



DIRECTIONS

Technology in Special Education

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The Value of Technology in Early Intervention

by Linda Heiland

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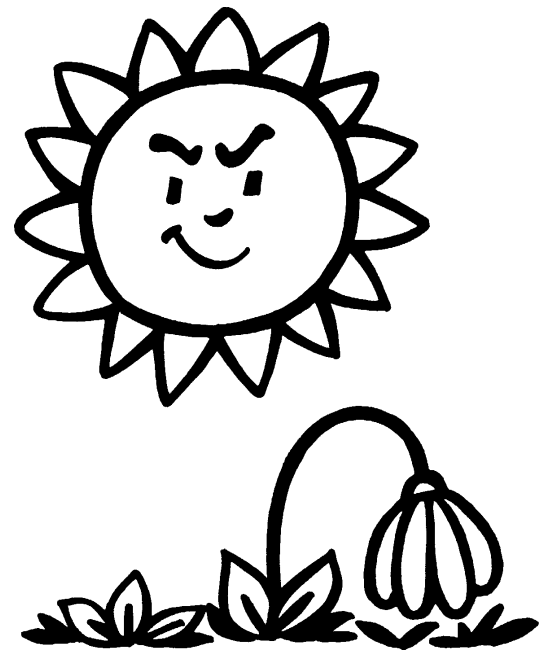
Some educators have a knack for planning, and it can get them into trouble. These are the people who are called upon to write grants on short notice, to develop curriculum and conjure up new programs at the drop of a hat. Linda Heiland displays her considerable skill in the following overview of early intervention. Warning to readers: this information is so comprehensive and convincing that it could almost stand alone as the basis for a grant. Share with caution, or you too could become a grant writer..

The Problem in a Nutshell

Providing quality services for disabled and developmentally delayed children remains a high priority for the nation, the states, and the local communities. Yearly, more and more children are identified as developmentally delayed or showing early signs of more debilitating disabilities. Each year the shortage of qualified educators, paraeducators, and caregivers increases. There are two basic plans of attack for coping with this growing problem: (1) recruit and train more personnel to provide quality services in the education of this population of children and (2) provide more intensive early intervention programs for children identified at birth by collaborative agencies.

Several federal agencies have been developed to assist in the provision of such services, but the time, locations, personnel and monies are simply inadequate to address the growing need. States have also recognized the increasing need for additional services but are plagued by the same problems that local communities are facing: a lack of trained personnel, service locations, time and monies.

Rural communities are by far the hardest hit in this growing crisis. Many



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people are relocating to smaller rural communities, seeking a better lifestyle for their families away from the problems fostered by the larger urban areas. At the same time, many educators are leaving the smaller rural communities to seek the excitement, convenience, and larger salaries that the urban areas offer.

The result is that smaller rural communities throughout the United States are losing personnel that is desperately needed to provide services for a growing population of exceptional children.

Proposed Solutions

Many programs have been developed and implemented to provide services for school-age exceptional children through inclusionary classrooms. Historically, research has demonstrated that this service situation works well for the disabled children and does not diminish the quality of education that is offered for the other children in the class. This solution, however, places an additional burden on the already overburdened general education classroom teacher. Qualified paraeducators, under the direction of certified special education and classroom teachers, are necessary in such situations to assist the special needs students with assistive and adaptive devices, methodology, and support to make this learning strategy successful.

In Praise of Early Intervention

One step toward a viable solution to this growing problem is the development and implementation of quality early intervention programs for

children in the birth through three-year age range. The primary conclusion after approximately fifty years of research is this: quantitative and qualitative data indicate that early intervention results in increased developmental and educational gains for the child and improves the general functioning of the entire family. As a result of early identification and program participation, fewer Special Education and other habilitative services are necessary for these exceptional children. Early intervention programs result in the participating children requiring less special education and other habilitative services later in life. Children who have participated in such programs are retained less often and in some cases are virtually indistinguishable from their non-handicapped peers later in life (U.S. Department of Education, KidSource, 1999).

Technology in Early Intervention

One vitally important component of early intervention programs is the introduction of technology to all children as soon as possible. Technology, if successfully integrated, will allow these children to better manage their lives and to interact more fully and more meaningfully with ideas and with others in their environment (Gilbert, 1999). The potential success of a "connected" education that involves not only students, but parents, future educators, instructors, caregivers, members of the community, families and local service providers is virtually limitless.

