The Importance of Handwriting and the Case for Cursive

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“The human hand allows the mind to reveal itself.”
-Maria Montessori, The Secret of Childhood
“WRITING IS A KEY TO A DOUBLE GAIN. IT ENABLES THE HAND TO MASTER A VITAL SKILL LIKE THAT OF SPEAKING AND TO CREATE A SECOND MEANS OF COMMUNICATION THAT REFLECTS THE SPOKEN WORD IN ALL ITS DETAILS. WRITING IS THUS DEPENDENT UPON MIND AND HAND.” - MARIA MONTESSORI
The “Cursive or Print?” debate now starts with “Writing or Typing?”
The Great Handwriting Debate

With the ever increasing speed of technological advancement, is handwriting itself becoming obsolete?

HOT
- KEYBOARDING

NOT
- My name is
- CURSIVE

Cartoon: "Welcome back to school, students!" Kid: "Oh, sorry, kids, I forgot..." Teacher: "They spent the entire summer texting. It takes a while to wean them." "Welcome back to school, students! WB 2 skool starts."
The Case For Dropping Handwriting Instruction

“Education should focus on the future.”

- Everything is online and digital, handwriting isn’t necessary anymore.
- Handwriting is “old fashioned” and a waste of time.
- Precious instruction time can be better used for more practical skills like keyboarding and programming.
- Typing is faster, easier and what students will be using eventually anyway.
- Fine motor skills can be developed in other ways. Fine motor skills developed through typing and other technological uses.
- Typing levels the playing field for students with poor handwriting.
- “Typing automaticity. . . allows [students] to focus on higher-order concerns, such as rhetorical structure and word choice.”

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“Progress for progress’s sake must be discouraged, for our tried and tested traditions often require no tinkering. A balance, then, between old and new, between permanence and change, between tradition and innovation because some changes will be for the better, while others will come, in the fullness of time, to be recognized as errors of judgment.” (Dolores Umbridge in J.K. Rowling’s *Harry Potter and the Order of the Phoenix*)
Arguments for handwriting based on “common sense logic.”

- Preserving and connecting to history.
- Ability to read primary source documents.
- Personal touch of handwritten notes. Providing a signature.
- Handwriting is artistic in nature.
- Handwriting “reveals something unique and ineluctable about our inner being.”
- The pleasure of feeling pen move across paper.
- Calculators didn’t eliminate the need for learning basic computations, Read-aloud technology doesn’t eliminate need to learn to read… typing doesn’t eliminate need for handwriting.
- Eliminating handwriting is “dumbing down” curriculum for students today.
What does the RESEARCH say?
Handwriting and the Brain

“The brain’s ‘reading circuit’ of linked regions that are activated during reading was activated during handwriting, but not during typing.”

- Dr. Karin Harman James at Indiana University used fMRI scanning to study how letter printing affects the brain activation in children.
- She found that brain activation of children increased significantly and showed similarity to that of adults after printing, compared to typing, tracing and visual control.
- Indicates that “the act of writing by hand makes a significant difference to brain activation patterns.”
- The movements involved in writing by hand leave a motor memory in the sensorimotor part of the brain.
- This was shown on brain scans where only printing activated motor regions of the brain as well as recruiting visual regions of the brain upon seeing letters afterwards. This is correlated with increased letter identification skill, with clear implications for reading development.
- Relative to typing writing by hand also saw increased activity in Broca’s area and inferior parietal lobe- areas involved with language comprehension.
Benefits of Handwriting Related to Memory

- Several studies have shown that the act of handwriting helps with retention of information more effectively than keyboarding.

- A study by Dr. Stephen Peverely compared students who took notes by hand versus by computer. The study found that students who took notes by hand, “exhibited better comprehension of the content and were more attentive and involved during the class discussion.”

