



Research Academic Importance of Handwriting

Compiled (2008) by: Joan Scanlon-Dise, OTR
Developer of “**I Can Do It!**”[®]
Manuscript Handwriting Program

Handwriting is Complex 2

Academic Impact of Handwriting 2

POOR WRITERS GET LOWER GRADES 2

PREDICTION OF ACADEMIC SUCCESS..... 2

ABILITY TO COMMUNICATE KNOWLEDGE THROUGH WRITING..... 2

WRITTEN LANGUAGE SKILL 3

SPELLING SKILL 5

OTHER ACADEMIC SUBJECTS 5

THINKING, PROCESSING, LEARNING INFORMATION 5

AMOUNT OF WORK COMPLETED 6

MEMORY 7

MEMORY AND ABILITY TO TAKE NOTES 7

MOTIVATION..... 8

Importance of Explicit Teaching of Handwriting 8

GOAL OF INSTRUCTION 8

Readiness of Young Children for Handwriting 9

DOES PRACTICE MAKE PERFECT?..... 9

READINESS 9

ATTENTION OF YOUNG LEARNERS 9

SUCCESS VS. FAILURE 9

BEGIN WHERE THE CHILD IS 9

ENABLING STUDENT SUCCESS WITH ‘INTELLIGENT CHALLENGES’..... 10

WHEN TO TEACH HANDWRITING 11

Special Needs Students..... 11

Why Screening is Important..... 12

Visual-motor Skill Transfer to Academics is Not Automatic..... 12

Full Citations 13

PLEASE NOTE: *BOLD* in quotations indicates *my* emphasis.



Handwriting is Complex:

“Although transcription may seem “mechanical” when it is automatized later in writing development, young writers often labor to master the complexities of the process.” [Berninger, 1999]

“Learning to write letters fluently and automatically is not a trivial task for young children when the importance of transcription skills in the writing process is considered (Jones & Christensen, 1999; McCutchen, 1998).” [Edwards, 2003]

Academic Impact of Handwriting:

Handwriting impacts student academic success in a variety of ways, including the following:

POOR WRITERS GET LOWER GRADES

Students who write with poor quality are very likely to receive lower grades than a student with neat handwriting, despite compositional quality. (Sheffield, 1996) (Alston & Taylor, 1987) (Briggs 1970).” “...although we may think we can objectively separate content from presentation, Briggs (1970, 1980) has shown unequivocally that this is not so. When content is equated, **children who write badly get lower marks.**” [Rubin & Henderson, 1982]

“**Handwriting quality may be used, albeit unfairly, to judge a student’s intelligence or achievement.**” [Sheffield, 1996] Our handwriting “...may influence the way people think about us, and in quite serious ways either open doors or limit progress.” [Sassoon, 1995]

“...teachers’ judge and grade students based on the appearance of their work, and the world judges adults on the quality of their handwriting.” [Sheffield, 1996]

“In studies (Briggs, 1970, Alston & Taylor, 1987)...the quality of handwriting did affect grading by experienced markers regardless of the papers’ content.” [Sheffield, 1996]

PREDICTION OF ACADEMIC SUCCESS

“In an attempt to identify children at risk for failure, Simner found that **form errors are valuable predictors of academic performance.**” [Moore & Rust, 1989].

“The findings underscore evidence reported by Simner that **printing errors can be utilized for the purpose of identifying children with potential learning problems.**” [Moore & Rust, 1989]

“...the printing sample can aid in the **early detection of students at risk for poor academic achievement.**” [Moore & Rust, 1989]

ABILITY TO COMMUNICATE HIS KNOWLEDGE THROUGH WRITING

The **functional goal of handwriting is to communicate.** To be successful academically in school, students must communicate their knowledge. For this reason, it is vital that it be taught, and taught properly, with thoughtful understanding of the complexity of the task and demand on memory for the young learner.

