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ANCHORAGE SCHOOL DISTRICT OCCUPATIONAL THERAPY DEPARTMENT

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Handwriting Versus Keyboarding

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With the increased technology available, educators often consider when the focus should shift from handwriting to keyboarding. Keyboarding may be considered for children who have difficulty with handwriting; however, providing a word processor alone will not be the answer for many children. Jones-Loheyde (1984) indicated that, "Improvement in skill does not come about merely by changing the medium on which it is done." Therefore, the purpose of this article is to review with educators a comparison of skills needed for keyboarding vs. handwriting.

Who Would Benefit from Keyboarding?

A review of the literature suggests there is currently insufficient data to predict which students would benefit from using a computer as an alternative writing tool. It is important to look at the performance components of handwriting and keyboarding. Will the reasons the student experiences handwriting difficulties also affect keyboarding? Children who struggle to write may also struggle to type if they have delayed motor skills and/or difficulty with reading and spelling. It is important to determine what skill negatively impacts handwriting and if that same skill is needed for successful typing. Keyboarding may be a potential alternative for written communication when accuracy and legibility are an issue, but not when speed is the concern (Preminger, Weiss, & Weintraub, 2004).

Speed of Typing vs. Handwriting

For typing to be useful, the process must be automatic and students must reach a typing speed at least equivalent to their handwriting speed. The University of Washington reported that students must be able to type 10-12 words per minute for typing to be an effective method for written expression. Multiple resources correlate handwriting speed with typing speed; in general, those who write more quickly will develop keyboarding skills more quickly. A study of 300 children in primary school showed a high correlation between handwriting and keyboarding speed, with handwriting speed consistently faster than keyboarding speed across all ages (Connelly et. al, 2007). Compositional quality was superior in the handwritten scripts. Dunn and Reay (1989) concluded that students whose keyboarding speed equaled or exceeded their writing speed had improved content of narrative writing. Typing must be automatic so the student can free their cognitive process for composing, rather than for the motor skill of typing.

Advantages and Disadvantages of Keyboarding

The advantages of keyboarding include improved neatness, legibility, and accuracy. The writing process may be more efficient as the student can more easily correct typing and spelling errors. The disadvantages are that it is more difficult to write in specific settings (e.g., library, field trips, etc.) and many children are not familiar with keyboarding. Keyboarding is a complex skill that is not simple to acquire or maintain and achieving fluency requires many hours of practice.

Keyboarding Instruction

Keyboarding is learned in three phases: Cognitive, associative, and autonomous. It requires the memorization of a large number of associations between spatial locations, verbal codes, the positioning of fingers on learned locations and then pressing each key with precision and timing. It requires attention, motor speed and accuracy, visual discrimination and processing, letter recognition, and a basic level of spelling and written language skills (Struck, 1995, 1998).

There is considerable variability in recommendations for keyboarding instruction for students. The majority of keyboarding instruction programs are geared toward individuals in the business community rather than toward school children. Recommendations in a literature review included practice at least four times a week, with a minimum of 25-30 hours of instruction before children become proficient (e.g., Schuller, 1989). Schuller explained that touch-typing courses are only effective if the student receives substantial initial instruction followed by regular practice throughout the year. *The need for intensive instruction and maintenance skills suggest that a team (school staff, parent, and student) should be prepared to devote daily practice time when recommending word processing for a student*.

Developing automaticity in typing, along with motivation to use the technology, are important for functional skill development. Providing a keyboard is not enough. The student must receive instruction and ongoing practice to develop competency. For example, children diagnosed with a learning disability that have access to word processing do not necessarily reduce the number or type of revisions they make (Freeman, 2005). These findings are similar between handwriting and word processing. However, when instruction in revision was combined with word-processing, the amount and quality of revision improved.

Minimal resources look at evidence-based support of using keyboarding with children who are disabled. Keyboarding, by itself, may not be a useful tool for children with an orthopedic, neurological, or cognitive impairment; however, the use of a computer or word processor with augmentative and adaptive features such as word-predict programs or touch windows may be helpful. This topic is beyond the scope of this article but information regarding augmentative communication and written production is readily available from a variety of sources.

Ergonomics

Finally, when looking at the use of keyboarding with students, it is important to remember ergonomics. Keyboards are designed for adult-sized hands. Smaller “kid-sized” keyboards, along with a smaller mouse or trackball may be helpful at preventing body discomfort. Having appropriate sized chairs and workstations are critical. Adjustable keyboard trays may be the answer to worksites that will accommodate a variety of sized students. Children are not as in-tune to body mechanics as

adults, and need to be taught good posture and techniques, including a good sitting posture with feet on floor, having the monitor at eye level, and arms close to the side and wrists in neutral.

Given that students may be typing for many more years than in the past, it is important to teach good habits and prevent repetitive stress injuries. Parents and teachers should encourage the student to practice good keyboarding habits. The combination of good ergonomics, formalized instruction, and daily practice are key elements in developing successful keyboarding skills.

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