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(Prompts) (Culp & Carlisle, 1988). Goosens & Crain (1992)

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(Judge & Lahm, 1998; Lewis, 1993).

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- Allaire, J. H., Gressard, R. P., Blackman, J. A. & Hostler, S. L. (1991). Children with severe speech impairments: Caregiver survey of AAC use. *Augmentative and Alternative Communication*, 7, 248-255.
- Batavia, A. I. & Hammer, G. (1990). Toward the development of consumer-based criteria for the evaluation of assistive devices. *Journal of Rehabilitation Research and Development*, 27, 425-436.
- Behrmann, M., Jones, J. & Wilds, M. (1989). Technology intervention for very young children with disabilities. *Infants and Young Children*, 1, 66-77.
- Bowser, G. & Reed, P. (1995). Education TECH points for assistive technology planning. *Journal of Special Education Technology*, 12, 325-338.
- Burkhart, L. J. (1993). *Total Augmentative Communication in the Early Childhood Classroom*. Santa Barbara, CA: Special Needs Project.
- Butler, C. (1989). High tech tots: Technology for mobility, manipulation, communication, and learning in early childhood. *Infants and Young Children*, 1, 66-73.
- Butler, C., Okamoto, G. & McKey, T. (1983). Powered mobility for very young disabled children. Developmental Medicine and Child Neurology, 25, 472-474.
- Campbell, P. H., McGregor, G. & Nasik, E. (1994). Promoting the development of young children through use of technology. In P. L. Safford, B. Spodek & O. N. Saracho (Eds.), *Early Childhood Special Education* (Vol. 5, pp. 192-217). New York: Teachers College Press.
- Carney, J. & Dix, C. (1992). Integrating assistive technology in the classroom and community. In G. Church & S. Glennen (Eds.), *The Handbook of Assistive Technology* (pp. 207-240). San Diego, CA: Singular.
- Church, G. & Glennen, S. (1992). Assistive technology program development. In G. Church & S. Glennen (Eds.), *The Handbook of Assistive Technology* (pp. 1-26). San Diego, CA: Singular.
- Clark, R. (1985). Evidence for confounding in computer-based instruction studies: Analyzing the meta-analysis. *Educational Communications and Technology Journal*, 33, 249-262.
- CO-NET: Cooperative Database Distribution Network for Assistive Technology (1995). *Hyper-ABLE-DATA Database: CO-NET CD-ROM Version* (3rd ed.). Madison, WI: Trace Research and Development Center.
- Culp, D. M. & Carlisle, M. (1988). PA CT: Partners in Augmentative Communication Training. Tucson, AZ: Communication Skill Builders.

- Dwyer, D., Ringstaff, C. & Sandholtz, J. (1991). Changes in teachers' beliefs and practices in technology-rich classrooms. *Educational Leadership*, 48, 45-52.
- Flippo, K. F., Inge, K. J. & Barcus, J. M. (1995). Assistive Technology: A Resource for School, Work, and Community. Baltimore: Paul H. Brookes.
- Gilson, B. B. & Huss, D. S. (1995). Mobility: Getting to where you want to go. In K. F. Flippo, K. J. Inge, & J. M. Barcus (Eds.), Assistive Technology: A Resource for School, Work, and Community (pp. 87-103). Baltimore: Paul H. Brookes.
- Glennen, S. G. (1992). Augmentative and alternative communication. In G. Church & S. Glennen (Eds.), *The Handbook of Assistive Technology* (pp. 93-122). San Diego, CA: Singular.
- Goossens, C. & Crain, S. S. (1992). *Utilizing Switch Interfaces with Children Who are Severely Physically Challenged*. Austin, TX: Pro-Ed.
- Goossens, C., Crain, S. & Elder, P. (1994). Communication Display Books for Engineered Environments: Preschool Environments. Birmingham, AL: Southeast Augmentative Communication Publications.
- Harris, D. (1982). Communication interaction process involving nonvocal physically handicapped children. *Topics in Language Disorders*, 2, 21-37.
- Hutinger, P. L. (1996). Computer applications in programs for young children with disabilities: Recurring themes. Focus on Autism and Other Developmental Disabilities, 11, 105-114.
- Hamilton, B. & Snell, M. (1993). Using the millieu approach to increase spontaneous communication book use across environments by an adolescent with autism. *Augmentative and Alternative Communication*, 9, 259-272.
- Iacono, T., Mirenda, P. & Beukelman, D. (1993). Comparison of unimodal and multimodal AAC techniques for children with intellectual disabilites. A ugmentative and Alternative Communication, 9, 83-94.
- Inge, K. J. & Shepherd, J. (1995). Assistive technology applications and strategies for school system personnel. In K. F. Flippo, K. J. Inge & J. M. Barcus (Eds.), *Assistive Technology: A Resource for School, Work, and Community* (pp. 133-166). Baltimore: Brookes.
- Judge, S. L. & Lahm, E. A. (1998). Assistive technology applications for play, mobility, communication, and learning for young children with disabilities. In S. L. Judge & H. P. Parette (Eds.), Assistive Technology for Young Children with Disabilities: A Guide to Family-Centered Services (pp. 16-44). Cambridge, MA: Brookline.
- Judge, S. L. & Parette, H. P. (1998). Assistive technology decision-making strategies. In S. L. Judge & H. P. Parette (Eds.), Assistive Technology for Young Children with Disabilities: A Guide to Family-Centered Services (pp. 127-147). Cambridge, MA: Brookline.
- King-DeBaun, P. (1994). Storytime! Holiday Fun. Park City, UT: Creative Communicating.
- Lewis, R. B. (1993). Special Education Technology: Classroom Applications. Pacific Grove, CA: Brooks and Cole.
- Lewis, R. B., Dell, S. J., Lynch, E. W., Harrison, P. J. & Saba, F. (1987). Special Education Tech-