McHale & Cermak (1992) have reported, “elementary students typically spend **50% of their day performing paper-pencil tasks.**” [Tseng & Chow, 1999]



“Because writing is a fundamental means for students to communicate their knowledge in other content areas, it is a crucial skill for success in school. (Christensen, Thurlow, Ysseldyke, & McVicar, 1989; Graham, 1982; Harris & Graham, 1985).” [Stein, 1994]

WRITTEN LANGUAGE SKILL

Handwriting has been shown to *directly affect the development of written language skill.*

“The findings from the current study indicate that handwriting is indeed causally related to learning to write. Students who received supplementary handwriting instruction outperformed their counterparts in the contact control condition (i.e., phonological awareness instruction) on measures assessing not only handwriting but writing skills as well.” [Graham, Harris & Fink, 2000]

“In summary, explicit supplemental instruction that helps young children write letters accurately and quickly can increase the probability that they will become skilled writers.” [Graham, Harris & Fink, 2000]

“Consequently, the mastery of handwriting skills not only appears to facilitate the initial process of learning to write, as demonstrated by this and previous studies (Berninger, et al., 1997; Jones & Christensen, 1999), but may also affect the outcomes of the learning process over time, at least up to a period of 6 months.” [Graham, Harris & Fink, 2000]

“An important prerequisite to articulating complex and coherent written text is producing legible and fluent handwriting.” [Connelly, et al., 2005]

“Handwriting is a vital tool in the writing process. As such, it is an important part of the acquisition of literacy. As Graves (1983) wrote, “Handwriting is the vehicle carrying information on its way to a destination.” [Farris, 1991]

“Writing is hard work. Writing can be hard early in writing development because it is resource-draining to apply strategies to the transcription processes of handwriting and spelling. It becomes easier to the extent that transcription processes can become automatized...” “To the extent that we can help beginning writers automatize transcription processes, we ease their burden for the ultimate challenge of constructing new ideas and solutions to problems.” [Berninger, 1999]

“Evidence shows that the fluency of handwriting can predict compositional quality well into the teenage years. The amount of variance in composition quality accounted for by handwriting fluency declines from 66% at early primary primary level to 16% at middle secondary level (Berninger 1999). This decrease in the variance accounted for by handwriting suggests that as mechanical low level skills become fluent they may have less impact on cognitive load.” [Connelly, et al., 2005]

“Berninger (1999) has demonstrated that handwriting fluency accounted for 41% of the variance of compositional quality in fourth to sixth graders in the United States. Given that our sample were performing at the speed of sixth graders and that handwriting fluency accounted for 42% of the variance in compositional quality, as measured by the rubric, then we can see that the current results mirror those of Berninger (1999).” [Connelly, et al., 2005]

“According to Graham (1990), if children laboriously form letters during text production, they often forget what they are trying to communicate through the writing process,



because attentional resources are consumed by the working memory required simply to write letters and produce text (Graham, et al., 2000).” [Edwards, 2003]

“Children referred for problems in written expression often have impairments in orthographic coding, fine-motor finger skills, and orthographic-motor integration (Berninger, et al., 1995).” [Berninger, 1999]

“Previous research has shown that **individual differences in handwriting skills are related to how much and how well children write** (see Graham, et al., 1997; Graham & Harris, 2000) and that **early, supplementary handwriting instruction can boost the writing performance of poor handwriters immediately following instruction** (Berninger, et al., 1997; Jones & Christensen, 1999).” [Graham, Harris, & Fink, 2000]

In a cross-sectional study of 300 primary grade students, 300 intermediate-grade students, and 288 junior high students, “...**transcription skills (handwriting and spelling) and working memory contributed statistically significant variance to composing at all developmental levels.**” “...the contribution of transcription shows developmental changes.” “For compositional fluency (rate of composing), transcription is most important in the primary grades...” “The contribution of transcription to the quality of composition peaks during the intermediate grades when expectations for written assignments increase and children vary greatly in the degree to which their transcription skills are adequate for the assignments given.” [Berninger, 1999]

“In contrast to the results of Scardamalia et al., (1982), **transcription skills contributed to composition skills in both the primary and intermediate grades**, although the contribution of handwriting was more pervasive than that of spelling. In the primary grades, the path from handwriting to compositional fluency and the path from to compositional quality were significant, but the path from spelling was significant only for compositional fluency and not for compositional quality. In the intermediate grades, only the path from handwriting was significant - for both compositional fluency and quality; spelling contributed to composition only indirectly through its correlation with handwriting.” [Berninger, 1999]

“Consistent with our predictions, **supplemental handwriting instruction also led to greater gains in compositional fluency than did instruction in phonological awareness.**” [Graham, Harris & Fink, 2000]

In a study by Jones & Christensen [1999] the **story writing quality of a group of 1st grade students improved to that of peers after their handwriting was improved.** “Although it was anticipated that there would be a significant relationship between orthographic-motor integration and the ability to express ideas in writing, the magnitude of the effect was surprising. In Grade 1, the correlation between handwriting and written expression was .73 when reading scores were partialled out. Thus, when reading was controlled, approximately 53% of the variance in story writing scores was accounted for by speed and accuracy in writing letters.” “This paints a very optimistic picture. It suggests that difficulty in handwriting is amenable to instruction. Further, it suggests that **improvement in handwriting will result in comparable improvement in written expression.**” [Jones & Christenson, 1999]