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Early intervention through a collaborative team approach should provide the incentive, stimulation and support necessary for these children to succeed later in life. Training should emphasize the communication and collaboration skills that will enhance an educator's and a paraeducator's ability to work with the parents and siblings of disabled children without infringement of the parent/student right. Future training for educators and paraeducators should address the ability to develop activities enhanced by technology that focus on the child and the family, not only in the facility setting but in the home setting as well. Such programs combine the strategies for sensory stimulation, communication skills, and appropriate social interaction skills in a combined home-based and facility-based program of intervention.

Programs that consistently review, revise and adapt assistive and adaptive technology (high-tech as well as low-tech) will assist infants and toddlers in becoming happy, healthy and having the ability to learn all that they possibly can, as early as possible. This "Heads up" strategy will expose children to the stimulation that is necessary for so many of them to facilitate continued growth and development and allow them to share many of the same experiences afforded children without special needs.

Research has repeatedly proven that developmentally appropriate, open-ended software designed to stimulate and support communication can be transformed in an early educational setting to facilitate awareness, confidence, and the control necessary for these children to initiate communication and to reveal abilities that may not have been

apparent previously. The early use of technology has the potential to encourage exploration, risk-taking, and discovery learning. (Knofo, 1994).

In Conclusion...

Early intervention programs that begin at birth or soon after result in greater developmental gains that tend to remain with the children longer. Additionally, the likelihood of developing additional problems is greatly reduced (Cooper, 1981). Parents and teachers who work together can create a climate for obtaining information, stimulate information and develop an atmosphere to enhance motivation, creativity and discover the value of learning.

Early intervention programs have repeatedly proven to be a cost-effective means of developing a long-term solution to some of these problems. High specialized and comprehensive services required to produce the desired developmental gains are frequently, on a short term basis, more expensive to implement than traditional school delivery models. However, significant long-term studies of early intervention programs throughout the country produce consistent data that the long-term cost effectiveness and the benefits to the children and the families far outweigh the initial cost of implementing such a program.

The theory is that the introduction of technology in early intervention programs in a consistent, sustained basis will assist developmentally delayed children to "catch up" with their non-disabled peers. This in turn will eliminate the need for additional services for these children as they age and progress through the more

traditional school structure. Multi-faceted, technology-infused early intervention programs that involve the parents and families offer reap the additional benefits of improved attitudes of parents and siblings toward these children. The support, guidance and availability of much-needed information help to alleviate some of the many outside stresses, frustrations and helplessness that parents and siblings often experience with the birth of a disabled child. Current data indicate that side effects of this type of program include reduced numbers of divorces, suicides, and child abuse.

In conclusion, the ultimate goal is the development and implementation of a quality program for special needs children that will benefit not only these children and their families, but will assist in alleviating some of the pressures that are being placed on an already overburdened education system. With the appropriate planning, training and assistance in implementation, technology-infused early intervention programs could be the first step toward success in this venture.

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A Framework for Aligning Technology With Transition Competencies

Part 3

A. Edward Blackhurst, Elizabeth A. Lahm, Elizabeth M. Harrison,
and Wanda G. Chandler, *University of Kentucky*

*Source: Career Development for Exceptional Individuals, The Council for Exceptional Children
Volume 22, Number 2, Fall 1999*

CONCEPTUAL FRAMEWORK

When decisions are being made about the provision of transition services for individuals with disabilities, a major issue is the problem the person has in functioning in his or her environment. For example, a woman with cerebral palsy may lack the fine muscle control that will permit her to fasten buttons so that she can get dressed independently. A man with a visual impairment may be unable to use printed material that is required to perform his job. A college student, due to an unknown cause, may be unable to solve math problems. Similarly, someone who has been in an automobile accident may have had a severe head injury that has impaired his ability to speak clearly.

In each of these cases, a demand has been placed on the person from the environment to perform some function that will be difficult to execute because of a set of unique circumstances or restriction in functional capability caused by the lack of personal resources. For example, the people described above lack the physical or mental capability to button, read, calculate, or speak.

