Reprinted courtesy of MamaOT. These two posts were initially published on March 16 and 19, 2014.

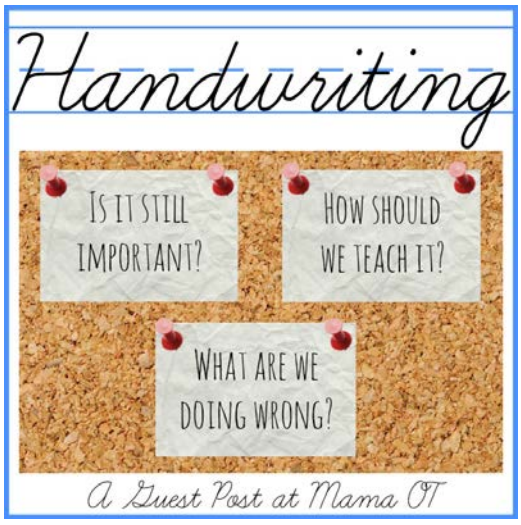
HANDWRITING:
Should we still teach it?
Why we should focus more on letter size than letter formation?

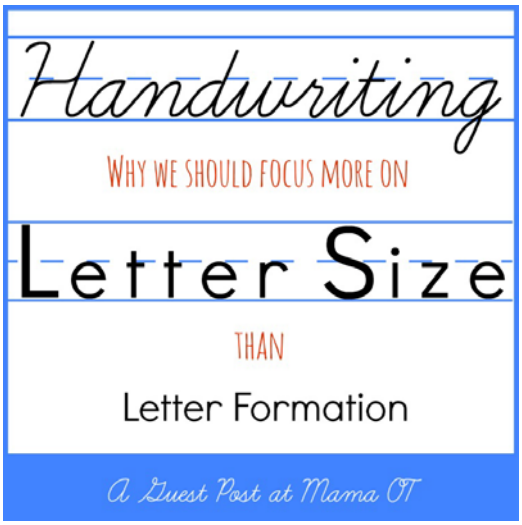
I am honored to welcome guest blogger, Dr. Beverly Moskowitz!
Bev is an occupational therapist, expert in the field of school-based practice,
and creator of a relatively new (and very exciting!) approach to handwriting.
Dr. Moskowitz provided a compelling post on why we still need to teach handwriting
(even in this age of technology),
how occupational therapists typically work on handwriting,
and why we may need to re-think that approach.

I had the unique opportunity to interview Bev, and she had some profound insights to share
about the role that handwriting and handwriting intervention play in our children's education.
Dr. Moskowitz is here to give us a front-row seat to her evidence-based approach to handwriting
that focuses more on letter size than on letter formation.
I recently attended her training and have begun implementing this concept in
my own school-based OT practice.

And let me tell you a little secret…it works!

. . . . .



and


Mama OT: *In this age of technology, is handwriting really that important?*

Dr. Moskowitz: Yes. But you're not alone in questioning it. The prevalence of computers in our classrooms and the potential they have to transcribe volumes of work in record times has led many to believe that handwriting is antiquated and that handwriting instruction an unnecessary use of time.

But here are the facts:

1. Handwriting is not a self-evident skill. Normal development and the passing of years don't insure that students will acquire habits and patterns that are either efficient or effective. This is confirmed by the research. Children *may* be able to make letters that are recognizable in isolation

or small groups. But in time when speed and volume are factors, their appearance often deteriorates significantly.

2. Keyboarding is not a faster skill. In fact, research has shown that children write more words and do so more quickly in grades 2, 4 and 6 when they print them than when they type. Furthermore, handwriting instruction supports automaticity, speed and output. In other words, when children have the skills to print legibly and neatly, they write more and they write faster.

3. The manual task of handwriting stimulates centers of the brain associated with learning, memory, creativity and more. MRI studies show a clear difference between students taught to print and those visually shown letters. In one of the neuroimaging studies by Dr. Karin James from Indiana University, four weeks of each approach showed a marked contrast in the electrical activation of the brain. Students who were instructed and practiced printing had brain maps illuminated comparably to that of adults. In comparison, there was no change in the electrical activity for children simply regarding letters. The implication is that the brain is exponentially engaged during the process of printing. These measurable results and imaging pictures argue forcefully for the inclusion of printing instruction as the process itself helps reinforce early learning.