In a study by Berninger et al., (1997), **students showed improvement in compositional fluency** (on the Writing Fluency subtest of the WJ-R) **as a result of specific handwriting instruction.**



“As McCutchen (1995) noted, **until transcription processes, such as handwriting, become relatively automatic, they impose a significant drain** on available resources and limit other writing processes, such as planning and content generation.” [Graham, Harris & Fink, 2000]

“Consistent with our predictions, supplemental handwriting instruction also led to greater gains in compositional fluency than did instruction in phonological awareness.” [Graham, Harris & Fink, 2000]

SPELLING SKILL

“The alphabet task, which requires that the alphabet be written in lower-case, manuscript letters in sequence (Berninger & Alsdorf, 1989), was correlated significantly with spelling achievement at the end of kindergarten...” [Berninger, et al., 1991]

“The consequences of illegible handwriting would be relatively unimportant if handwriting were an end unto itself rather than a means to an end. However, this is not the case. **Poor penmanship is a barrier to both the clarity of written expression and spelling competence** (Strickling, 1973).” [Graham & Madan, 1981]

“The common processes that influence how easily both handwriting and spelling are learned are orthographic coding of letters in written words and letter knowledge (how accurately and precisely letters are represented in memory and produced on the graphic motor channel). Handwriting, however, is also influenced by the fine-motor processes that affect the planning and coordination of finger movements. Spelling is not directly influenced by these fine motor processes, but **children with handwriting and spelling problems have a more difficult time learning to spell than children with only spelling problems** (Berninger, Abbot, et al., 1998).” [Berninger, 1999]

OTHER ACADEMIC SUBJECTS

“Alston & Taylor (1987) add that “problems in this mechanical skill are likely to **spill over into the child’s level of success and failure throughout the curriculum.**” [Sheffield, 1996]

“Because handwriting is a basic tool used in many subjects - taking notes, taking tests, and doing classroom work and homework for almost every content area as well as language arts classes - **poor handwriting can have a pervasive effect on school performance.**” [Spear-Swerling, 2006]

“Simner (1982) investigated the value of using form, addition, and deletion errors as a means of predicting academic success. He reported that **form errors (poorly written letters) correlated with academic performance measured at the end of kindergarten and throughout first grade in reading, phonics, language, and math.**” “In an attempt to identify children at risk for failure, Simner found that form errors are valuable predictors of academic performance.” [Moore & Rust, 1989]

THINKING, PROCESSING, LEARNING INFORMATION

“The ideal English student, as you can see, is quite like the ideal learner in other areas of learning, in that critical reading, writing, and listening are required in virtually all subject areas. Yet the **language arts are more central to education than perhaps any other area. Without command of one’s native language, no significant learning can take place. Other domains of learning rely on this command.** The ideal English student should



therefore come close to being the ideal learner, and while helping our students to gain command of reading, writing, and listening we should see ourselves as laying the foundation for all thought and learning.” [Paul, 1990]

“In short, critical writers engage in parallel tasks when writing to those of reading. Both are challenging. **Both organize, engage, and develop the mind.**” [Paul, 1990]

In the broader sense, writing is thought to assist in development of mental abilities – it “concentrates the mind.” **A student engaged in writing must analyze and synthesize information. This develops critical thinking skills and contributes to further learning.** [Whiteman, 1981] “This explanation is consistent with literature data showing that, from 6 to 9 years of age, graphic execution is cognitively costly. Thus, **6 to 7 year-old children would devote two-thirds of their composition time to transcription** (Foulin & Fayol 1988). These results suggest that **young children have to allocate resources to low-level activities specific to writing (i.e., handwriting, spelling)**. The cost of graphic transcription also appears in the activity of subvocalization in young children (Simon 1973). Indeed, during the first two years of learning to write, children subvocalize what they write. This activity of subvocalization is generally interpreted in terms of cognitive load and suggest that the graphomotor activity consumes cognitive resources.” [Bourdin & Fayol, 2000]

AMOUNT OF WORK COMPLETED

“One of the most commonly reported problems of children with severe handwriting difficulties is that they are **very slow and never manage to get enough written in the allotted time.**” [Rubin & Henderson, 1982]

“Emphasizing how often this automaticity is not achieved, Phelps, Stempel, and Speck (1985) studied 1372 Dallas students in grades 3 through 8. They concluded that **10% of the 3rd and 4th graders had difficulty with speed and legibility. And 20% of the 5th through 8th graders wrote too slowly to meet school demands. Many high school students cannot write legibly or quickly enough to deal with their school work.**” [Sheffield, 1996]

Graham, Harris & Fink [2000] reported in their study that “**Consistent with our predictions, supplemental handwriting instruction also led to greater gains in compositional fluency than did instruction in phonological awareness.**” “As expected, the gains in handwriting performance obtained at posttest were maintained 6 months later.”

