Handwriting: A Complete Guide To Instruction

Teaching Physical Patterns For Reading And Writing Fluency

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Special Thanks

Thank you, Dr. Hans-Leo Teulings, for your monumental patience and nearly two years of effort that introduced us to the digital world of handwriting sample collection and a wealth of motor research from around the world. During my many years as a handwriting specialist, hundreds of frustrated teachers expressed the feeling that more time was needed for handwriting instruction. Your effort has produced a source of information that supports their feelings and reduces the frustration by leading us to a time-efficient and effective method for instruction. I know that the teachers who use this book to build the physical language skills of their students will be grateful too, for the annual pleasure derived as they watch each new group of students grow into improved symbolic language fluency.

Thank you, Dr. Ann Smiley-Oyen, for taking the time from your own important research to review the material in this book and lend your expertise to this effort. Your recognition of the need for teacher support is greatly appreciated.

Thank you, Harry S. “Chip” Gierhart, for your energy and vision. I will continue to believe in Kid Pad and hope to see the project completed one day soon.

Thank you, “Handwriting Teachers” for continuing to teach your pupils a physical process for writing. You have endured jokes from peers and perhaps reprimands from superiors because you knew in your heart that process handwriting instruction helped “your kids” become better students. You have had the right idea all along - and you are not alone.
Handwriting, A Complete Guide To Instruction
Teaching Physical Patterns for Reading and Writing Fluency

Foreword

Well over 90% of our current knowledge of the brain has been learned since the mid 1980’s. The sudden increase in knowledge of the brain is in large part due to two seemingly unrelated phenomena - the technology explosion and the growing need to know fostered by health care costs that are spiraling upward at a rate that is staggering. It is important to realize that the research in brain function is driven primarily by health care costs rather than problems in education.

I mention this because it demonstrates a reason for the lack of attention to the research by educators. Teachers are ready for integration of research information. But, they have too little time to study all of the research that has a medical focus, then interpret the findings for educational impact. There is, however, an obvious overlap of interest and responsibility that should be considered.

The cost of brain and nervous system diseases is estimated to exceed $360 billion annually (The Society of Neuroscience, Carey 1990). An additional $144 billion is spent each year in dealing with the problems of alcohol and drug abuse. Disorders of the brain and nervous system result in more hospitalizations than any other disease group (Armstrong & Rust 1996). These figures illustrate reasons for the medical focus of the research. However, science is demonstrating powerful information that should be understood by parents and professionals who bear great responsibility for brain development. I recall the old adage, “An ounce of prevention is worth a pound of cure.”

Teachers focus on behavioral systems that are evidenced in all of us. Teaching-methods courses address the need for design of learning experiences that offer input and processing through the five senses. The educational word used is multimodal. However, these courses often skip lightly over the concept and theory behind it. There is little impetus toward investigation of the current research that is relegated largely to the disciplines of neuroscience and cognitive science.

Over the last fifteen years, classroom teachers at the elementary level have seen a constant stream of new programs and curriculum designs aimed largely at improving language usage skills - in particular reading. All of these language and reading programs have presented teachers with techniques to develop a wide array of skills related to reading. However, current scientific research has identified one powerful reading skill area has been widely ignored - even purposefully eliminated from the language arts curriculum in many of our schools: Studies show that good physical patterning of handwriting process will impact positively on all applications of symbolic language - even keyboarding. The new knowledge presents potent reasons for change in our preschool, primary and intermediate classrooms. I quote Dr. Hans-Leo Teulings, in a memo to me regarding analysis of digital handwriting samples, “Even if a child never uses a pencil to communicate, handwriting process instruction should be part of the school curriculum.”

If you think that the word penmanship is archaic and refers to an old fashioned art that has little relevance to the modern curriculum, it is time to reevaluate. Perhaps a new name will help - Physical Language! Recognition of the fact that brain growth (cortical density) may be increased through rich experience (M. Diamond 1988) should cause educators to assess curriculum and how they conduct specific activities in the classroom. Additional evidence has recently been provided using PET SCAN technology to demonstrate how motor learning opens pathways in the brain (Shadmir & Holcomb 1997). Science has demonstrated that instruction aimed at developing dynamic patterns for symbol production should be assigned a high priority as an integral part of the reading/language arts curriculum.

The intent of this work is simple. We examine the science and apply it to specific techniques for the classroom. Our focus is Physical Language - handwriting skill development! The reason for this focus relates to a demonstrated need for redesign of curriculum to include instruction of the dynamic and ergonomic skills needed for fluent application of symbolic language. No matter what approach to reading and language instruction, the physical dynamics of handwriting patterns play a part in the decoding process (Babcock & Freyd 1988).

We provide a detailed, easy to follow outline for instruction that is based on the new knowledge. Our goal is to answer a teacher request I have heard thousands of times during the 20-some years I have been working in schools, “I don’t have time to learn the reasons - just tell me what to do!” Should you find time to look for the reasons you can do that too.
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Glossary of Unusual and New Terminology

**Anchoring** - A motor control term used to describe the movement process involved when a person touches (moves to touch) a point that is relative to another point or stroke (crossing a letter t, dotting the i, or spacing the two letters together to form the word it).