- Another study taught two groups of adults to write in an unknown alphabet, one was taught by hand and the other with a keyboard. The results showed that the participants taught by hand performed better on recollection of the letters as well as ability to distinguish right and reversed letters. Again, fMRI scans showed activation of Broca’s area only by those who hand learned by hand.
A study by Dr. Virginia Berninger, at the University of Washington followed students in grades 2, 4, and 6. She found that students who used handwriting wrote more words, wrote faster, and expressed more ideas than the students who used keyboarding.  

Subsequent studies also showed an improvement in length of compositions, particularly in grades 3 and 4.  

A study by Dr. Steve Graham at Vanderbilt University worked with first graders who were given 15 minutes of handwriting instruction three times a week. After nine weeks they had doubled their writing speed, their expressed thoughts were more complex, and showed increases in their sentence construction skills.  

“Handwriting motor patterns are linked to the decoding processes used for reading. A lack of consistent patterns adversely affects reading fluency and therefore comprehension.” – Rand H. Nelson, Peterson Directed Handwriting.
Previously mentioned brain studies by Dr. Karin Harman James indicated that handwriting contributes “to reading fluency by activating visual perception of letters and improving children’s accuracy and speed for recognizing letters.”

Research on remedial programs used for children with dyslexia have highlighted the critical link writing plays in “reinforcing the articulatory and kinesthetic bridge between the visual and auditory symbols.” The London and Learning Difficulties Research Project completed at Middlesex University stresses that, “Typical of all successful remedial programmes is the focus on spelling as well as reading reinforced by writing especially in cursive . . .”
Cognitive and Motor Skills Development

- Hanover Research showed how handwriting requires both cognitive and motor skills.¹⁰
- Scientists are uncovering the role of handwriting in cognitive development, particularly in “training the brain to learn “functional specialization, that is the capacity for optimal efficiency.”¹¹
- Increases in fine motor skills including dexterity, precision, coordination, and grasping.¹²
- While some argue fine motor skills can be developed in other ways, “The more variety of things you do in the fine motor domain, the more variety of hand movements you make, will improve your dexterity,” according to Dr. Amy Bastian at the Kennedy Krieger Institute at Johns Hopkins University.¹³
- Increases in attention, focus, and creativity.¹²
But Montessori knew that already...

“The human hand, so delicate and so complicated, not only allows the mind to reveal itself but it enables the whole being to enter into special relationships with the environment. We might even say that man ‘takes possession of his environment with his hands.’ His hands under the guidance of his intellect transform this environment and thus enable him to fulfill his mission in the world.”

-Maria Montessori, *The Secret of Childhood.*

“In this way the movements on hand and arm are fixed so that they are able to reproduce a sign which the eye has the opportunity of fixing at the same time from a distance. A letter is thus memorized in a twofold manner, by sight and by touch.”

Maria Montessori, *The Discovery of the Child.*

“Writing is a complex act which needs to be analyzed. One part of it has reference to motor mechanisms and the other presents a real and proper effort of the intellect.”

Maria Montessori, *The Discovery of the Child.*
Now that we answered this question...
We are back to.....
Write in 'cursive'? I have no idea what you're talking about.

Although I think my dad spoke in 'cursive' when he paid for my textbooks.

It's cursive.

Last time I used cursive, I got my mouth washed out with soap.

My teacher doesn't want you guys to write her any more notes.

What?

She only wants electronic communication because it's faster, safer and saves paper.

Oh, well, I guess that makes sense.

Plus, people her age can't read cursive.

Suddenly, I feel very, very old.

Suddenly, we're growing obsolete together.

At least we're growing obsolete together.
“Conventional Wisdom” of our times

Print is Primary

- Books, signs, computers, tablets are all in print.
- Print is basic.
- Printing is easier than cursive.
- Print is easier to read.

Cursive is Advanced

- Learning cursive is laborious. 14
- Learning cursive should be reserved for older students (typically 3rd grade).
- Learning cursive is pointless in the digital age.
- Learning Cursive takes up precious instruction time, that could be better used for more relevant subjects.

“Yes Sarah, even digital natives need to learn cursive.”
“The conventional wisdom is often wrong.”

- Steven D. Levitt
A brief history of script...