“The aim in handwriting instruction is the production of a personal hand which is both flowing and natural, but is **legible and fast enough to meet all reasonable demands...**” [Baily, 1988]

“**Too many students are handicapped in their work in high school and college by handwriting that is slow and illegible.** Too many intelligent adults are hampered in the world of work by writing that is often interpreted as illiterate.” [Sheffield, 1996]

An additional criterion for **functional handwriting is that it must involve fluid, natural movements that allow sustained writing without pain.** Sassoon (1995) reports that pain when writing is a common but not modern complaint (Solly 1864; Sheehy & Marsden 1982; Hughes & McLellan 1985), and **in one survey of 15-year-olds, pain when writing was reported by 40% of girls and 20% of boys.** In another small survey of students at “school-leaving” age, Sassoon (1990) found **40% of girls and 25% of boys in pain when writing.**



MEMORY

“There are at least three reasons that handwriting must be carefully taught to all children. First, **handwriting allows access to kinesthetic memory, our earliest, strongest, and most reliable memory channel.**” [Sheffield, 1996]

“Handwriting is important because it taps into kinesthetic learning. Our first and strongest memory system is the kinesthetic one (Zaporozhets & Elkonin, 1971). Competent writing is our access to utilization of this crucial channel for school learning. **Because kinesthetic learning is such a strong learning channel and so reliable, all children need to assimilate accurate formation of alphabet letters to a point that forming these letters requires no conscious effort.**” [Sheffield, 1996]

“Writing is often likened to a juggling act in which the writer must juggle multiple simultaneous goals (e.g., planning what to say and how to say it, selecting words and sentence and discourse structures, producing text, monitoring what is written and what is about to be written, and revising on-line, etc.) without dropping any of the goals.” “The instructional implication of a capacity-limited view of working memory is that **transcription skills such as handwriting and spelling should be taught until automaticity is achieved** in order to free up limited working memory resources for the higher-level cognitive processes of composing.” [Berninger, 1999]

MEMORY AND ABILITY TO TAKE NOTES

“Transcription can be an aid to *planning*, for example, when **notes are written as a source of “extra-memory”** to supplement capacity-limited working memory, as suggested by Graham.” [Berninger, 1999]

Regarding the “capacity-limitation” and “temporal-coordination” views of working memory (Berninger, 1999), “One instructional implication of the need to create a management system for both space and time resources is the production and use of written notes during planning. Written notes, which draw upon transcription skills, may serve two purposes. First, they create what Graham calls “extra-memory” to supplement capacity-limited working memory...” “The written notes, in effect, increase the capacity of the work space (number and nature of processes supported) in working memory. Second, they allow the writer to refer to the plans at multiple points in time so that the simultaneous goals of text generation and transcription (on different pathways) can be coordinated more effectively.” [Berninger, 1999]

Sassoon (1995) reminds us of the importance of looking beyond the early handwriting training in primary grades and considering **long-term impact** on students. “**Focus on neat perfection, aesthetically pleasing qualities, and details of specific formation rather than speed with readability is ill advised and impractical, and will negatively impact students at higher grade levels.** Those responsible for teaching writing in primary students must consider this long-term consequence during instruction. As Dr. MC Williams, Director of Bureau of Language Arts in Chicago Public Schools noted in the College CHES (cited in Johnson 1984), “The test of good penmanship today is ‘**Can someone read it?**’ rather than ‘**Is it beautiful?**’ ”

Handwriting is ...”a means to an end, not an end unto itself, and should therefore be produced with **maximum efficiency and minimum effort.**” [Graham & Miller, 1980]



MOTIVATION

“Graham and Weintraub (1996) suggested that **there are a number of ways in which the mechanical demands of handwriting may interfere with the higher order processes involved in composing text.**...Finally, students’ motivation may be impacted because of experiences of frustration with the writing process.” [Jones & Christensen, 1999]