All of us face situations daily in which environmental demands are placed on us. Our goal is to understand the processes and relate them to the lives of exceptional individuals who face

more complex and restrictive situations. There is the need to know many things, such as the nature of the demands that are being placed on the individual from the environment and how those demands create the requirements to perform different human functions, such as learning, walking, talking, seeing, and hearing. It is important to know how such requirements are—or are not—being met by the person and how factors such as the person's perceptions and the availability of personal resources such as intelligence, sight, hearing, and mobility can affect their responses. In addition, it is important to understand how availability of external supports, such as special education, transition services, rehabilitation, supported employment, different types of therapy, and technology can impact on the individual's ability to produce functional responses to environmental demands.

Although each individual will be exceptional, the common challenge is to identify and apply the best possible array of educational, rehabilitation, technology, and related services that can provide support, adjustment, or compensation for the person's functional needs or deficits. A variety of responses may be appropriate. For example, Velcro fasteners may be used to replace buttons on garments for the woman having difficulty with buttoning. Braille or audio materials

may be provided for the man who cannot read conventional print. The student who has difficulty calculating may require specialized, direct math instruction, while a computerized device that produces speech may enable the person who cannot talk to communicate.

The unifying functional model we propose is displayed in Figure 1. We have developed this model to illustrate the different elements of life associated with a functional approach to special education, transition services, rehabilitation, and related services, including the provision of medical, instructional, information, and assistive technologies. When examining this model, note that the items in each box are meant to be illustrative and not all-inclusive.

Illustrating the elements of the model, their interrelationships, and how the model serves as a framework for making decisions about technology is the following example. Ann is a high school sophomore with learning disabilities who is planning to attend college. Although she has above-average intellectual ability, Ann experiences difficulty with written composition and spelling, plus her handwriting is difficult to read. Her reading rate is slow, and she experiences some difficulty in comprehending written material,

although her understanding of spoken information is excellent. Ann receives most of her education in regular classes with support from a special education resource teacher, who also consults with Ann's other teachers about ways to ensure that Ann will succeed in her college preparatory courses. Those responsible for developing a transition plan for special education also have been involved in making decisions about ways to best prepare her for her college experience.

Application of the model begins with the box at the bottom of Figure 1, labeled *environment and context*. Those involved in transition planning for Ann are concerned with two environments. One is her prospective college environment, the other is her current high school environment. The context is that she will eventually find herself in an academic setting that requires certain skills that must be applied independently. She must develop those skills and learn how to apply them while she is still in high school.

The environment and context place *functional demands* on all of us. Although a host of issues could be addressed related to the demands placed on Ann, those related to technology and transition will be highlighted, since this is the focus of this article. The demands that will be placed on Ann will include the necessity to read and comprehend the written materials that she will encounter in college. Due to the amount of reading that is required, she will need to read that material as rapidly as possible. She also will need to prepare written

compositions, reports, and answers to examination questions. Furthermore, it will be incumbent upon her to prepare written materials that are legible and have correct spelling.

In preparing to make responses to environmental demands, people *explore options* that are available to them that will enable them to respond in a constructive fashion to those demands. This typically involves assessments, experimentation with different options, and making adaptations. In Ann's case, a variety of technology-based options might be considered to assist her in meeting the demands described above. For example, to increase her reading rate, she might explore a computer-based speed-reading program or the use of machines designed to increase reading speed, such as tachistoscopes. She may explore the possibility of books recorded for people with visual impairments or reading difficulties as an alternative to reading. Another option would be the use of a scanner to convert printed text to computer files that could be read aloud through speech synthesis. She might pursue the use of hand-held spelling checkers and the use of word processing computer programs that incorporate spell checking features. She also might investigate the possibility of obtaining instruction in the use of learning strategies to help her develop good study habits, such as those described by Deshler and Schumaker (1986).

One's *personal perceptions* play a big part in exploring response options and making a decision about which option to accept. For example, some people may, or may not, perceive that a need exists or that they have a problem. People also have perceptions about the psychological, physical, and monetary costs of different

alternatives and their consequences.

A second factor in making decisions about response strategies relates to the *personal resources* that people have available to them. These factors relate to their abilities in areas such as physical functioning, cognitive cannot read conventional print. The ability, intelligence, motivation, speech, and other personal dimensions which can be used in producing actions.