**Action Words** - Verbalizations designed to be chanted with writing movements to enhance integration of rhythm for fluent control as language skills improve.

**Airwriting** - Gross motor practice of movement patterns using different muscle groups and Action Words.

**Ballistic Movement** - For our purpose a generalized description is better than a complex scientific one. The term ballistic is used to refer to an "automatic" kind of movement. For example, you do not have to think about moving your feet as you walk down the hall. The muscle groups involved in maintaining your balance in this process have "automated" the various sequences. Watching an infant grow through the stages of learning to grasp, reach and grasp, crawl, walk and run reveals lots of practice and plenty of miscues before automation is accomplished. In this work the term is used occasionally as a synonym for the word fluency and refers to the difference between writing and drawing types of movement.

**Digitizer** - A computer tablet and special software which allows measurement as a person writes or draws on the surface.

**Fingertracing** - Using the pointer finger, rather than using a crayon, pencil or pen, to trace models. Movements are made to the rhythm of the Action Words chant. This small adjustment to current teaching practice could well be one of the most important as we consider new understanding of the fluent type of movement. Pencil tracing usually elicits visual-feedback movement because children want the lines to match.

**Illustrate & Describe** - The process of teaching start points, end points, direction of movement, sequence of movements and a grammar of action. The combined objectives are: learn where to start, which way to go, and what to say as you move.

**Text Generation** - A name for one subprocess occurring in the brain as written language is composed. It refers to the mental task of choosing words, word order, etc., as a person writes using any sort of tool; pencil, marker, crayon, pen or keyboard.

**Threading** - This motor-control term is used to refer to the application of sequences or patterns of pencil movements without lifts between strokes. Some print letters can be "threaded" but the real recognition for application of this skill must go to cursive! Threading usually detracts from legibility when print forms are used. Threading or joining enhances the legibility of fluent cursive writing because the forms were designed for a lateral movement process.

**Transcription** - The word is used as a name for one subprocess occurring in the brain as written language is composed. It refers to the mental process associated with translation of phonemes into the movement sequences needed for production of the symbol representing the spoken sound.

**Write & Say** - A directed practice technique for encouraging and enhancing the integration of rhythm information for control of fluent movement. Fluent movement has rhythm while the visual-feedback process does not. When students can write and chant at the same time, they are practicing writing movement. When the voice won't work, the pupil is drawing letters rather than moving with rhythm.
Mission Statement
This work is presented in response to requests from thousands of people. They believe that time should be spent on development of handwriting skills and have asked for support. Handwriting should be a useful tool for children in upper grades. Instead, it has become a roadblock to efficient use of teaching and learning time.

Pupils are expected to use written forms of symbolic language but are receiving minimal training in skill development. Our research shows that ten minutes a day can provide process instruction that will enable fluency as related language skills grow. Will you teach a proven process or hope they will invent one of their own? A choice is made in every classroom.

Section 1 - Introduction and Background

When you begin a new journey it make sense to know where you are at the start.

We hope that you will find in these pages, reason to increase the priority for handwriting skill development in your language arts curriculum. We believe current research is demonstrating that enormous advantages are offered by motor learning activities and that a concerted effort to build physical language skills by all teachers in your building will result in significant improvement in reading scores as well as fluency for composition.

Please take the time to find answers to these questions:
1. Your school provides means for showing successful improvement of language and reading skills. Do you also provide a means for showing successful skill development for written language?

2. Does your school participate in the Peterson Diagnostic Review & Analysis process? If so, does anyone use the returns for coaching? If not, how is improvement recognized?

3. Does your school have an organized curriculum across the grades for development of written language skills? If not, we offer free assistance via our web site Resource Library. Visit the Curriculum section to acquire powerful tools in PDF format.

The Administrator's Guide offers a wealth of information for design of your curriculum.

www.peterson-handwriting.com/Publications/ResourceLibrary.html

4. How much training did you receive in college methods courses? Our Information Directory offers links to animated presentations for teacher training that far exceeds any you may have received in college.

www.peterson-handwriting.com/info.html

5. How much time do teachers have for learning? Our Distance Learning Service uses the telephone and the internet to deliver teacher-training seminars that are effective, time efficient and convenient. Call toll free to arrange a free trial. We can set up one or a series of sessions, at times that are convenient for your school schedule. If you can be on the internet and telephone at the same time, this service offers a solution that makes sense.

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Computer Science Validates the Importance of Handwriting Lessons

A digitizing tablet feeds information to the computer as you write on its surface. As many as ten measurements are recorded at the rate of 1000 points per second. Measures include the angle of the pen, the pressure applied to tablet surface, squeeze pressure on the pen, acceleration/deceleration and a record of the points touched as the pen moves on the surface. Electronic ink can be played back, real time. The computer can show the pen and replicate its movements based on pen angle measures. The measures provide objective information for comparison of movement processes. This equipment is providing us with objective data to replace subjective observations from the past.

Modern Motor Control Research is Rarely Published in Education Journals.