“A similar cycle may exist in written expression **for students who lack automaticity in handwriting.** Failure in writing is likely to result in lower motivation to learn in the future, loss of self-efficacy, development of external locus of control, and avoidance of writing tasks (Ames, 1992; Bandura, 1986; Covington, 1983).” [Jones & Christenson, 1999]

“...a child who leaves these formative years; feeling badly about himself or herself as a learner, with an aversion to learning and a dislike of school, will **never fully realize his or her latent abilities and talents.**” [Elkind, 2006]

Importance of Explicit Teaching of Handwriting:

Graham, Harris & Fink (2000) reported the following: “...there has been a **tendency to downplay or even eliminate handwriting instruction** as part of the writing program (Berninger, 1999, Graham & Weintraub, 1996), as approaches such as whole language and process writing have placed greater emphasis on content and process and much less emphasis on form. The findings of the current study as well as the investigations by Berninger et al., (1997) and Jones and Christensen (1999) however, **indicate that such an approach may be ill-advised with beginning writers** who experience difficulty in initially mastering the intricacies of handwriting. **Students in these studies benefited from explicit and supplemental instruction in how to form and fluently write the letters of the alphabet, as they evidenced improvements in both their handwriting and compositional skills.** Thus, if educators want to improve the writing of these students, they need to focus not just on the content and process of writing, but on transcription skills such as handwriting as well.” [Graham, Harris & Fink, 2000]

GOAL OF INSTRUCTION

“The aim of handwriting instruction is the production of a personal hand which is both flowing and natural, but is **legible and fast enough to meet all reasonable demands.**” [Baily, 1988]

An additional criterion for functional handwriting is that it must involve **fluid, natural moments that allow sustained writing without pain.** Sassoon (1995) reports that pain when writing is a common but not modern complaint (Solly, 1864; Sheehy & Marsden, 1982; Hughes & McLellan, 1985), and in **one survey of 15-year-olds, pain when writing was reported by 40% of girls and 20% of boys.** In another small survey of students at “school-leaving” age, Sassoon (1990) found 40% of girls and 25% of boys in pain while writing.

Sassoon (1995) reminds us of the importance of looking beyond the early handwriting training in primary grades and considering long-term impact on students. **“Focus on neat perfection, aesthetically pleasing qualities, and details of specific formation rather than speed with readability is ill advised and impractical, and will negatively impact students at higher grade levels.** Those responsible for teaching writing in primary students must consider this long-term consequence during instruction. As Dr. MC Williams, Director of Bureau of Language Arts in Chicago Public Schools noted in the College CHES (cited in Johnson, 1984), “The test of good penmanship today is ‘Can someone read it?’ rather than ‘Is it beautiful?’”



Readiness of Young Children for Handwriting

DOES PRACTICE MAKE PERFECT?

“Practice does not make perfect. Practice makes permanent. Perfect practice makes perfect.” [Author unknown]

READINESS

Readiness is defined as *“prepared physically and mentally for some experience.”* [Webster, 1975]

“As in other content areas, **all children are not equally prepared to begin handwriting instruction.** Students who have not attained sufficient mental maturity, motor control, or perceptual development are **scarcely ready to participate** in a formal program.” [Graham & Miller, 1980]

“How is readiness assessed? Generally, a student should demonstrate: (a) a mental age of 4-0 to 5-0 (Simon, 1957); (b) an interest and desire to write; (c) adequate muscular coordination; (d) the ability to make visual discriminations; (e) an understanding of the concept of left to right progression; (f) a writing hand preference (left or right); and (g) the ability to draw a circle, diagonal line, and horizontal line.” [Graham & Miller, 1980]

ATTENTION OF YOUNG LEARNERS

Even for adults, “You can concentrate only so long before your attention wanders.” [Higbee, 1996]

“It has been recommended that the study period should be shorter for difficult tasks, young, inexperienced learners, and early stages of learning, than for easier tasks, more mature learners, and tasks that are in an advanced stage of learning.” [Higbee, 1996]

“Brought together, play and work are pleasurable; it is only their separation that is painful.” [Elkind, 2007]

SUCCESS VS. FAILURE

“Illegible handwriting is found to have secondary effects on school achievement and self-esteem.” [Malloy-Miller, et al., 1995]

“To feel like someone special, to please your parents and teachers, to be well-liked by your classmates and to fulfill expectations is to feel worthy. What a gift it is to feel capable of accomplishing what is expected. And what sadness it is to feel inferior, to feel incapable or inadequate, to experience shame.” [Bruns, 1992]

BEGIN WHERE THE CHILD IS & PROVIDE OPPORTUNITY FOR NON-CONTRIVED AND FULLY INDEPENDENT SUCCESS

As David Elkind, author of *MisEducation* (1987) tells us, success makes children confident and competent, and teaches them trust, initiative, independence, and autonomy rather than negative feelings such as inferiority and helplessness. He suggested that we **“...provide young children with the experiences that will allow them to emerge from Kindergarten**



and first grade with a robust sense of industry and competence, and an eagerness and enthusiasm for further schooling.”