- Up to the 14\textsuperscript{th} century writing was limited to scribes and monks - a specialized skill requiring skill and practice.\textsuperscript{15}
A brief history of script...

- In Europe in the 14\(^{th}\) century, “men of science and letters, and especially of the church” needed a more convenient means of personal communication and began using a “slim, connected form of writing that was much easier to produce” versus the careful drawing of “frozen, separate letters.”

- The longhand of the 14\(^{th}\) century scientists made it possible for more people to learn how to write (and read). “Cursive longhand took the pen out of the hand of the professional calligrapher and placed it into the hand of the common man, and finally, into the hand of the child!”
Puritans and other reformers in England and America preferred a more plain and easy script, and copperplate (round hand) was devised as an alternative and in wide use by the 18th century.

In the early 1800’s Platt Rogers Spencer developed a script, “meant to be rhythmic and comfortable.”

In 1904 A.N. Palmer introduced a new method designed to increase automaticity of handwriting such that, “the muscles of the properly trained writer could do the job and not much mental effort should be required.” This was the adopted method used to teach students to write.
The word “cursive” comes from Latin word “cursivus” which means “running.”

“Cursive, script, joined-up writing, joint writing, running writing, or handwriting is any style of penmanship in which the symbols of the language are written in a conjoined and/or flowing manner, generally for the purpose of making writing faster.”
Beginning in the 1920’s a “new and controversial technique of writing” was introduced to the American educational system: printing, of “manuscript writing.”

In the 1940’s and 50’s American and French educators attempted to “improve education” by teaching children only print first in schools. After two years the French educators evaluated the results and changed back to teaching cursive. The Americans did not.

"[The decision to teach print first and cursive later] was decided at a time when the cognitive aspects of the writing process and the important role of graphic-motor skills in learning how to write were unknown.”
In 1978 Donald Thurber developed D’Nealian font as a way to ease the process of teaching children cursive writing. In the 1980’s Mexican President Lopez Portillo banned the teaching of cursive writing. In 2000 it was re-introduced into the curriculum when education officials acknowledged it was actually to the children’s benefit.

In the 1990’s Local Education Agencies in the UK began experimenting with returning to “cursive from the outset” which, “have proved highly successful in achieving writing targets earlier and for a larger number of children. It is also found to be equally readable.” Cursive, or “joined handwriting is now a part of the national curriculum and is taught “from Reception.”
When the Common Core Standards were released in 2010 they required “basic features of print” in kindergarten and first grade, and “sufficient command of keyboarding skills” by fourth grade. Cursive was left out completely. ²

At least 41 states do not require public schools to teach cursive. ²⁵

State boards are now debating whether or not to reintroduce cursive into their State Standards, leading to “The Great Handwriting Debate.”¹⁹
Cursive Writing
Cursive is more natural and easier for children to learn\textsuperscript{16, 21, 8, 23}

- Nature creates curved lines while humans create straight lines.

- Straight lines, rarely found in nature, are harder for the brain to recognize than curved lines.\textsuperscript{16}

- Making straight lines and perfect circles is much more difficult for children. The weight of the arm makes one more naturally draw a curved line instead of a straight line.\textsuperscript{16}

- Children experience less pain and difficulty, particularly those with handwriting coordination difficulties.
Let’s try it out..

- PRINT the word “picky,” counting how many times you lift your pen.

- Now write the word “picky” in CURSIVE, counting how many times you lift your pen.

- Repeat for “everything.”
In the lined space at the bottom put your pen down as if you are going to print the letter “m” but don’t write anything.