Using a computer with a tablet digitizer, scientists around the world are learning more about our motor control systems. They search for answers to Parkinson's, Spina Bifida, C.P., and brain injuries. But, educators should consider carefully the fact that scientific measurement of handwriting movements has become a major highway into the unknown complexity of our nervous system. Science is demonstrating that handwriting lessons provide a direct link for integration of the patterns of symbolic language.

Developmental specialists agree. Everything about symbolic language must be learned!

Research has Demonstrated Several Facts of Major Importance.

1. Handwriting motor patterns are linked to the decoding processes used for reading. A lack of consistent patterns adversely affects reading fluency and therefore comprehension.

2. The difference between good handwriting patterns and poor patterns is rhythm and “ballistic” movement.

3. Putting thoughts on paper fluently, with pencil or keyboard, requires a fluent motor pattern for the movements needed to produce each letter. When the brain is forced to think about movement control functions, language composition can proceed only one stroke at a time (Overburdened Cognitive Process).

Because time for instruction is at a premium, it makes sense to teach an efficient pattern for letterform production. Otherwise, children are forced to invent one as they work.

The Peterson objective is to cause the integration of an efficient pattern for the process of our symbolic language. Your choice from the wide variety of alphabet styles (there are thousands of different “printer fonts” for manuscript letters alone) is a product selection. The child needs an efficient process for producing the product style. The We Write To Read series, support materials and method are specifically designed to address developmental needs of children, the teacher's need for efficient communication of process factors, and the budgetary needs of schools.

Our Letter Styles are Chosen for Scientific and Developmental Reasons.

1. Separate stroke, vertical manuscript builds the motor control skill called “anchoring” and at the same time emphasizes the top-down, left-to-right pattern of our language for a child who is completely cognitive about building letters. One stroke at a time allows understanding and early success as it builds early sequencing skills and confidence.

2. A motor control skill called “threading” is the focus of “no-lift” and slant manuscript. Once the basic left-to-right pattern is established, this product allows focus on more fluent, rhythmic process.

3. The American Standard cursive alphabet is presented in a unique manner based on complete letter rhythm patterns as they are needed for fluent word processing. This approach works to establish the “ballistic” movement control described as advantageous by modern research. Fluent movement demands more control from the internal model. This approach allows children to learn how to coordinate internal and external visual feedback control systems while establishing links between the auditory phoneme and the grapheme movement sequences.
When do I “know” a letter?

For many decades most of us would have answered,

“When you show me a picture of the letter I can name it.” or “When you name the letter I can make a picture of it.”

Modern research shows...

fluent composition with, and fluent decoding of, symbolic language is greatly enhanced when you “know” a little more about the letter.

1. When you show me a picture of the letter I can name it, and
   the sound/s it represents, correctly, without hesitation, every time.

2. When you show me a picture of the letter I can touch the
   correct start point, without hesitation, every time.

3. When you show me a picture of the letter I can point out
   the correct stroke sequence, without hesitation, every time.

4. When you name the letter I can write it, without hesita-
   tion, without visual model, using the same process (start
   point and stroke sequence) every time.

5. When you name the letter, I can write both capital and
   lowercase forms on cue, without hesitation, and without
   a visual model.

6. When you ask me to use the letter in a word, I can place
   it in space correctly, without hesitation, with the other
   letters needed.

Successful demonstration of the above “knowledge” is a good indication that a fluent motor pattern exists in the central nervous system to relieve the brain of specific motor control functions.

What is a motor pattern?

It is helpful to imagine a picture of a motor pattern. The picture is not complete. It looks like a connect-the-dots page taken from a child’s coloring book. Movement of a pencil from dot to dot produces the picture. Three different dot patterns are shown below. All three are patterns for the same picture - a print letter C. Following the dots in each pattern will result in a different number of stops and starts. The number of stops and starts create three different rhythm patterns for the same picture.

What is smooth rhythm? Which motor pattern below is more fluent? The contents of the pattern can allow the brain to choose fluent movement or demand a visual feedback approach to letter production.

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>start</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>6</td>
<td>7</td>
<td>8</td>
</tr>
<tr>
<td>9</td>
<td>10</td>
<td></td>
</tr>
</tbody>
</table>

Once established, good motor patterns can control muscle movement outside of the brain’s cognitive areas. For example, you do not have to think about maintaining your balance or bending each finger to grasp an object (Teulings, 1994). The question remains, what and how do we teach to create handwriting motor patterns that will give our student the gift of fluency?

The answer lies in new understanding of the difference between the types of movement the brain might choose to accomplish the task. Two types have been identified by our digital samples. Dr. Teulings refers to the more common type as Visual Feedback Movement. It is the type of movement used by those who describe their handwriting with a statement similar to this, “I can write neatly when I take my time, but...” The type of movement used by persons who seem gifted because they write legibly with a quick and easy process, is called Ballistic Movement.

