As the consultation model of service delivery spreads, more and more speech and language clinicians are coming out of the therapy room and going into the classroom. Clinicians and classroom teachers can form technology partnerships as they collaborate to use microcomputer software to address the needs of children with speech and language disorders. This guide discusses several of the roles speech and language clinicians undertake as they: (1) use software as a context for communication; (2) adapt educational software; (3) integrate computer applications; (4) cue and prompt communication; (5) collaborate with teachers; (6) teach stimulation techniques; (7) serve as technical advisors; and (8) participate in software selection. The guide also examines the three stages of computer activities (precomputer, computer, and postcomputer) and the issue of whether the clinician or the student should operate the keyboard. A list of seven references and nine organizational, print, and software resources is included. (JDD)
The Role of the Speech Therapist in Technology Acquisition and Use

The distance between the classroom and the therapy room dwindles when classroom teachers and speech and language clinicians collaborate to use microcomputer software to address the needs of children with speech and language disorders. In the process, significant technology partnerships are formed.

Technology applications in general, and educational software in particular, present a shared context in which academics and communication augment each other. The child receives additional exposure to subject matter, increased opportunities to master information, and more occasions to use speech to express understanding of the material presented in the computer program.

As the consultation model of service delivery spreads, more and more clinicians are coming out of the therapy room and going into the classroom. Within the classroom setting, clinicians are providing services to children, collaborating with classroom teachers to accentuate communication opportunities during instructional activities, and teaching teachers how to prompt speech and language performance.

The clinician's role expands from that of a provider of service to a consultant, technical advisor, and learner. This Tech Use Guide discusses several of the roles speech and language clinicians fill in: (a) using educational software for enhancing speech and language performance; (b) collaborating with classroom teachers and aides to use technology to enhance speech and language performance in the classroom; and (c) advising special education administrators when making decisions about acquisition of technology that could assist the communicative and academic performance of communicatively impaired children.

Using Software as a Context for Communication

Speech and language is enhanced when children focus on communicating about the content or operation of a computer program. Students need opportunities to stabilize or expand their articulation, fluency, voice, or language skills in a functional context. They need experience asking questions, commenting, listening, taking turns, and initiating communication. Using the same software in the classroom and therapy area provides that experience.

In 1986, Miller and Marriner advocated employing software as a catalyst to promote carry-over of communication. When children respond to questions or comments about the program, communication becomes the focus of the activity. Conversely, when the operation of the program is the focus, communicative interactions are minimized.

One example of adapting software to a language approach is the creation of a poster for an upcoming school event, project, or holiday. Print Shop is one of several programs for designing posters, banners, and greeting cards. Easy to learn and simple to operate, it is more than a tool program—it is a context for communication. Questions such as “What do we want to say about litter?,” “Should we put pictures with the text?,” “Why do you like this style?,” or “What happens if we put too many things here?” facilitate the communicative interactions that are so essential if students are to learn to use their speech and language appropriately outside the therapy situation.

Software is the means to an end: the end is to get the child to use language to direct, talk about, and comment. Often, if the teacher or clinician deliberately makes a mistake in selecting an option or entering text, an opportunity for problem solving and critical thinking is presented.

Adapting Educational Software

Educational software designed for language arts concepts such as analogies, cause and effect, or inferences is readily adaptable for therapy. Programs originally designed to provide drill and practice for reading comprehension become language comprehension programs when the items or instructions are read aloud to the child. Responding to questions or directions, the child uses his or her speech and language for academically-oriented material. In a group situation, the child with an articulation disorder focuses on his or her sounds in responding; the child with a voice problem would monitor and control pitch or loudness; and the child with a language impairment uses tense markers or other grammatical structures in his or her response.

Integrating Computer Applications

Speech and language clinicians have found that technology is as effective as more traditional approaches,
and in many instances is more engaging than paper or pencil activities. Increasingly, efforts have focused on integrating computer applications into the curriculum as opposed to earlier efforts on supplementing or "adding on" to the curriculum. Software programs are educational tools; when they are used as part of the instructional process, they "fit in." Using a word processing program to construct and revise a story as part of a whole-language approach fits more appropriately into speech and language therapy than allowing a child to play a computer game if he or she performed a series of activities acceptably.