Mark the spot with an X

Repeat for: f, t, i, e, b, d
Print is actually quite complex

- Print requires lines and perfect circles to come together tangentially using precise, stylized movements.
- Many manuscript letters are fragmented, made up of two or more separate line segments which must be subsequently pieced together, therefore requiring a temporal sequence of movement (e.g. “k” is made up of three different line segments).
- Print requires constant reworking of directional, orientational and locational cognitive processing.
Cursive is actually more simple than print

- Printed letters start at many different positions. Cursive letters all start in the same place.
- Spacing between cursive letters and words is orderly and automatic due to the single continuous movement. This minimizes spacing and sizing difficulties often found in early print handwriting.
- Legibility of handwriting is improved.
- Cursive letters all start with one of only four basic approach strokes.
- Cursive writing and reading has been shown to be much easier for dyslexic children to perceive, decode and to master. In particular, the fact that all cursive letters start from the same beginning point eliminates reversals and inversions: bd: b d, pq: p q.
Cursive enhances reading, writing, and spelling skills\textsuperscript{15,21,8,24}

- Cursive letters all start from the left and continue toward the right, helping to establish left to right directionality for reading and writing.
- Printed letters are all separate, cursive letters go hand in hand with spaces only between words reinforcing the beginning and ending of words. It provides a visual representation of how sounds are connected to make a word, which encourages blending of sounds within words.
- The generalized movement patterns of cursive requires less cognitive effort and therefore leads to faster automaticity. Thus, less cognitive attention is focused on the process of writing and is available for higher level thought and processing. The connected writing also allows for a continuous flow of thought and thinking while writing.
The proof is in the pudding…and the data

- Professors Morin and Lavoie at Université du Québec à Rimouski Sherbrooke conducted a study with 718 students and teachers exploring the influence of three handwriting techniques: print, cursive, or print and cursive. They looked at the acquisition of graphic-motor skills (speed and quality of writing), spelling, and text construction. They found that the students who learned cursive benefited the most, particularly in spelling and syntax. 19

- A 1975 study conducted through Indiana State University compared first grade students at two neighboring elementary schools. One group was taught cursive handwriting, the other manuscript. At the end of the school year the students were given three different standardized tests. Results found that the students taught cursive scored at a significantly higher level of achievement on the Word, Reading, and Spelling subtests. They also found that Students in the manuscript group, “demonstrated more transposition errors (gril for girl)” compared to the group using cursive. 24

- Dr. David Sortino, in Brain Research and Cursive Writing, describes how he introduced cursive writing as a kinesthetic exercise to “ground my students’ energies.” After six months he found that the students, “were showing one to two years academic growth in word attack, reading fluency and reading comprehension as defined by popular achievement tests.” 22

- The College Board reports that SAT essays written in cursive had slightly higher average scores than those written in print, “which experts believe is because the speed and efficiency of writing in cursive allows students to focus on the cohesion of ideas in their essays through the mirror of the connected cursive stroke.” 19
First Grade Student
Coming from 3 years in a Montessori Primary classroom using D’Nealian entering a new Elementary classroom in cursive-only school.

September
For first sentence:

pencil lifted 19 times.

December
Pencil lifted 7* times.
September - year one

I am called: Luna

I would like to be called: Luse.

I am: A little girl.

I love to: Play Basketball.

I never: Be scared.

The Mays

One day I will: Be a Teacher.

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April

1. The flower will start to grow when there is light.

2. An egg comes from a chicken.

3. I like you but so does she.

---

September - year two

- book
- mango
- snow thing
- lock
- pillow
- map
- cameron
- rachel
- cat

---

December

- me
- angry
- boy

---

My name is Luna. I love to dance. I love to eat pizza. My favorite color is blue, I love to be happy and nice.

I am 7 years old. At home I like to play with my dogs and my friend. The best thing about me is I do all sports with my dad and mom.
My mom told me to write some like random thing. As I am going to write about my cats. My cats are evil. They bare every war they poop. Every war they stink of the basement. They don't like my cats.

Print- “Just write anything, but in print.”

Cursive “Write in your fast cursive.”

I am the least.
I am the king.
I am the lord.
Not a cat person.

Cursive “Write in your best cursive.”