Add to the equation the fact that the language hemisphere is auditory and the other visual and we discover the simple objective of this method. Teach the patterns of movement with a grammar of action to establish patterns for fluent application!
HANDWRITING PATTERNS ARE IMPORTANT FOR LEARNING

Handwriting motor patterns eliminate the need to think about the strokes that form each letter freeing your brain to focus on other things - spelling a word, structuring a sentence, formulating your paragraph. Without these patterns students must concentrate on letter building.

The fact that cognitive letter building creates difficulty during writing activities was established long ago (Early & Heath 1970).

This condition is easily found in classrooms - a fourth grader gets one or two sentences written but can’t remember what else he wanted to say - a first grade paper shows a string of letters, more or less along a line, that are not spaced into word groups. Handwriting patterns are bridges to fluency for whole language application. Poor penmanship blocks the language application process and learning. Can whole language be whole without handwriting skills?

HANDWRITING PATTERNS ARE IMPORTANT FOR TEACHING

Time spent creating handwriting patterns leads to integration of an efficient process for symbolic language use (reading, writing & speaking). It will pay huge dividends. It is a fact that teachers are forced to allow for big blocks of time when students are asked to write. Good handwriting patterns will complete written work faster allowing more time to teach. Plus, legible student papers mean less preparation time.

HANDWRITING PATTERNS ARE IMPORTANT FOR READING

Handwriting patterns are bridges to more fluent reading skill. It has been demonstrated scientifically (Babcock & Freyd 1988). Look at the “form” shown here for a second. Now, touch the spot on the form where it started.

The fact that you can pick a start point means you are seeing the movements used to write the form. The form is not moving. The movement you perceive, and the start point you choose, comes from the motor patterns created as you learned to write! This dynamic information helps to bring fluency to the reading process. This is an extremely important point because the competition for curriculum time slots is fierce. Please visit our web site Information Directory to work through the animated presentation on "Readiness" for more information. Understand the need for a developmental transition from a form-constant world to symbolic language - where directionality is extremely important.

It Is A Fact....

The existence and function of these Learned Pattern Modules has been demonstrated many times as researchers work to understand the operation of our motor control system via study of motor tasks involving sequences of specific movements - speech, Morse coding, typewriting and particularly handwriting (Lebrun & Rubio 1972; Klapp & Wyatt 1976; Sternberg, Monsell, Knoll & Wright 1978; Rumelhart & Norman 1982; Teulings, Thomassen & Van Galen 1983; Van Galen 1983; Hulstijn & Van Galen 1983; Teulings, Mullins, & Stelmach 1986; Van Galen, Meulenbroek & Hylkema 1986; Van Galen 1986, 1991; Povel & Collard 1982; Rosenbaum, Kenny & Derr 1983; Sternberg, Knoll & Turcock 1990).

The particular focus on handwriting is explained nicely by Dr. Hans-Leo Teulings (1994) in his chapter on handwriting movement control in Handbook of Perception and Action, vol.3. Motor Skills.

“Among the many motor activities - displacement of the body, maintaining posture, grasping and manipulating objects - handwriting distinguishes itself in that it is a learned and generally practiced human skill. For that reason, the motor control aspects of handwriting are both interesting and important.”

The brain's response to motor training has been recently demonstrated using the new PET Scan technology. The study shows the development of “Neural Correlates” in living, functioning human brains (Shadmir & Holcomb, 1997). It is profound evidence that directed motor experience opens pathways in the brain!
Handwriting Instruction for Reading Fluency

We have always known that the Peterson method of instruction produced exceptional results in handwriting skill development. Samples from several thousand classroom teachers, reviewed during each school year, have demonstrated success every year since our inception in 1908. Thanks to technology and, in large part, Dr. Hans-Leo Teulings, we now understand the scientific reasons for the consistent success! However, there are many schools that have abandoned organized handwriting instruction - often to expand time for more reading/language instruction.

During my many years of classroom work I have encountered thousands of teachers who believe that time spent on developing handwriting skills improves student abilities all across the curriculum. The frustration they feel with curriculum trends that ignore handwriting instruction, is very real and constant. They ask for support because feelings don’t carry much weight in curriculum meetings.

Neuroscience is demonstrating powerful connections between reading and handwriting, skills that have been considered to be unrelated by far too many educators. Coincidently, the science is also validating the Peterson method of handwriting instruction.

The following series of excerpts, primarily referenced from Endangered Minds, 1991, by Dr. Jane Healy, provide some powerful scientific evidence for the recognition of handwriting pattern instruction as a potent, physical adjunct to reading and language skill improvement.

Excerpt 1 (From Endangered Minds)
Dr. Jerre Levy to Dr. Healy:
"I suspect that the normal human brains are built to be challenged and it is only in the face of an adequate challenge that normal bihemispheric brain operations are engaged."

Dr. Levy goes on to say:
"...children need a linguistic (auditory) environment that is coordinated with the visual environment they are experiencing."

Excerpt 2 (From Endangered Minds)
Dr. Healy writes, “Authorities now suspect that the ability to activate and coordinate the work of both hemispheres may be even more important than developing individual systems in either side.”

Handwriting instruction using the Peterson method creates precisely the type of physical experience - involving linguistic coordination with the visual picture - that experts say can engage bihemispheric brain operation. We are building pathways in the brain and there is undeniable evidence to support this claim.

