

The SLICE™ Program

By
Lynda Morris, PhD

Introduction

The SLICE™ Program was piloted in 1995/96 with a 14 year old boy who had severe dyslexic-type learning disabilities. He had already told his parents that he would drop out of school when he turned 16. In May, 2001, that same young man graduated from high school. He now attends a small college, where he was on the President's List at the end of his first semester. (Morris, 96a, 96b).

Since its inception, SLICE™ has successfully served the special needs of more than 200 children ages 8-19. Most of these students were attending public or private schools or schools on two Native American Reservations. In addition, SLICE™ has served juveniles being held in detention centers, at-risk students receiving after-school tutoring and children being home schooled by their parents. SLICE™ has also provided services to approximately 20 young adults earning GED's and 50 political refugees and immigrants learning English. The flexibility and potency of this program to serve special needs populations was clearly established by 1999 (Morris, 99a, 99c, 99e).

SLICE™ has been used by public and residential schools, adult literacy agencies, tutorial centers, individuals, and families, in North Dakota, Texas, Colorado, Arizona, and Utah since 1997. Field data, primarily reported in the form of case study and anecdotal evidence, has consistently indicated that students who used SLICE™ to do their school work became more confident, motivated learners and better readers (Morris, 97, 99b, 99d). Today SLICE™ is primarily used by middle and high school students who qualify for special education, 504 or Title I services. Each student application must be signed by a certifying professional.

Research Base

In 2003, the Center for Research in Educational Policy (CREP) at the University of Memphis published an empirical evaluation of the effects of SLICE™ on reading achievement. The study analyzed Stanford 9 test scores of special education students using SLICE™ who attend two Western Navajo Agency Schools in Kayenta, Arizona and Navajo Mountain, Utah. The main conclusions state that:

- SLICE students had significantly higher gain scores than did Control students
 - Lower achieving students gained more than high achieving students for both SLICE and Control groups.
 - Younger students appeared to have larger gains in both samples.
 - The students who participated for a longer time in SLICE showed higher gains.
- (Sterbinsky, 2003)

The instructional approach used by SLICE™ is derived from a relatively small body of research around the 1970's which indicated that the Neurological Impress Method (NIM), paired reading, repeated reading and echo reading were powerful instructional strategies to help struggling readers, particularly in regard to fluency (Heckelman, 1969) (Langford, Slade & Barnett, 1974) (Lorenz & Vockell, 1979). All of these strategies employ a multi-sensory approach which has long been recognized as the most effective method for teaching individuals with disabilities. NIM, for example, incorporates the child looking at printed text on a page (visual) and pointing at the words (kinesthetic) as they synchronously read aloud with a teacher or parent (auditory). According to the early studies, struggling readers typically experienced dramatic success by using the NIM to read only 15 minutes per day for a cumulative total of only 8-12 hours. Teachers continue to re-discover the value of these techniques. In 1990, for example, Downs and Morin used a combination of NIM and repeated reading methods with students from elementary grades through high school and reported that "all demonstrated rapid improvement in reading fluency and a renewed confidence in their abilities as readers and as learners" (p40).

During the 1990's researchers began investigating the efficacy of using of computer technology to teach and improve reading (Elkind, 1998) (Male, 1998) (Marston, Deno, Kim, Diment and Rogers, 1995) (Meyer and Rose, 1999) (Wise and Olson, 1995) (Wise, Rig and Olson, 2000). Of particular relevance to the SLICE™ Program is a study conducted in 1993 by Elkind, Cohen and Murray where 28 middle school students used computer-based readers for 30 minutes/day over one semester. The researchers reported that 70% of the students improved approximately one grade level or more in reading comprehension, and 40% of these students had gains of two to five grade levels. Torgeson and Barker concluded in their review of technology that, "Perhaps the most promising of all computer-assisted aids for reading acquisition involves computer assisted text reading that allows children with reading difficulties to receive feedback on words that are difficult for them" (1995, p 85).

Computer technology is able to provide assisted text reading to students with reading disabilities on a on a widespread basis and offer them access to whatever literature they need to cope with life (Stahl & Aronica, 2002) (Chafee Amendment, 1996). Furthermore, the technology expeditiously replicates historically successful approaches, like NIM, so that large numbers of youngsters who have print disabilities can also become better readers. SLICE™ capitalizes on the ready availability of computer technology in schools, the affordability of software that will simultaneously read and highlight text, and the eased copyright restrictions on behalf of individuals whose disabilities require alternative access to printed material.