I am the most awesome.
I am the greatest.
I am the best.
Cursive FIRST!
A two year study by Dr. Feland Meadows at Kennesaw State University\(^{16}\) compared 4 groups of Montessori Primary students taught to write and read cursive and print by instruction and association in varying order. He found that, over a two year period, the children who learned to write and read cursive longhand first and learned to print by association afterwards, “progressed at a faster rate and developed more effective writing and reading skills than children in all other categories!”

<table>
<thead>
<tr>
<th>GROUP</th>
<th>WROTE</th>
<th>READ</th>
<th>LEARNED BY ASSOCIATION</th>
<th>SKILL LEVEL</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Cursive</td>
<td>Cursive</td>
<td>Read Print</td>
<td>1</td>
</tr>
<tr>
<td>B</td>
<td>1 Cursive 2 Print</td>
<td>1 Cursive 2 Print</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>C</td>
<td>1 Print 2 Cursive</td>
<td>1 Print 2 Cursive</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>D</td>
<td>Print</td>
<td>Print</td>
<td>Read Cursive</td>
<td>4</td>
</tr>
</tbody>
</table>

The 2012 study in Quebec found that, “children are better off when one type of writing is taught. Teaching [print first and then cursive in second grade] does not promote the acquisition of automatic motor movements, which play an important role in spelling and text construction. . . We observed among [the students who learned cursive] an increase in syntactic skills unlike those who only learned to print or who learned both.”\(^{19}\)

Studies have shown that, “the transition to cursive in 3\(^{rd}\) grade causes writing speed and legibility to revert to 1\(^{st}\) grade levels.” Students taught cursive in later grades often fail to complete the transition to cursive, or revert back to manuscript or a blend after third grade.\(^{23}\)

Children who learn cursive first have no difficulty reading in print or transferring to print writing once cursive is established.\(^{16}\)
Dr. Montessori observed that a child’s sensitive period for writing occurs in Primary. Motor movements engrained during this period will not only become automatic, they will be hard to change at a later time. In *The Discovery of the Child* she wrote, “Will not a child have to make an effort to forget printed, in order to learn cursive? . . . The hand of the child of six or seven has already lost it’s precious period of sensitivity to movement. This delicate little hand has left behind that blessed period in which its movements were coordinated.”

“We have said enough about the time needed for learning how to write. As far as the actual writing is concerned, our children from the very moment that they begin to write, write well; and one is surprised at the shape of the letters, rounded and sure, closely resembling the sandpaper models. The beauty of their writing is almost never attained by a pupil in the elementary schools who has not had special training. . . I know how difficult it is to persuade twelve- and thirteen-year-old boys in secondary schools to write whole words without lifting the pen . . .” -Maria Montessori *The Discovery of the Child.*
Common Concerns

- Writing in cursive and reading in print.

\[ a a \alpha a a \alpha a a a a a a a a a a \]