“Much of cognition and learning depends on identifying the relevant knowledge which the learner already has in existing memory so that this knowledge can be used as a starting point for learning what is new. Having no starting point, or an unnecessarily distant one, will hamper learning and reasoning, so will an unwillingness to deal with a starting point from which the end-point is not obviously within reach.” [Meadows, 1993]

“Learning something new does not occur in a vacuum. Rather, **new learning always builds on what the learner already knows.**” [Baker, et al., 2006]

ENABLING STUDENT SUCCESS WITH “INTELLIGENT CHALLENGES”

To be successful, handwriting instruction, as with all educational instruction, must provide what David Elkind (1987) referred to as an **“intelligent challenge.”** This would be providing a challenge that is just **“...enough beyond the child’s level of comprehension to encourage an effort at understanding...”** but will enable success. An “unintelligent challenge,” on the other hand, is one that no matter how much effort the child puts forth, he will not be successful. This is too great a risk, because as Elkind says, **“Unintelligent challenge is frustrating and discourages initiative and encourages guilt** (for not understanding).” [Elkind, 1987]

Certainly, it is important that children learn that everyone makes mistakes and that we all learn from failures. As Holt says, “...we need a semantic distinction here, between non-success and failure.” [Holt, 1964] However, as he also stresses, **“Of course we should protect a child, if we can, from a diet of unbroken failure.”** What kids need **“...is the experience of doing something really well-so well that they know themselves, without having to be told, that they have done it well.”** [Holt, 1964]

Even if the child does not experience such strong negative emotions as frustration, guilt, inferiority, and helplessness due to their lack of success, they will certainly lose interest and joy in learning the material! **“By insisting when the child is not ready, you may destroy any possible interest when he or she is ready.”** [Elkind, 1987]

How do you provide “intelligent challenges?” Start where the student is; *do not* jump ahead of their capacity to perform! Elkind says, **“In general, we can challenge a child more by horizontal enrichment (by elaborating on what the child already knows) than by vertical acceleration (by introducing totally new and abstract concepts).** Lev Vygotsky suggested the term “scaffolding” as “helping children in ways sensitive to their level” [Hirsh-Pasek, 2003].

“...easily foster self-confident learners through activities that gently challenge children to reach the edge of their developmental level, but not beyond.” [Hirsh-Pasek, 2003]

“One of the main determinants of how easy something is to learn is how meaningful it is to the learner. If it doesn’t make sense, it will be hard to learn; the more meaningful it is, the easier it will be to learn.” [Higbee, 1996]

“Generally, the more you know about a particular subject the easier it is to learn new information about it, not only in terms of remembering the information but also in terms of understanding it. Learning builds on learning. If you already know something about a



topic, if you are already familiar with it, then not only will the new information be more meaningful but you will also have something with which to associate it...” [Higbee, 1996]

WHEN TO TEACH HANDWRITING

Keith Beery, author of the widely recognized *Developmental Test of Visual-Motor Integration*, says that geometric forms including the X need to be mastered before handwriting instruction begins. His comments are supportive of the point that simple, basic lines must be mastered before a student can effectively combine them to make a more complex form. Indeed, this makes common sense. Beery says, “Keeping in mind Piaget’s and others’ developmental findings, it seems **prudent to postpone formal pencil and paper writing at least until a child can easily execute a copy of the Berry VMI oblique cross. The oblique cross requires the ability to draw the diagonal lines used in many letters.**” [Beery, 2004]

“At the heart of motor miseducation is the belief that if you start a child earlier in a particular motor skill, the child will have an advantage over children who begin learning that skill at an early age.” “...Similar conclusions can be drawn from two studies of identical twins. In these studies, one of each pair of twins was taught a motor skill, such as stair-climbing or cube manipulation, while the other twin was not. In both studies, the untrained twin learned the skill more easily when confronted with it at a later age. After the second twin had learned the skill, there were no differences between the twin who had learned the skill early and the one who had learned it late. **Training is important, too, of course, but it is more effective and efficient when it is introduced when the child is physically ready than when it is not.**” [Elkind, 1987]