A third factor influencing decisions relates to the *external supports* a person has available. Supports are resources available to assist individuals in responding to environmental demands. For example, family members can provide both emotional and physical support. Families also may be able to provide interpretations of their child's or sibling's personal perceptions when a disability interferes with their ability to communicate reactions and preferences. Social service agencies can provide supportive services, such as instruction about ways to cope with environmental pressures. Health insurance agencies can sometimes provide financial support for the purchase of assistive and adaptive devices. Special education and transition services are another major form of external support, as are the use of technology devices and the delivery of various technology services. §

See part 4 in our August issue

Copies of all figures and tables mentioned in this article can be obtained by contacting Dreamms For Kids, Inc.

Introduction to Technology in Transition

Part 6

Sherrilyn K. Fisher & J. Emmett Gardner

*Source: Career Development for Exceptional Individuals
The Council for Exceptional Children
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DISCUSSION

Exploring common horizons of transition and technology has great significance for the future of these shared disciplines. The converging paths of the two fields forms a much broader application and influence on the lives of people with disabilities than each concept considered in isolation or separately. As we examined the articles included in this issue, we found several emerging themes which have implications for practice and for future investigation.

First, using technology to enhance instruction (both for students and educators) is predominant. In particular, given the recent thrust of inclusion and of progress in the general education curriculum, increased attention to academic headway, accommodations, and the related services that support transition to postsecondary environments should be anticipated. What is both exciting and reassuring in many of these articles is the demonstration that the field of special education is developing and perfecting innovative applications of various types of technology in functionally relevant ways. These applications take the technology far beyond an elementary use to a use which—by careful analysis, expertise, and reflection—represents an accurate and creative way to address transition dilemmas.

Second, the importance of the questions both raised and considered as we bring new technology-based tools to transition planning is paramount. Questions of personal choice, family considerations, and self-determination certainly deserve attention. Research examining the effectiveness of technologies “chosen” vs. technologies “prescribed” or “available” would contribute valuable information to those performing technology assessment in transition environments. Undoubtedly there will be more questions of the category that Parette raises: What really *can be* acceptable for individuals and their AT preferences? Will devices continue to draw undue attention to individuals, or are we rapidly approaching the time when robotics, simulated voices, replaceable body parts, and electronic circuitry become so commonplace that no second looks are given?

Third, the use of video-based technology in transition assessment and learning activities is increasing. The capability to bring realism to structured assessment and learning activities may well revive the old controversy between simulated and situational assessment. As virtual worlds become more prevalent and accessible, it is very likely that assessment of transition skills will be accomplished with picture-perfect accuracy and in simulated contexts that are matched closely to the “real-life” setting in which the student

will be asked to function. Davis’ writing regarding the importance of using visual models and signing when administering computer-based assessment, as well as Wissick et al.’s discussion concerning anchored instruction and appropriate role models, provide such viewpoints. The effectiveness of using technology in transition-related assessment and instruction is not just related to how well a computer manages assessment and instruction, but in how naturally and meaningfully the information is presented to the individual learner.

Finally, while political agendas continue to shape the direction and extent of technology assistance, there exists a pressing need to reach joint understanding of the union of technology and transition. The article by Blackhurst et al. provides our field with a model that can be used in a consistent manner to not only understand how technology is linked to transition competencies, but how decisions in the technology and transition planning process take place.

SUMMARY

Starting in the 1980s, system change initiatives sponsored by the United States Department of Education exerted a great deal of influence upon education. Included among these were model demonstration and research programs, interagency assistance and significant policy directives. Transition implementation, and more recently, AT policies and practices have benefited

from these impetuses. In a variety of ways, both the transition and technology fields have continued through the 1990s in a roughly synchronous fashion. In the articles that follow, the reader will notice other barriers—some mentioned specifically and some implied—to full implementation of AT in classrooms and in the process of transition (e.g., expense of technology, training demands, rapid hardware and software developments). Keep in mind that reaching the full power of technology has much more to do with the people involved than with the hardware or what we see as perspective of or obstacles to implementation. Let us not forget that, “As educators, specialists, and advocates we need to stay informed and open to new technologies and to ways of teaching and guiding the transition into the 21st century. We must keep in mind that the psychology of change is always much more difficult than the technology” (Fisher, in press, p. 309). We hope that you will

enjoy this issue and that the work described herein becomes an impetus for this type of change.

REFERENCES

For a list of references, please contact Dreamms For Kids, Inc.

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"King Gimp" Takes the Spotlight: In March, "King Gimp" won an Academy Award for Best Documentary Short Subject. Now the film is showing on HBO. Dan Keplinger, the

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