Excerpt 3 (From Science Magazine, Aug. 1997)
PET scans demonstrate changes in the brain resulting from motor training. Subjects were exposed to the training of a movement sequence as guided by a robot arm. The scan revealed that one area of the brain was involved at the initial exposure. A bit more than five hours passed before subject #1 could receive a “second lesson.” At the outset of lesson two the scan showed several areas of the brain were now involved with the activity, and the subject’s proficiency with control of the movement sequence had greatly improved.

Are we also looking at some potential reasons for the fact that the 1971 reading-score summit has not been surpassed? Few, if any, entities other than Peterson Directed Handwriting have been aware of a steady, often precipitous decline in handwriting skills and instruction. Has anyone else collected and processed several hundred thousand handwriting samples each year from elementary school students? Our diagnostic evaluation is also a form of action research over a considerable span of time.

Our experience shows the constant redesign of curriculum has consistently removed time for handwriting instruction from our schools. This fact shows on paper in our diagnostic department, as fewer kids each year - in grade one classes - learn to produce symbols smoothly and space them into word groups with any sort of fluency. First grade teachers send notes with the samples apologizing for the poor papers. They explain that time for handwriting instruction has once again been reduced to expand the “reading/language block.”

Every year I receive requests for samples from a long list of schools. They are asking for “Language Arts” materials. A phone call to the curriculum office for clarification results in a negative response in 9 out of 10 cases - “No, we are looking for language arts programs, not handwriting.”

Excerpt 4 (From Endangered Minds)
Pictures of blood flow in the brain as children are reading shows multiple areas (of the brain) are involved in the process. Good readers are definitely using both right and left hemispheres as well as prefrontal systems (Segalowitz, S. to Dr. Healy).

Excerpt 5 (From Endangered Minds)
Instruction tailored to boost hemispheric cooperation by focusing activities on the hemisphere that is least involved has proven to improve reading in dyslexics (Bakker, D.) (Bakker, D. and Vinke, J. 1984).
Excerpt 6 (From Brain Topics: A Handbook for Teachers and Parents, Chapter 3.)

_The literature about the brain is growing at such a rapid rate that anyone is challenged to keep pace. “For example, at the National Library of Medicine, nearly 100,000 publications in the archives contain the term 'brain.' This is more than double the number of such articles five years ago.”_

Excerpt 7 (From Brain Topics: A Handbook for Teachers and Parents, Chapter 3.)

_One giant educational miscue of the last two decades is that of the left brain/right brain dichotomy. Parents, teachers and administrators are making assertions about deficiencies in right or left brain capabilities._

Teacher training sessions on left brain/right brain concepts were all the rage for a time. The unfortunate result is a myth that the left hemisphere acts alone to control rational thought and language skills while the right side handles holistic thinking and art projects.

_It is time for educators to accept the idea that the brain also has other parts, front and back with bottom and top that all work together. According to Dr. Jerre Levy, biopsychologist at the University of Chicago, the entire brain must work together for our well-being. "This is particularly true for reading and other cognitive functions that are extremely complex activities involving many areas of the brain."_

We need to recognize the fact that a myriad of science has demonstrated that learning experiences can change the physical structure of the brain. The brain _learns_ how to coordinate the activities of its various structures by opening pathways for communication - and pupil abilities improve as a result.

If your school does not currently include handwriting process training as a physical adjunct to your language arts curriculum, I hope that this information will help you to rally support for change.
Your Language Program and Handwriting

Everything about symbolic language must be learned. Putting thoughts into words on paper is the highest form of language skill development. It is the most complex form of language use because it requires the simultaneous application of several learned skills.

This presentation is designed to help you better understand the need for an organized program for instruction of physical language skills and how handwriting skill objectives relate to a language arts program. You will find a specific delineation of handwriting skills, by level, in the scope and sequence provided later in this text.

If writing is to be fluent, the student must learn to coordinate many subskills in an automatic process. Dr. Louisa Moats of the Houston Health Science Center identifies two general written language sub-skill categories. The separation will help us see specific skills and teaching objectives from an improved perspective.

Writing it down - fluently. 
A Complex Set of Processes

Two General Process Categories

Transcription

*The process of translating spoken language into written symbols.*

The brain must translate phonemes into physical movement patterns that will result in the symbol needed. Pencil, pen or keyboard, the task demands automation for fluency.

Text Generation

*The process of translating ideas into language; choosing words, sentence structure, etc.*

The brain must decide what we want to say and how we want to say it, by accessing the database of words, definitions and rules we constantly work to build.

Most language arts programs are focused primarily on those skills that would get filed under the category of text generation. If there is any mention of handwriting it is rarely more than cursory.

Integrated programs, that have been the most recent trend, are particularly guilty. Some materials provide alphabet models with numbers and arrows for copy and trace activities on workbook or reproducible pages. Will this type of learning activity provide students with sufficient tools for developing fluent, automatic transcription skills?

Where would you classify the task of building vocabulary and spelling skills? Are these strictly text generation skills?