Special Needs Students

“...children with special needs...can be taught to write.” **“A critical element in designing a successful writing program for these students is recognizing that they are capable.”** [Graham, Harris & Larsen, 2001]

“These children may be viewed as so challenging that a form of pedagogical paralysis occurs, as teachers are uncertain about what to do or lack confidence in their own capabilities to successfully teach these children (Kame’enui, 1993).” [Graham, Harris & Larsen, 2001]

“...set high but realistic expectations for each child’s writing performance; help students develop an “I can” attitude...” [Graham, Harris & Larsen, 2001]

“A critical element in enhancing the writing development of children...is to **identify and address obstacles that impede their success in learning to write.**” [Graham, Harris & Larsen, 2001]

“...outstanding literacy instructor...” **“approached each child as a competent learner** – one who can learn to work productively and independently in the classroom.” [Graham, Harris & Larsen, 2001]

“The beliefs teachers themselves have about teaching and learning and the nature of expectations they hold for students also exert a powerful influence (Raffini). As Deborah Stipek (1988) notes, **“To a very large degree, students expect to learn if their teachers expect them to learn.”** [Lumsden, 1994]



Why Screening is Important

“A person who starts out going nowhere generally gets there.” (Dale Carnegie)

“**If you don’t know where you are going, you will probably end up somewhere else.**”
(Laurence J. Peter, 1919-1988)

“Handwriting is a complex perceptual-motor skill that is dependent upon the maturation and integration of a number of cognitive, perceptual and motor skills, and is developed through instruction (Hamstra-Bletz and Blote, 1993; Maeland, 1992). While a plethora of information in lay and professional literature about many of the common problems experienced by school age children, **difficulty with handwriting is often overlooked and poorly understood.**” [Thorne, 2008]

“The fact that the problems of our children were all rather different also emphasizes that the skill of writing must be examined under all circumstances relevant to the classroom. For instance, the child’s writing may be different when copying, writing from dictation, writing under speed stress or writing creatively. For some, the problem may include an intellectual component; the child who has difficulty with spelling may find that working out the sequences of the letters creates difficulty and so his handwriting deteriorates. For others, the problem may be specifically visuo-motor. They may have to go back to the very basic task of learning how to copy accurately using the correct sequence of movements. **Only through an examination of these factors can we help to eliminate the problem of poor handwriting.**” [Rubin & Henderson, 1982]

“It is clear that there is a need for a reliable, systematic assessment procedure which looks at the characteristics of handwriting relevant to the remedial teacher. **A sound analysis of strengths and weaknesses in the child’s performance is essential for the development of a good individualized remedial programme.**” [Rubin & Henderson, 1982]

Visual-motor Skill Transfer to Academics is Not Automatic

“A number of studies report significant improvements in *Beery VMI* test scores and similar sensory-motor measures following various types of teaching programs. However, **transfer of improved sensory-motor integration skills to academic skills does not occur automatically.** Thus, effective processes for teaching children to draw circles and squares must be applied, as soon as children are ready, to the teaching of letters, words, sentences, and other shapes.” [Beery, 2004]



Full Citations:

PLEASE NOTE: **BOLD** in the quotations indicates *my* emphasis.

Joan Scanlon-Dise, OTR

Alston & Taylor, 1987, *Handwriting Theory & Practice*, Croom Helm Ltd, London & Sydney.

Baily, 1988, *Handwriting: Ergonomics, Assessment, & Instruction*, British Journal of Special Education, Vol. 15, No. 2, 65-71.

Baker, et al., 2006, *Vocabulary Acquisition: Synthesis of the Research*, Prepared by the National Center to Improve the Tools of Educators, funded by the U.S. Office of Special Education Programs, 32 pgs.

Beery, Keith E. & Natasha A. Beery, *The Beery-Buktenica Developmental Test of Visual Motor Integration*, 5th Edition, 2004, NCS Pearson, Inc., Minneapolis, MN.

Berninger, 1999, *Coordinating Transcription and Text Generation in Working Memory during composing: Automatic and Constructive Processes*, Learning Disability Quarterly, Vol 22, No.2, 99-112.

Berninger, et al., 1991, *Theory-based Diagnosis & Remediation of Writing Disabilities*, Journal of School Psychology, Vol. 29, 57-79.

Berninger, et al., 1997, *Treatment of Handwriting Problems in Beginning Writers: Transfer from Handwriting to Composition*, Journal of Educational Psychology, Vol.89, No. 4, 652-666.

