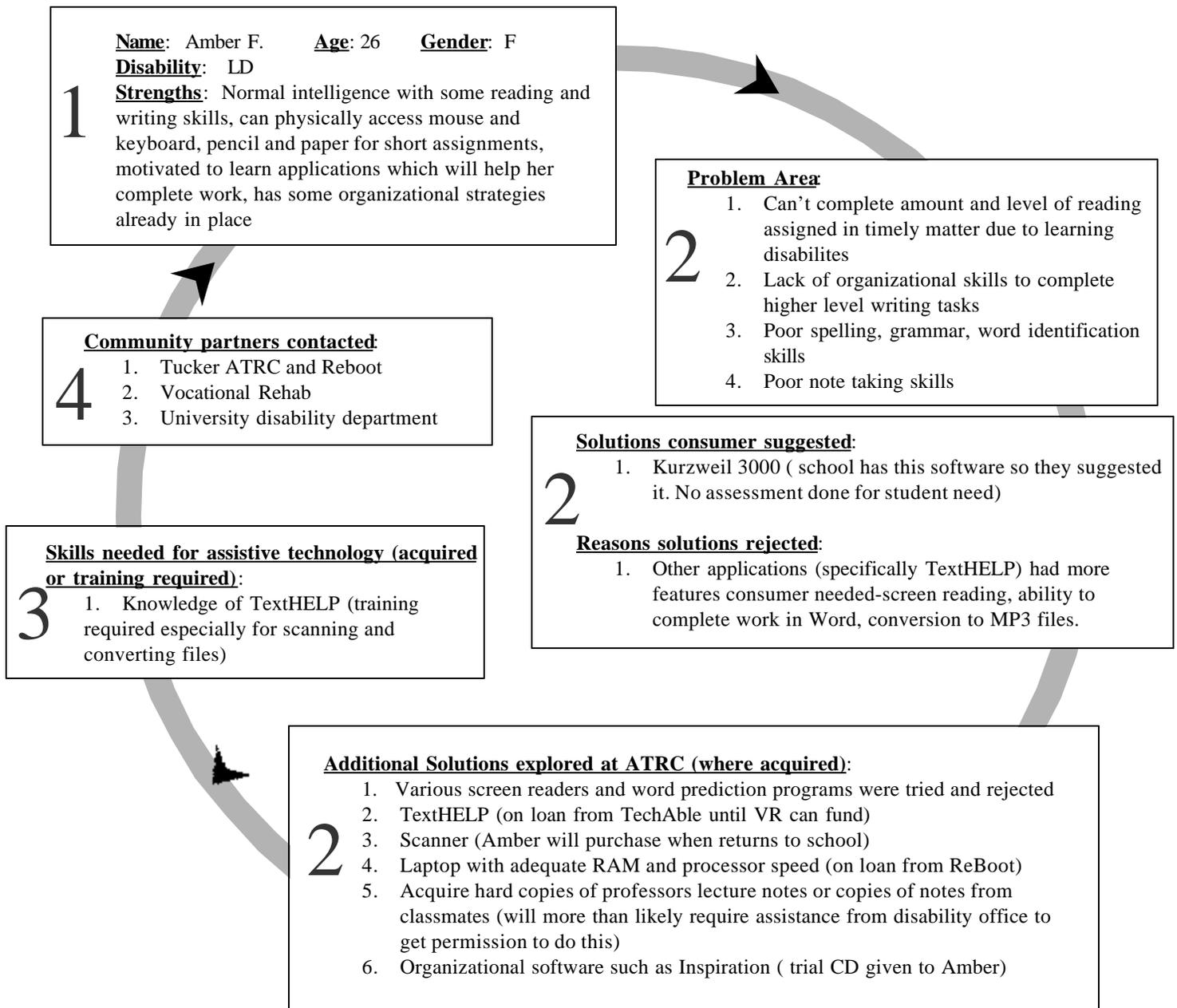
2 Reasons solutions changed as result of ATRC intervention:
1. Laptop is too complicated for 8 year old to handle i.e.- weight, battery life, boot-up time, ease of use
2. One-on-one parapero increases dependence, keeps her separated from peers
3. Kurzweil 3000 features not needed at this time, reading level is age appropriate, does not need auditory feedback, too many bells and whistles for the job. May be a future solution as schoolwork gets harder and more complicated.
Substituted solutions (where acquired):
1. Alphasmart with Co:Writer applet (school provided)
 a. With infrared and computer to Alphasmart software
2. Scanner with Form-typer software (school provided)
3. Mathpad Plus (school provided)
4. Rolling school bag (parents provided)

Several suggestions were given to the parents concerning trying to keep Sally on task. These included using a kitchen timer, a First-Then board, and an egg timer. Sally's parents should work with the school psychologist and/or behavioral intervention staff.

The suggestions listed above made the need for a full-time parapero to be used as a scribe unnecessary. A classroom parapero would be responsible for scanning worksheets, tests, or other work. Given supervision Sally should eventually be able to scan her own work. However, if this takes away time from her completing schoolwork then a staff member should be the responsible party.

As you can see from the solutions Sally’s assistive technology and staffing needs were significantly simplified. At age eight her level of academic work is not so great that she can’t complete most work on a portable keyboard. Because the documents on the keyboard can be downloaded to a computer for further editing, she could complete more complex written work on the computer if needed. Her math needs also fit into existing adapted programs since she is still working on basic arithmetic skills. As she begins more complex math such as algebra and geometry alternatives will need to be considered.