- nology in Action: Teachers Speak Out. San Diego, CA: San Diego State University.
- MacArthur, C. A. & Malouf, D. B. (1991). Teachers' beliefs, plans, and decisions about computer-based instruction. *Journal of Special Education*, 25, 44-72.
- Mageau, T. (1990). Integrated Learning System (ILS): Its new role in schools. *Electronic Learning*, 10, 22-32.
- Male, M. (1997). Technology for Inclusion: Meeting the Special Needs of All Students (3rd ed.). Boston: Allyn and Bacon.
- Mistrett, S. G., Raimondi, S. L. & Barnett, M. P. (1990). The Use of Technology with Preschoolers with Handicaps. Buffalo, NY: Preschool Integration Through Technology Systems.
- Parette, H. P. & Angelo, D. H. (1996). Augmentative and alternative communication impact on families: Trends and future directions. *Journal of Special Education*, 30, 77-98.
- Parette, H. P. & van Biervliet, A. (1990). A prospective inquiry into technology needs and practices of school-age children with disabilities. *Journal of Special Education Technology*, 10, 198-206.
- Peterson, N. L. (1987). Early Intervention for Handicapped and At-risk Children. Denver: Love.
- Petty, L. (1994). Powered mobility for your child? Exceptional Parent, 24, 33-35.
- Romski, M. A. & Sevcik, R. (1996). Breaking the Speech Barrier: Language Development through Augmented Means. Baltimore: Paul H. Brookes.
- Spiegel-McGill, P., Zippiroli, S. M. & Mistrett, S. G. (1989). Microcomputers as social facilitators in integrated preschools. *Journal of Early Intervention*, 13, 249-260.

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<sup>:</sup> Golden, D. (1998). Assistive technology in special education: Policy and practice. Reston, VI: CASE and TAM division of CEC

## Educational Application of Assistive Technology for Students with Disabilities

Eunhye Park\*, Bok Sun Hwang (Dept. of Special Education, Ewha Womans University)

Assistive technology serve as the window that enables students with severe and multiple disabilities who previously lived isolated, dependent lives to enhance the quality of life as full and productive citizens. However, the mere presence of technology does not guarantee an automatic success for the meaningful improvements. In order for assistive technology to make a real difference in education, special education teachers should examine specific factors that might affect profoundly on the effects of its use. The purpose of this paper was to identify effective ways to integrate assistive technology into the curriculum on the basis of the four-step process that was integrated technology into teaching and learning activities in order to provide practical and useful solutions that could resolve a variety of complex issues associated with the application of assistive technology as educational tools. As a result of this paper, we suggested the multi-step assistive technology model to guide really useful programs for improving or compensating deficits of students with disabilities. That is, effective technology integration programs should be consisted of the following four-step integration process: (1) selecting target activities for integrating appropriate assistive devices, (2) developing the technology integration plans linked with the individualized educational plans, (3) implementing the technology integration plans in the instructional process, and (4) following the implementation, evaluating and revising the plans on an ongoing basis. In conclusion, to establish effective and efficient assistive technology integration into special education, we emphasized the importance of the access to sufficient funding used to acquire assistive devices and services, rapid development of available devices that are potentially appropriate, and adequate training for professionals to implement needed assistive technology.

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