Philosophy

In addition to the historical research basis of this instructional approach, SLICE is grounded in a sound philosophical base of inclusion, academic achievement, student independence and parent involvement. These four basic principles of SLICE™ have been recognized in law and delineated in "good practice" guidelines through IDEA,

Section 504, Assistive Technology Act of 1988, No Child Left Behind Act, and state departments of education throughout the USA.

1. Full inclusion

Today the ethical value, as well as legal necessity of inclusion according to IDEA and ADA is indisputable. Although SLICE™ has been shown to improve students' reading achievement, the original intent was to keep students with dyslexic-type learning disabilities learning alongside their peers in the regular classroom. Consequently, the technology is user friendly, unobtrusive and incorporates universal design for learning. The patent for SLICE™ envisions students using laptop computers that they carry in their backpacks from class to class like other students carry textbooks, notebooks and pencils (Morris, Hefner and Johnson, 2000). Although the majority of SLICE™ students still use desktop computers in their classrooms, the preferred implementation of the program is the "mobile model" (laptop) which has been used very successfully by many students

2. Traditional academic success in the regular curriculum

SLICE™ embraces the fundamental belief expressed in the No Child Left Behind Act that children who have special needs in reading can and should make academic progress in the traditional sense. From its inception, SLICE™ has been committed to using technology to deliver a student's entire, regular printed curriculum rather than portions or variations of it.

In the classroom, for example, a Social Studies teacher can expect SLICE™ students to attend class, read Chapter 7 in the textbook, and answer all of the end of the chapter questions. SLICE™ students quickly realize that they have the technological tool they need to read (and re-read) Chapter 7 and complete their assignment. They understand that if they do the required work, they will succeed and if they don't, they are likely to fail. Given a "real" choice to succeed or fail, SLICE™ students typically finish high school, and many go on to further and higher education.

3. Student autonomy and responsibility in learning.

A key to a productive, satisfying life is the ability to confidently make choices, but choices for individuals who have reading disabilities are limited. In earlier times, non-readers were able to find work as plumbers, electricians, air conditioning technicians, or truck drivers (opportunities); today these professions require passing written exams for essential certifications and licenses (choices). More than ever before, a young person's inability to adequately cope with reading and writing will plague them as they seek employment, attempt to advance in jobs, or be "good" parents and read to their own children. (Cramer and Ellis, 1996).

SLICE™ is offers individuals a tool for a lifetime, beyond school doors. For example, SLICE™ students have been able to read their Boy Scout Merit Badge book, a PADI scuba diver training manual, and the study guide for the Machinist Automotive Service Excellence exam. SLICE™ provides individuals with a lifelong

tool that helps them accomplish any goal they set for themselves (Margolis, V. H. and Michaels, C. A., 1994).

4. Parent involvement

SLICE™ provides parents with current online, printable reports so they can stay informed about their child's reading activity. More importantly, computers seem to offer parents and children a means of communicating that is based on mutual learning and mutual respect. One cannot ignore the underlying message of a parent telling how they stayed up all night surfing the internet WITH their son rather than worrying because he hadn't come home. Or, the joyful disbelief expressed by a parent whose son had made the decision to enroll in technical school because he wanted to get a promotion at work. SLICE™ has been repeatedly instrumental in mending a broken relationship between a failing, angry student and a frustrated, worried parent.