\[ cat \; cat \; cat \; cat \; cat \; cat \; cat \; cat \]
Common Concerns

- Writing in cursive and reading in print.

```
aa bb cc dd ee ff gg
hh ii jj kk ll mm nn
oo pp qq rr ss tt uu
vv ww xx yy zz

cat cat dog dog pin pin fed fed```

Common Concerns

- Learning how to write in print.
My name is Parker.

I am 11 years old.

I am really good at playing the piano.

I really like it when it rains and it is sunny because I like rainbows.

This is my very best exercise writing.
My name is Brennan.

I am human.

I am good at baseball, skiing.

I really like it when it snows.

This is my most beautiful cursive.
5th grade - primary

My name is Baylee.

I am eleven years old.

I am really good at being funny.

I like it when I go to the beach with my family.

This is my very fancy survival.
My name is Liam.

I am twelve.

I am really good at running.

I really like it when we go outside at the end of the day.

This is my most beautiful handwriting.
My name is Kendal.
I am awesome.
I am really good at painting.

I really like it when I read.

This is my most beautiful cursive handwriting.
1st grade

My name is Evron
I am human
I am really good at annoying my friends

I rely like it when I am annoying (not

This is my best writing
My name is Andrew.
I am a person.
I'm really good at climbing.

I really like it when I can watch YouTube.

This is my best cursive.
Print-
“Just write anything, but in print.”

Cursive
“Write in your ‘just for yourself’ cursive.”

Leo:
“When I write to myself I write in cursive. When I write to other people I write in print.

Why do you write to other people in print?
“I don’t think they would be able to read my cursive.”

Why do you write to yourself in cursive?
“When I write in print it takes longer to make the letters. I don’t make very good lowercase letters in print. When I write in cursive I can get my thoughts out faster.”

I like Pokémon cards.

Some pencils have no eraser and no tip, so those pencils are mean.

I can’t wait for the Pokémon card!

I like to play baseball.

I like to make stuff, but I don’t like to write French stuff.

The cats bark too much.
Making the change to cursive
Making the change to cursive first in the Primary classroom.²⁰

- Begin with cursive sandpaper letters.
- Use cursive with any initial/final/medial sound work.
- Cursive moveable alphabet is best, but it’s o.k. if yours is print.
- For older students, give a lesson on recognition of manuscript letters—most letters are easy to match.
- Give lessons on approach strokes and connecting letters to blend sounds.
- Add more cursive to your classroom with name cards, calendar, snack board, etc. But reassure teachers they don’t have to change ALL their work to cursive—cursive is for writing, manuscript is for reading.
The 4 Approach Strokes

- Loop
- Swing-up
- Up-over
- Around-up
The 4 Approach Strokes

- Loop
- Swing-up
- Up-over
- Around-up
Beginning cursive in the Elementary classroom.

- Immerse your classroom in cursive create a culture of cursive.
- Begin with all first years at the very beginning of the school year. Let cursive practice be a primary work.
- Expect students to write in cursive as soon as they know all the letters provide samples for copy work if necessary.
- “Copy work is handwriting practice!” Have quick reference cards available.
- Mid-cycle students are given cursive lessons, but not “forced” to write in cursive if handwriting is fully established.
- Begin keyboarding once handwriting is fully established for “publication” only and as keyboarding practice.
- True “typing” can begin in Upper Elementary.
Never underestimate the power of... an Impressionistic Lesson!
Handwriting Lesson Sequence

- Impressionistic Lesson: Introduce cursive script in a small group lesson with large motor movements highlighting starting point and letter connection.

- Key Lesson: Introduce approach stroke letters one group at a time.
  - Walk the letters.
  - Trace letters in the air.
  - Copy letters on large surface.

- Trace, copy, compose.

- Independent practice
“PERFECT practice makes perfect!”

Make sure you teach and PRACTICE with lead-in stroke.

```
a a
d d
b b
e e
c c
f f
```
I eat lunch at 11:30.
Cursive Writing Worksheet

A a
B b
C c
D d
E e
F f
G g
This is so cool. You can type anything you want for a free handwriting worksheet.
Swing Up ! i t p

i i i i i i i i i i i i

i i i i i i i i i i i

i i i i i i i i

i i i i i i i i

i i i i i i i i

i i i i i i i i

i i i i i i i i

i i i i i i i i
“PERFECT practice makes perfect!”

- Make sure you teach and PRACTICE with approach stroke.
- Simplicity - foundation of Montessori materials.
- Part of individual work choice.
- Available on the shelf.
- Enticing.
Preparing the parents...

- Collect research and rationale and provide a packet for parents.
- Reassure parents that cursive first will not delay reading skills (but it will improve them!) and that children who read in manuscript will naturally learn to write it too.
- Announce ahead of time with excitement and emphasis on positive benefits of cursive. Allow for questions and concerns.
- Provide examples as well as research.
Please feel free to contact me for copies of research, a sample letter to parents, lesson plans, or any of my materials (copy-trace-write cards, “felt” letter cards, practice sheets).
Notes

7. The University of Stavanger. (January 24, 2011).
References


References


Murphy, T. “Cursive First: Resources, Research, and Resources for Teaching Cursive First in Your Early Childhood Classroom.” Presented at MAT Conference, Brentwood, TN, 16, September, 2017


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