Bourdin & Fayol, 2000, *Is Graphic Activity Costly? A Developmental Approach*, Reading and Writing: An Interdisciplinary Journal, 13: 183-196.

Bruns, 1992, *They Can But They Don't: Helping Students Overcome Work Inhibition*, Penguin Books, NY.

Connelly, et al., 2005, *The Slow Handwriting of Undergraduate Students Constrain Overall Performance in Exam Essays*, Educational Psychology, Vol. 25, No. 1, Feb 2005, 99-107.

Edwards, Lana 2003, *Writing Instruction in Kindergarten: Examining an Emerging Area of Research for Children with Writing and Reading Difficulties*, Journal of Learning Disabilities, Vol. 36, Issue 2, 136-148.

Elkind, David, 1987, *MisEducation*, Alfred A. Knopf, New York.

Elkind, 2006, *Early Childhood Education: Developmental or Academic*, Education Next.

Elkind, 2007, *The Power of Play: Learning What Comes Naturally*, Perseus, Philadelphia, PA.

Farris, 1991, *Views and Other Views: Handwriting Instruction Should Not Become Extinct*, Language Arts, Vol. 68, 312-314.

Graham, Harris & Fink, 2000, *Is Handwriting Causally Related to Learning to Write?* Journal of Educational Psychology, Vol. 92, No. 4, 620-633, 2000.

Graham, Harris, & Larsen, 2001, *Prevention & Intervention of Writing Difficulties for Students with Learning Disabilities*, Learning Disabilities Research & Practice, 16 (2), 74-84.

Graham & Madan, 1981, *Teaching Letter Formation*, Academic Therapy, Vol.16, Issue 4, 389-396.



Graham & Miller, 1980, *Handwriting Research & Practice: A Unified Approach*, Focus on Exceptional Children, 13 (1980), 1-16.

Higbee, 1996, *Your Memory*, Marlowe & Company, New York.

Hirsh-Pasek, 2003, *Einstein Never Used Flash Cards*, Rodale, USA.

Holt, 1964, *How Children Fail*, Dell Publishing Co., New York.

Jones & Christensen, 1999, *Relationships Between Automaticity in Handwriting and Students' Ability to Generate Written Text*, Journal of Educational Psychology, Vol.91, No.1, 44-49.

Lumsden, 1994, *Student Motivation to Learn*, Eugene OR: ERIC Clearinghouse on Educational Management [ED370200]

Malloy-Miller, et al., 1995, *Handwriting Error Patterns of Children with Mild Motor Difficulties*, CJOT, Vol. 62, No.5.

Meadows, 1993, *The Child As Thinker*, Routledge, New York.

Moore & Rust, 1989, *Printing Errors in the Prediction of Academic Performance*, Journal of School Psychology, Vol. 27, 297-3000, 1989.

Pasternicki, George, 1986, *Teaching Handwriting: The Resolution of an Issue?*, Support for Learning, Vol. 1, No. 1.

Paul, 1990, *Critical Thinking: What Every Person Needs to Survive in a Rapidly Changing World*, Edited by J.A. Binker, Center for Critical Thinking & Moral Critique, Sonoma State University, Rohnert Park, CA Accessed on www: 8-08.

Rubin & Henderson, 1982, *Two Sides of the Same Coin: Variations in Teaching Methods & Failure to Learn to Write*, Special Education Forward Trends, Vol. 9, No. 4, 7-24, 1982.

Sassoon, 1995, *Handwriting: The Forgotten Facet of Literacy*, Basic Skills, 10-12.

Sheffield, 1996 *Handwriting: A Neglected Cornerstone of Literacy*, Annals of Dyslexia, Vol. 46, 21-35.

Spear-Swerling, 2006, *The Importance of Teaching Handwriting*, LD Online. WETA.

Stein, 1994, *Effective Writing Instruction for Diverse Learners*, School Psychology Review, Vol. 23, Issue 3, 292-406, 1994.

Thorne, 2008, *Why Some Kids Hate to Write*, re-printed article, Apraxia Kids website.

Tseng & Chow, 1999, *Perceptual-Motor Function of School Age Children with Slow Handwriting Speed*, AJOT, Vol. 54, No.1, 2008.

Webster, 1975, *Webster's New Collegiate Dictionary*, G. & C. Merriam Company, Springfield, MA.

Whiteman, et al., 1981, *Writing: The Nature, Development, & Teaching of Written Communication*, National Institute of Education (U.S.), SWRL Education Research & Development Laboratory, Published by Lawrence Erlbaum Associates.