References

- Cramer, S. C. and Ellis, W. (1996). Learning Disabilities: Lifelong issues. Baltimore, MA: Paul H. Brookes Publishing Co.
- Chafee Amendment of 1996, Pub. L. No. 104-197, 17 E.S.C.A., § 121.
- Downs, J. & Morin, S. (1990). Improving reading fluency with precision teaching. *Teaching Exceptional Children*, 22(3), 38-40.
- Elkind, J. (1998). *Computer Reading Machines for Poor Readers, Report # 9801*. Portola Valley, CA: Lexia Institute.
- Elkind, J. Cohen, K. and Murray, C. (1993). Using computer-based readers to improve reading comprehension of students with dyslexia. *Annals of Dyslexia*, 43, 238-259.
- Heckelman, R.G. (1969). The neurological impress method of remedial reading instruction. *Academic Therapy*, 4, 277-282.
- Johnson, D. R., Stodden, R. A., Emanuel, E. J., Luecking, R, and Mack, M. (2002). Current challenges facing secondary education and transition services: what research tells us. *Exceptional Children*, 68,4, 519-531.
- Kayenta Community School, Inc. (2002). *Annual Report Card-School Year 2001-2002*, Kayenta, Arizona: Western Navajo Agency.
- Langford, K., Slade K., Barnett, A. (1974). An explanation of impress techniques in remedial reading. *Academic Therapy*, 9, 309-319.
- Lorenz , L. and Vockell, E. (1979). Using the neurological impress method with learning disabled readers. *Journal of Learning Disabilities*, 12, 420-422.

Male, M. (1998). Technology for Inclusion: Meeting the special needs of all students. Needham Heights, MA: Allyn & Bacon.

Margolis, V. H. and Michaels, C. A. (1994). Technology: the personal computer as a resource tool. In Michaels, C. A. (Ed.), *Transition Strategies for Persons with Learning Disabilities*. San Diego, CA: Singular Publishing Group, Inc.

Marston, D., Deno, S. L., Kim, D., Diment, K. & Rogers, D. (1995). Comparison of reading intervention approaches for students with mild disabilities. *Exceptional Children*, 62(1), 20-37.

Meyer, A. & Rose, D.H. (1999). Learning to read in the computer age. In Onofey, J.F. & Chall, J.S. (Eds.), *From Reading Research to Practice: A series for teachers*. Cambridge, MA: Brookline Books.

Morris, L. (1996, April, a). Dyslexic Student given Sight through Technology for the Blind. Poster session presented at the International Conference of the Council for Exceptional Children, Orlando, FL

Morris, L. (1996, November, b). The SLICE Program: Special Learners Included through Computers in Education. Paper presented at Closing the Gap Annual Conference, Minneapolis, MN.

Morris, L. (1997, October). Assistive Technology Techniques that will keep LD/ADHA Students Learning in the Classroom. Paper presented at Closing the Gap Annual Conference, Minneapolis, MN.

Morris, L. (1999, February, a). The SLICE Program. Presentation at Western Navajo Agency Principals-School Board Members Winter Seminar, Flagstaff, AZ.

Morris, L. (1999, February, b). Troubles/Triumphs: Pioneering Computer Assistive Technology for Dyslexia. Presentation for Colorado Council at Exceptional Children Annual Conference, Colorado Springs, CO.

Morris, L. (1999, April, c). Integrating Assistive Technology into an Adult Literacy Program: How to make Plan "B" Work! Presentation at Missouri Valley Adult Education Association Conference, Fargo, ND.

Morris, L. (1999, October, d). Do Screen Readers Help Young Students Who Have Learning Disabilities? Presentation at Closing the Gap Annual Conference, Minneapolis, MN.

Morris, L. (1999e). The SLICE Program. Four Corners Parenting Magazine, 2,8,8.

National Research Council (1997). *Educating One and All: Students with disabilities and Standards-Based Reform*. Washington, DC: National Academy Press.

National Reading Panel (2000). *Teaching Children to Read; An Evidence-Based Assessment of the Scientific Research Literature on Reading and Its Implication for Reading Instruction*.

Stahl, S. & Aronica, M. (2002). Digital text in the classroom. *Journal of Special Education Technology*, 17, 57-59.

Sterbinsky, A. (2003). *Special Learners Included Through Computers in Education (SLICE): Evaluation report*. University of Memphis: Center for Research in Educational Policy.

Torgesen, J. K. and Barker, T. A. (1995). Computers as aids in the prevention and remediation of reading disabilities. *Learning Disability Quarterly*, 18, 76-87.

Wise, B.W. & Olson, R.K. (1995). Computer-based phonological awareness and reading instruction. *Annals of Dyslexia*, 45, 99-122.

Wise, B.W., Rig, J. and Olson, R.K. (2000). Individual Differences in Gains from computer-assisted remedial reading, *Journal of Experimental Child Psychology*, 77,3,197-235.

Patent

Morris, L. L., Hefner, K. F. and Johnson, B. D. (2000). System and Method for Educating Learning Disabled Individuals (Serial No. 08/834,958).