4. Writing letters by hand has been proven to help children recognize and remember letters more easily than if they typed them. Compounding the argument for the importance of putting pencil to paper are studies that show heightened neural stimulation during printing versus keyboarding. In addition, students remember less when typing as compared to while printing.

Mama OT: *In my experience working as an occupational therapist, I've found that handwriting is one of the main reasons students are referred to OT for screenings and assessments in the school-based setting. Why do you think that is?*

Dr. Moskowitz: There are several reasons for this. The easiest is the prevalent but erroneous belief that printing is a self-evident skill and that instruction is therefore not needed. Strangely, that philosophy is often paired with a popular linguistic philosophy that encourages students to write without attention to the mechanical aspect, as if doing so would dampen the love of immortalizing thoughts onto paper. These romantics seemed convinced that students couldn't handle correction.

It is no small coincidence then that surveyed teachers admitted to not being comfortable with handwriting instruction. In fact, only 12% noted that they'd had any formal background in the subject.

That lack of understanding has led many to assume that printing could be mastered by simply completing worksheets independently after all other work is done.

Together, along with the overall economic cutbacks confronting school districts across the country, many administrators deem as superfluous the consumable workbooks required by most handwriting instructional programs.

In turn, districts are forced to make hard choices. Services, subjects, personnel and more are put on the chopping block.

But as if all of the above was not enough to discourage even the most stalwart of handwriting instruction supporters, the mandates to differentiate instruction, obtain voluminous data, intercede at the earliest signs of struggle and procure proficiency scores on all local, state and national tests, have forced teachers to cry 'uncle.' They've just run out of time. They are often unable to cover curriculum aside from that required by tests used to determine future funding. In fact, it feels like

No Child Left Behind has actually left a lot of curriculum behind…handwriting being one of them.

Mama OT: *In your experience, what do OTs most often focus on when working on handwriting with students?*

Dr. Moskowitz: OTs are nothing if not holistic. We've been trained to be analytic, comprehensive, methodical and inventive in evaluating, treating and documenting our treatments. Toward that end, we have relied on the wealth of theories that have informed our understanding of development, perception, motor skills and cognition. And being the professionals that we are, it stood to reason that we'd apply equal zeal in addressing all of the deficits, building the foundation skills and layering on accommodations identified by allied professions and our own ingenuity. The problem is *not* that we have *not* been diligent, consistent or deferential to the literature. Lots of therapists are using marvelous techniques, energy and wisdom to plug in all the holes, to remediate perceptual delays of visual discrimination and spatial relations, to strengthen the core and maximize in-hand manipulations. Traditional approaches to instruction based on the formation of letter shapes pervade the existing options and our orientation to the issue. We've been cognizant of logical times to push-in support, like handwriting instructional time. Plus, our students are seen regularly. Yet we acknowledge as a group that carryover and follow through are ongoing concerns.

But the research is only starting to catch up with the real variables impacting legibility. Process-oriented interventions (i.e. all the traditional treatments we've pursued heretofore) have been shown to be inconclusive or mixed at best and do not appear to promote function. And that's the word that is slow to get out there. **Performance-oriented techniques hold the most promise in promoting function and participation.** The evidence shows that specific skills like handwriting respond best to specific skill training.

It's not glamorous and it's not consistent with our impairment-oriented roots.

But it is consistent with best practice.

What we have to do requires a significant paradigm shift. We need to work smarter and to embed handwriting sensibility into the curriculum so that good skills are utilized throughout the day. We need to suspend disbelief, as it were, and attend to the task specific training required to be neat printers. Function and participation must be our mission, even if it means leaving contributing or popular factors unattended. **Pencil grip, letter shapes and yes, directionality of stroke, too—none of these impact readability as much as we have previously thought.**

The American Occupational Therapy Association (AOTA) has been vocal on this front. They caution us to focus less on building skills outside of the classroom or with materials not germane to the curriculum. But historically, that's exactly what we've done. We've got cool stuff in our therapy rooms, cool apps on our iPads and even cooler manipulatives that can be transformed into letters. But unless we are able to give teachers concepts, sound bites, goals, materials and strategies that are fun, easy, measurable and cut across all subjects, we are sentencing ourselves to ever-enlarging caseloads. Worse, we're not fostering the independence students need for success.