It is amazing how often I find that intermediate level programs do not address the need to practice transcription of new words. When the transcription process is not automatic, it will interfere with use of subskills associated with text generation. Overburdened Cognitive Process is a very real condition - and not just in the special classrooms.
Automating the Transcription Process

Peterson research has provided the means to target the brain for integration and internalization. The new information relates to digital measures of the two types of movement control used for writing. If you think about it, you have probably observed both kinds of movement control.

Some people can write quickly and easily producing text that is easily legible and often quite beautiful. Others say, “I can write neatly if I take my time.”

There is a measurable difference between the two types of movement control. This difference allows the teacher to present learning activities that target the fluent type of movement.

Even if you are not a fluent writer yourself, you can provide instruction that can allow your students to acquire fluent skills - and improve your own abilities too. Understanding movement control options is a key that will open the door to fluency.

The real, long term objective is the ability to perform a balancing act. The brain must first build and learn how to use movement guided by an internal model. Then the student can learn how to coordinate the two systems.

Too much reliance on the external system results in a labored process that won’t work for fluent application. If you have renewed your drivers license recently, or used a credit card for a purchase at a department store, you may have had some experience with the condition. When you were asked to sign your name on a small digitizing pad, did you find it difficult when you could not see the traces produced by the stylus? How much do you really need visual feedback during the writing process? Test the strength of your internal model in the box below. Touch your pen, close your eyes and write the simple sentence with your eyes closed.

I love to read.

Some people seem to have a special gift. They are not bothered by a lack of visual feedback. They could probably write a whole paragraph if the little digitizing pad were big enough.

Since visual feedback was eliminated by the digitizing system in the store, and by closing your eyes above, movement control must come from another source.

That source is the internal model. If your lessons are limited to visual feedback strategies, how can students learn confidence in the fluent kind of movement?

The brain responds to challenge. If we do not present the challenge, will students discover the gift of fluency? Our experience and digital samples show that a majority never do.
Building An Internal Model

**STEP ONE TOWARD AUTOMATION**

A high priority objective of your handwriting program should be fluency. That means the lessons should be aimed at providing learning experiences that will allow the brain to build, and learn how to use, an internal model for control of the movement sequence. Then the pupil can learn how to coordinate internal control with the external visual process. If the student is to use lined paper for written language, the external, visual-feedback system must play a part.

How well can you use both systems in a cooperative effort? The box below offers space for you to write the same simple sentence we used earlier. We need to make some changes to rules in order to answer the question.

<table>
<thead>
<tr>
<th>I love to read.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

You can see one difference immediately. This time the box contains a set of lines which adds a new challenge. You will have to use visual feedback if you are to use the lines. One objective is to write the sentence at adult size using the lines, so you will write with your eyes open.

We also want to demand that you use the internal model as you write. It is not hard to do. Simply spell aloud, creating each letter as you name it. Say the word 'space' as you lift and touch between words. The second goal is to keep your voice working. If you can't maintain the verbalization, you have switched to visual feedback mode and eliminated the internal model from the exercise.

Our digital measures of thousands of handwriting samples revealed a relatively simple difference between the fluent type of movement guided by the internal model and the visually controlled option. As fluent legibility increased so did the consistency of rhythm. Good internally-guided movement is rhythmic. Measures showed that visually guided movement had little or no rhythm.

If you have tried to learn a line dance by getting on the floor to watch (and try to move with) the dancers who knew the steps, you have experienced the effect of visual feedback on rhythmic movement. It is next to impossible to move with the others, or the rhythm of the song, until you have integrated the whole movement pattern completely.

At that point, you can suddenly move through the pattern to the beat of the music. When you really get the pattern down you can probably do the same steps to other songs as well.

Building an internal model that contains rhythm information for the movement sequences allows the brain to change the rate of movement to different speeds.

In the test above you were challenged to keep your voice working. That challenge demanded that you move rhythmically. This demand is even greater when the whole class is spelling aloud in unison.

Rhythmic movement is not fast or slow. It is both - or it could be. If we get the right information into the internal model through directed motor learning activities, the pupil can operate at different speeds to meet different needs.
What do you see?

There are two ways to look at the letters shown above. Most often teachers get into discussions about the shape of the letters as they compare materials from various publishers. The product is there in front of us. It is easy to see.

However, there is an alternative way to look at the letters. In most materials the illustrations of process are limited to arrows and numbers to illustrate the suggested sequence of strokes and the direction of movement. If we added numbers and arrows to the letter strip above, it would make it a little easier to perceive the symbols as something other than a picture to be reproduced. We could see each letter as a series of movements - a pattern of movements to be learned to the point of automation like the steps of a line dance.

This is the first line of demarcation between the programs produced by various publishers. It should be an important point of consideration, but often it never comes up in discussions. What process does the program teach? What are the specific activities provided for teaching the process? How do the skill development activities reinforce good process? How do the materials provide for movement instruction? A number of publishers simply do not address the specifics or even mention the idea of teaching movement. At the time of this writing, I know of no other publisher that addresses the need for instruction of fluent movement.

You do see movement!