Case #2: The following is the second case concerning the cognitive aspect of the writing process. Even though this article has separated out these two areas, many times clients have problems with both areas of writing necessitating the need to combine solutions. AT solutions can and do often overlap. For instance, word prediction software was first developed for persons with physical disabilities to reduce keystrokes but is now more often used for people with learning issues and writing difficulties.



Amber also needed some assistance navigating the VR system. Some time was spent helping get her connected with a VR counselor so she could eventually get a laptop and software paid for through VR. Because Amber had the opportunity to try various programs at TechAble she could better determine what features were more helpful for her.

Writing Issues and Assistive Technology Solutions (continued)

When accessing the need for assistive technology to help with the writing process it is imperative to look at each specific area of writing as well as reading skills of the consumer. Then one must assess whether the skills are emerging given the age of the consumer. Is the consumer at an age or level where he/she is still able to learn the basic skills of the task? Keyboarding can be an easy solution for writing for a person with dysgraphia but when do you use keyboarding over trying to learn to write by hand. Even extremely poor handwriters need to be able to take a phone message, write a note to a family member, or write a thank-you or birthday card. Looking at the goal of the task can help determine the appropriate low or high tech technology to use. A higher tech solution may increase dependency rather than decrease it due to staff time, maintenance, cost and training requirements. For instance does the person need to only write short pieces but has trouble staying in lines? If so maybe having raised line paper or a writing guide could be an easy and low cost solution.

Since reading is inherently tied to writing it is also imperative to access the reading level of the consumer. Before the 4th or 5th grade children are learning the process of reading. After this they are reading for content. This does not mean that older children or adults can't learn to read. It does mean that one must determine when reading help such as Wynn or Kurzweil is needed in order to get the history chapter done and when working on reading skills is the goal. As you can see from the first case study a solution was rejected (Kurzweil) because it would have given the student too much reading support and she didn't need that kind of support because she needs to be developing her reading skills. In the second case the consumer needed more reading support than Kurzweil could give because she needed to have access to screen reading across multiple applications and on the internet. She has large amount of reading in graduate school to complete. Given her learning disability and age she will probably not improve in her ability to process large amounts of reading therefore compensation is the goal. And even though she can write small amounts: complete lists, short answer tests, take limited notes she will always need help organizing and completing large written assignments.

As you can see the writing process is a complicated one. Finding good solutions to help someone with a disability can be difficult. Many times a period of trial and error is

necessary to determine how well a solution may work. Some solutions are appropriate in certain circumstances such as school or work. Lower tech solutions may be okay at home for more simple writing needs. In this article we have explored several higher end solutions for writing.

The following information includes some highlights of three of the solutions given in the case studies.

Word Prediction

Possible Features (different companies have different features)

- 2-15 word lists displayed after each letter is typed,
- Phonically based and/or based only on letters typed
- Auditory feedback
- Word lists can follow cursor or stay in one place
- User types whole sentence then sentence goes into document (Co:Writer)
- Different size dictionaries, different users can save personal profiles/Dictionaries
- Smart program (computer learns users writing style and predicts for it)
- Change font size and color and background color
- Predict ahead and predict in-line
- Switch scanning

Uses:

- Spelling support
- Decrease number of keystrokes needed
- Help for reluctant writers by providing more support (predict ahead feature)
- Co:Writer feature of completing whole sentence at a time helps focus user
- Give auditory support for word retrieval or poor readers

Prerequisites for use and considerations for choosing which one to use:

- Know letters, sounds of letters
- Has some word recognition skills
- Does user want it to be able to attach to any application?
- How large a vocabulary does the consumer need?
- Does the user need auditory support?
- Need phonetic spelling support (predicts knee even if spelling nee)
- Does user need switch scanning capabilities?

Writing Issues and Assistive Technology Solutions (continued)

Portable Word Processors

Possible Features and or advantages

- Lower cost than laptop/quick boot-up time/ longer battery life
- 4-10 line LCD display
- word processing
- calculator
- word prediction applet available on some models
- auditory feedback on some (greatly increases price)
- new brands have palm application features (DANA)
- light weight
- multiple users can have separate files (some brands have files for multiple documents, some just one document per file)
- download to computer for editing and printing (some can print directly)

Uses:

- persons with dysgraphia
- need help with handwriting but can access a keyboard (mild CP, ABI)

Prerequisites for use and considerations is choosing

- User needs writing support but not all the features of full word processing application
- More portability needed
- Due to small display user's vision needs to be adequate to view screen
- Does user need word prediction?
- Does user need auditory feedback?

Scanning Software

Possible Features (and sample programs)

- Scans into reading program (Wynn, Kurzweil)
- Scans into windows application (TextHELP)
- Scanning software with scanner (User directs where and how to save info –txt., bmp. gif)
- Form Fillers or Form typer –allow user to type answers/info onto scanned forms, tests, or worksheets, etc. (some scanners come with this software , Kurzweil and Wynn have this type of feature built in)

Uses:

- Complete “forms” on computer
- Scan written info for reading aloud by the computer
- Scan info to be read and downloaded to MP3 file/ CD for listening

Prerequisites for use and considerations is choosing

- Labor intensive if scanning books/lots of reading material (who is doing the scanning and are they trained to edit/problem solve)
- Does user need all the features of the higher level programs such as Kurzweil or can the scanning software do the job.
- Check compatibility issues with operating systems, scanner, printer, software