Mama OT: *I've heard that you have been successful taking a slightly different approach to handwriting intervention, focusing more on letter size than letter formation. Can you please explain a little more about that?*

Dr. Moskowitz: For many years, I was a school-based therapist drowning in handwriting referrals. Using

my knowledge of neuromotor, fine motor, perceptual and cognitive development as well as popular intervention programs, I worked tirelessly to correct deficits and teach letterforms. I assumed that once interfering factors were controlled, children would be amenable to structured lessons and on the road to neat printing. Unfortunately, I never seemed to get my students to the point of consistency and legibility, carryover and graduation.

That's when I started playing around with variables that seemed more impactful. **I noticed that by focusing on letter size, form followed quickly.** On top of that, the overall appearance of the written page changed dramatically if not immediately. In a short amount of time, the special education children were becoming the neatest printers in the school.

Motivated by those achievements, I put my toe into regular education classrooms to see if the strategies translated. The reception was astounding. **Teachers reported instant changes in students' printing.** Children consciously and carefully began making letters the right size to earn stars—the incentive that evolved into our scoring system. One teacher shared the story of a parent confessing to scolding her daughter for being so irresponsible, bringing home someone else's assignment book. She didn't recognize her own daughter's printing after one 30-minute lesson. **Those early successes led me to formalize, conceptualize and test my approach.** While it is one thing for my students to experience triumph, it's another matter entirely for other therapists or teachers to replicate the feat, and another still to have it proven.

Once I'd finished my doctoral program, I remained affiliated with Temple University in Philadelphia. I asked my professors that if they ever had students looking for a study, to test my methods. Within a couple years, we had two willing candidates. One did a meta-analytic review of the literature and reached the same conclusion as me. **Direct instruction was the most effective way to go, along with embedded lessons, mnemonics, self-monitoring, verbal cuing, visual modeling, home involvement and more—all features of my program.**

The other did a controlled empirical study, the largest of its kind. Using two school districts, one in rural upstate New York and another in urban Massachusetts, our demographics included over 200 students in grades Kindergarten, First and Second Grades. Assigned to either a control or intervention groups, each student participated in 8 weeks of instruction using either the **Size Matters Handwriting Program** (SMHP) or a teacher-directed incidental approach. Comparing the change scores from before and after, the difference was huge. Significance was achieved at a .001 level. In other words, the students in the treatment group showed such a profoundly measurable difference in printing in terms of legibility, form, size, and alignment that the statistician volunteered to write the discussion section for the journal. He wanted 'in' on a result of this magnitude.

The Size Matters Handwriting Program is a concept-driven approach. It is not workbook-driven. There is a lot of upfront teaching to insure that children have the knowledge to critique their efforts and to print neatly. Both the OT Practice Framework and the research attest to the importance of empowering patients/clients/students with information and decision-making. It contributes to their investment in the process and the outcomes. On many levels, Size Matters does just that.

On top of that, it is realistic and reflective of the time constraints and economics that plague our educational system. First of all, since it is concept-driven, no materials are actually needed at all. Therapists or teachers can use their own dice, run off good adapted paper, draw writing lines on the board and use colored markers to indicate letter size. Most importantly, by extracting handwriting legibility to its essence—Letter Size—one can embed handwriting awareness into the entire school day for any subject at any time.

The premise is this: Letters come in 3 sizes—Size One, Size Two and Size Three. When you focus on Letter Size, form follows. With only 3 sizes, it is easy to remember 'The Rules', especially since they come packaged as a 'song and a dance.' Correcting errors in Letter Size

makes an immediate difference in the consistency and appearance of the written page. This is the prime variable influencing readability.

The Dice Game is an instant hit. It's the modality used to determine practice and remediation. In time, the audible sound of clinking dice reminds students to 'think Letter Size.' It's embarrassingly simple but undeniably powerful.

Scoring for Letter Size occurs by noting whether Letter Lines TOUCH the Writing Lines in all the right places. This is an observable and measurable commodity. Students count the number of letters written followed by the number of letters printed the right size. With the first number placed in the denominator and the second in the numerator, all parties can track progress on letter size accuracy. Children learn to score themselves. Parents and teachers can do it, too.

Scoring for spacing is encouraged only after 80% accuracy is achieved on Letter Size. This is done through drawing Spaghetti or Meatballs (i.e. yellow lines or red circles) inside or between words respectively. Equally engaging, students relish the concrete and fun concepts that explain how to make their printing look its best.