The Three Stages of Computer Activities

The communicative value of educational software is accentuated when the program is tied to nontechnological activities. Cochran and Bull (1991) have modified teaching of writing strategies for use in speech or language. The three stages of an activity—precomputer, computer, and postcomputer—all share the same theme. Cochran and Bull have applied this format to language therapy. During the precomputer activity, they recommend that the clinician structure interactions to establish the activity as one requiring verbal interaction. An example of a precomputer activity for stimulating language comprehension or production is using the Mr. Potato Head toy to teach concepts such as spatial relations (above/below, left/right) and body parts (eyes, nose, ears). In the precomputer phase, the clinician asks questions or responds to instructions from the children for selecting and positioning facial features.

The second stage, the computer activity, is similar in content to the precomputer activity but is in a computer format. For example, the Pacemaker program enables students to construct a face as well as to animate some facial features such as eye blinking, smiling, or crying. A child working on a WH-question formation asks another child, "Where is the hat?" Another child learning spatial terms identifies where different facial features are to be placed. Using his or her newly improved speech sounds, a child with articulation problems can learn to use the correct keys is the focus of the activity.

The third stage, the postcomputer activity, prepares the child to use language skills in another setting. This activity is used to rehearse an assignment, particularly when it is possible to generate a printout from the activity. For example, a postcomputer activity might be a homework assignment to explain how a printout was created. Presenting questions such as "What are you going to tell your mom about how you made this card?" prepares the learner to use his or her communication outside the therapy setting.

Cuing and Prompting Communication

Speech and language clinicians consciously use cues and prompts to stimulate children to use speech and language. Depending upon the way a cue or prompt is worded, a child can be stimulated to follow directions or use speech and language for single word, phrase, or sentence replies. A choice prompt, "Is the animal on the chair or under the chair?" will stimulate a one-word response. A WH-question, "When do you wash the dishes?" is likely to be answered in a short phrase. Lastly, a prompt that asks "Why?" or "How?" is most likely to inspire the listener to respond in sentences or discourse. These techniques seem to be as effective for computers as for nontechnology materials in stimulating speech and language.

Opportunities for prodding communication may be missed if prompting and cuing techniques are not employed. The Q&C (Question, Comment, Question) technique has been developed to remind clinicians to cue and prompt verbal responding. Comments and questions are used to induce the child to comment about the contents of screen displays or to direct the operation of the program. Inexperienced computer users tend to become passive observers rather than active participants in a computer activity. The Q&C technique was developed to help remind clinicians to ask questions to prompt a child to talk. As an example, when using Explore-a-Stony: The Lima Bean Dream, the clinician comments about the display (e.g., "That cow is walking across the field to go into the barn") or about the operation of the program (e.g., "How can we get the goats into the pen?"). The child responds to an utterance using the articulation, voice, fluency, or language pattern being developed. In turn, the clinician makes a comment on the child's utterance that may clarify or amplify what the child said (e.g., "Yes, the cow is eating some hay. She can also eat grass in the field."). The comment is immediately followed by another question (e.g., "What do you think the cow will do when the farmer opens the barn door?").

Controlling the Keyboard

Operating the keyboard is not necessarily consistent with activities designed to stimulate verbal responding or interactions. For many children, operating a computer keyboard helps them to develop a sense of independence, achievement, and confidence. When a child keyboards, program operation can become the focus rather than the context of the activity. There is little need for talking when using the correct keys is the focus of the activity.

Using speech and language to interact with others or to understand or express concepts is a challenge for children with speech and language problems. Sitting at a computer and responding to screen displays by entering responses on the keyboard might accentuate a child's reticence and awkwardness in communicative situations. Keyboarding can actually reinforce nonverbal behavior.

One alternative that is consistent with Miller and Marriner's exhortation to use technology as a context is
for the clinician to operate the keyboard. The child’s
attention and efforts are then channeled toward
descriptions of screen displays or toward the next steps
of operating the program. When the clinician asks, “Why
do you want me to move this object over here?,” the child
has more opportunities to use speech and language in a
functional setting than if the child used the arrow keys to
relocate the object on the screen.

Furthermore, when the clinician keyboards, there is an
opportunity to deliberately make mistakes. This can be an
occasion for a child to learn pragmatic skills about
correcting others, giving instructions, explaining what is
wrong, describing the correct response, and explaining a
decision or recommendation.

Younger children or those with more severe problems
who need opportunities to use speech and language to
convey information or understand directions are not
appropriate candidates for operating the keyboard. Older
children, particularly those with residual language
comprehension problems, can work on tutorial or
simulation programs independently, operating the
keyboard themselves, if the content has previously been
introduced in class or therapy.