Choose a letter or two on the strip above to do a simple activity. Use your pencil or pen to mark the spot where the letter starts. The fact that you can choose a start point demonstrates that you perceive movement. The fact is, the movement you see may not be the same as the movement seen by others. The movement you perceive depends upon the pattern you learned; or, if you were not taught a production process, the pattern you invented (Babcock & Freyd 1988). This is a major point that illustrates powerful potential for handwriting instruction that is not widely recognized.

Common sense dictates that movement patterns which conflict with the left-to-right tracking of our language would not be helpful for reading fluency. Conversely, production patterns that support the directionality of our language do offer assistance. It is relatively easy to recognize the effect of movement information at the beginning levels.

Children enjoy a form constant world.

Things are what they are. Directionality does not play a part until the child discovers written language. Our symbols do not conform to the “form-constant” world of a child. Is it any wonder the letters below are the two most confused forms for beginners?

Learning to see and use a different movement pattern for each letter, removes the d/b confusion for more fluent decoding.

Creating new abilities...

We all hope to endow our pupils with abilities that will allow fluent use of our language in all forms. Do you acknowledge the idea that a modicum of automation is required if thoughts are to be organized into words and sentences - particularly in a written format?

Before you answer, consider that a child with apraxia is quickly spotted and referred to the speech pathologist for help. The hesitant, disordered word sequences can't be missed.

But, how many of your pupils have similar problems when it comes to writing? Is their process so labored as to cause learning problems - or give the appearance of problems? How many of your students spell words orally with no trouble, then miss several on the written test? How many take forever to construct sentences using the new words?

Learning to pre-plan sequences is an important part of the process for all applications. The experience provided by handwriting lessons can and will present an opportunity for this important ability when we recognize the opportunity to teach our students how to move. There is new evidence that movement training actually stimulates changes in the brain - changes that result in enhanced fluency (Shadmir & Holcomb 1997).
Pre-plan and move? Move then adjust?
Initial outings with a digitizing tablet quickly revealed that two very different processes were being used by the various people writing samples. Like so many digitizers in use today, our pen did not produce a line on the tablet surface. It was obvious that this caused trouble for some but not for others. We knew that kids would be affected but were surprised by adult reactions. Our specialists had no trouble but the outside world proved very different.

We found a majority of adults were confounded by the equipment. Many struggled to write their name; trying to watch strokes on the computer screen while moving the pen on the tablet. We added an inking stylus for the pen and provided paper for the first few thousand samples.

Most subjects were happier with the sample collection process but surprisingly, the data collected didn’t really change. Subjects still used two basically different types of movement. Some people wrote easily and quickly. Others moved very carefully.

The writing produced by careful movement was very precise and legible but slow. Analysis of the data showed that these writers proceeded with numerous adjustments within the strokes of letters. When these subjects attempted to write faster, legibility decreased more rapidly than movement speed increased.

Plan and then Move
The people who moved quickly and easily showed very different measures. The number of adjustments within letter strokes was extremely low, almost nonexistent. However, these people could be divided into two groups; those who produced legible writing and those who produced a scrawl that, at best, was difficult to read. In both groups the data revealed that movements were executed in batches as the internal model sent sequences to the muscles for execution (H. L Teulings, Ballistic Handwriting).

The scientists refer to this type of movement strategy as point-and-shoot. The movement or movement sequence is planned to a target-point, then that batch of information is sent to the muscle for execution.

Legibility or Scrawl - The Difference
Legibility differed from scrawl in one major way. The legible “batches” showed a simple consistency that was lacking in the scrawl “batches.” Legibility improved when the pattern-organization process consistently selected the same target-point for each iteration of a letter. The scrawl showed little consistency in target-point selection during the organization process. This difference was revealed by measures of the acceleration/deceleration cycles - a measure of rhythm. As rhythm consistency increased, legibility improved.

Rhythm Offers Fluent Legibility!
Several things become clear as we translate scientific information into objectives for teaching.

1. To enhance student fluency, we need to teach pupils how to move with rhythm.
2. To learn how to move, the pupil needs to understand the letter as a pattern of movements rather than a picture to be duplicated.
3. To move with rhythm, the pupil must learn how to organize each of the moves in the pattern -from start to end.
4. To learn fluent movement, the pupil needs rhythmic experience at gross and fine levels - no matter what the age of the student. Teacher direction of practice activities is crucial.

Developmentally Appropriate?
Rhythmic movement is seldom considered an objective outside physical education, music or dance classes. So, at this point, we should address some of the developmental issues that are bandied about with great relish in discussions of various curriculum activities - particularly when there is talk of choosing a program for teaching handwriting.

Different publishers tout different concepts to suit the specific approach they are trying to sell. Here is a little information that is relevant to a discussion about what is “developmentally appropriate.” One of the more common “appropriate” arguments revolves around two different motor skills - anchoring and threading.

1. Anchoring - the issue (for handwriting) is eye-hand coordination. Anchoring is in essence the act of touching (or moving to) a certain spot relative to another.