Collaborating with Teachers

Children who have speech and language impairments
take their communication problems into the classroom
with them. The vocabulary and grammar problems of
these children clearly impact their academic success.
Classroom instruction is augmented when educational
software is used as a tool in speech and language therapy.
Conversely, carry-over of newly emerging communication
skills is enhanced when classroom teachers know how to
use educational software to complement speech and
that when clinicians know how academic subjects such as
reading, writing, math, or science are taught, they are
better able to assist classroom teachers when speech or
language problems interfere with a child’s progress in
these areas. As technology partners, teachers and
clinicians develop activities and lessons to improve a
child’s inferencing skills. When a child has problems with
abstract concepts, the speech-language clinician may be
able to help design a lesson to simulate additional
experiences for the students.

Clinicians also assist teachers who use word
processing software for teaching language arts, reading,
and writing to maximize the communicative values of
those activities. In principle, as children draft, edit, and
share stories they are creating, they learn to use reading
and writing skills. Collaborating with the classroom
teacher, clinicians extend an essentially reading/writing
activity into a speech and language one. Typing the child’s
words, sentences, or narration, the clinician solicits
additions or revisions. The child or other children in the

Teaching Stimulation Techniques

Classroom teachers would not be surprised to find that
drill and practice, tutorial, and simulation software offer
numerous opportunities to enhance a child’s speech and
language. Clinicians in a technology partnership often find
themselves in the role of teaching the teacher. Cuing and
prompting and the QCQ techniques have been previously
described in this Tech Use Guide. Two additional
procedures used in language therapy, expansions and
expatiations, are worthwhile. Expansions are comments
to a child’s utterance where the teacher expands or
elaborates upon the vocabulary used by the child. For
example, a teacher could expand a child’s naming of the
barnyard animals in the farm scene in the
Explore-A-Story series by naming additional animals that
might be found in a barn or by telling the child about
buildings or equipment that could be found on a farm.
Expatiations, on the other hand, involve rewording a
child’s response into a more complete or advanced
grammatical form. Again, using the barnyard scene in
Explore-A-Story, if the child describes some event (e.g.,
“The horse is running”), the clinician or teacher uses an
expansion such as “Yes, the horse is running in the corral”
or “The horse will jump over the fence after it runs
around.” Expansions and expatiations are used as part of
the QCQ technique to keep communicative interactions
active between the child and the teacher.

Serving as a Technical Advisor

Clinicians often provide technical advice and
assistance about how to hook up, set up, or use different
peripheral devices. As more and more classroom teachers
use word processing software and talking word
processors in particular for language arts activities,
speech and language clinicians are a useful resource.
Explanation without practice is incomplete, so one of the
responsibilities of the technical advisor is to watch the
teacher work with the program and provide feedback and
guidance on how to use the activity as a catalyst for
utilizing speech or language skills.

Participating in Software Selection

Speech-language clinicians assist teachers and
administrators in identifying and evaluating software that
might be used both for teaching subject matter and for
stimulating speech and language. Classroom teachers
look at the content and organization of a software program
for consistency with curricular objectives. Speech and
language clinicians are particularly sensitive to the type
and level of language used in a program, ways software
can be modified to stimulate speech or language delays,
and how software content and operation functions as a
catalyst for communicative interactions. Simulation
programs, particularly those using animation or
synthesized speech, are easily integrated into therapy
activities.

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CONCLUSION

Synergy is the result of interactions between two or more forces to produce an outcome that is superior to what individuals could create by themselves. The technology partnership of the classroom teacher and speech-language clinician in the use of software is synergistic. Transfer of speech and language performance is accentuated, and academic subjects are reinforced. The ultimate beneficiaries of synergy are the children who are better able to use speech and language to learn and to express themselves in the classroom.

References


Resources

Information

Foundation for Technology Access, 1307 Solano Ave., Albany, CA 94706-1888; 415/528-0747.

National Support Center for Persons with Disabilities, International Business Machines, P.O. Box 2150, Atlanta, GA 30055; 800/IBM-2133.

Journals/Newsletters/Software Directories

Apple Computer Resources in Special Education and Rehabilitation, DLM Inc., One DML Park, Allen, TX 75002; 800/527-4747.

1990 Closing the Gap Resource Directory, Closing the Gap, P.O. Box 68, Henderson, MN 56044; 612/248-3294.

Computer Users in Speech and Hearing, CUSH Business Office, Attn: William Seaton, P.O. Box 2160, Hudson, OH 44236.


Software Products

Explore-a-Story: The Lima Bean Dream, D. C. Heath & Company, 125 Spring St., Lexington, MA 02173; 800/238-3565.


The Print Shop®, Broderbund® Software, P.O. Box 12947, San Rafael, CA 94913-2947; 800/521-6263.

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