Discussion - Anchoring
With young children this movement task can be a little difficult, particularly when the demand is for precision and the move is unpracticed. For example, ask the pupil to touch the top line on a piece of ruled paper with his or her pointer finger. The breadth of the finger, relative to the thickness of the line, produces a considerable level of tolerance for a slight miss in any direction. Ask the student to touch the line with the point of a pin and the level of difficulty increases dramatically.

The idea that anchoring is developmentally difficult is touted as a reason to purchase print writing programs that introduce letter building process as “continuous stroke” - threading letter parts together instead of lifting the pencil between strokes. The fallacy of this argument lies in the fact that the pupil must still lift and touch to build many letters and of course, between letters. The demand for anchoring skill remains a major part of the task of printing words and sentences with appropriate spacing and size for legibility. You will find little discussion of movement strategy or
fluency in the material provided from publishers trying to use this issue as a sales point.

There is truth to the basic premise. When letter shape allows strokes to be fastened together, eliminating a lift between the strokes makes the movement process easier - and more rhythmic. Peterson highlighted this concept in 1972 when we focused attention on the concept and named it no-lift. We named the lowercase letters, where correct movement sequence led to threading, the no-lift letters: a b d e g h m n p q r u v w. Lowercase y could also be included if you wanted to use a form based on the u.

Some children had readily adopted the shortcut, threading approach quite naturally without coaching. We simply recognized, named and emphasized the process as advantageous for teaching fluent, rhythmic movement. At the time there were many teachers who viewed the shortcut as a means to a sloppy end.

In defense of those teachers, precision was the perceived objective. There was little consideration of any relationship between fluent movement and perfectly pretty papers. The product was more important than the process.

2. **Threading** - this skill actually relates to putting movements together in sequences. It demands the ability to perceive and organize a pattern of movements.

**Discussion - Threading**

Unfortunately, programs touting the threading process as an answer to handwriting and reading problems, don't mention the fact that kids come to kindergarten already perceiving a sequence. Because threading is easy for little ones, a majority of youngsters seem to do pretty well. Applied on a letter-by-letter basis in primary grades, the writing looks OK. But what if the child “sees” the wrong start point, a reversed stroke direction and/or sequence?

These programs present instruction as undirected, trace & copy practice which sells books but may embed poor patterns. Trace & copy, cannot tell the child he or she is making the letter strokes in the wrong direction. The real advantage of threading, rhythmic movement, is ignored. **Rhythm is eliminated by pencil-tracing!**

**The Real Developmental Issue**

If fluency is the long term objective the real issue is movement. Can we teach young children skills that will allow the brain to guide the fluent type of movement as spelling and language skills improve in later grades? The answer is yes - with the right kind of instruction.

The teacher is a necessary ingredient in the recipe for fluency. You can teach them how to move! If the materials you choose for instruction help to communicate the process and direct movement practice activities, lessons can be time-efficient, effective and fun.

**The Capital Letter Issue**

There is some discussion about capital letters for the cursive alphabet - largely stimulated by publisher PR efforts. A few publishers have fastened on this issue as a way to sell new books. They present cursive capitals that have been modified from the original American Standard Cursive Alphabet. The premise is that the loops and curves of our standard caps are too difficult for kids to learn. It will be easier to teach the program because the capital letters are easier to produce.

There is again some truth behind the idea. If students are to learn on their own, it will be easier for them to figure out an efficient way to draw a picture that is simple.

Is this a valid reason for selection of materials and a program for instruction? Here is some food for thought.

1. I have always loved to see the look of satisfaction on the faces of second grade pupils who learned to create, moving with rhythm, with their eyes closed, the cursive capital D or F during one ten minute session. The letters were not precise duplicates of the model on the wall. But, they were legible, written not drawn, and absolutely wonderful in the pridelful eyes of those kids. I don't believe that the experience of education is enhanced by removing the challenges.

2. In a story assignment written by an above-average, grade 5 student, you would probably count 70 or 80 lowercase letters for every capital letter. If the objective is fluency, wouldn't it be better to select a program because it provided a means for developing fluent skills for writing - even if it only taught lowercase letters?

3. I have been in committee meetings that included a 20 minute argument about the cursive capital X. How often do you need to write a capital X - even if you live in Xenia, OH and work for Xerox? Incidentally, nobody even mentioned movement or how the capital X in question was related to the movements needed for other letters in the teaching sequence.

**The Italic Issue**

In intermediate grades, the lack of fluency is actually retarding the learning process. Teachers say that a demand for cursive writing results in laborious production of written work, particularly if legibility is expected to be part of the equation.

A vast majority of intermediate pupils ask to print. Teachers feel they have little choice but to acquiesce to the request because there is so much demand for writing as a tool, both
for learning and for evaluation of progress. The italic issue is presented by a search for alternatives to cursive. Some people are suggesting that we need a better way to print and promote a calligraphy style of letterform as the answer.

This issue exists for a reason. In a majority of those schools where the problem is being addressed, they are selecting programs for skill development that do not include techniques for teaching rhythmic movement. Concerted effort results in minimal and short-lived improvement. Student and teacher frustration remains and the time for handwriting lessons is once again consumed by other important work.

Even in grades four and five, the real number of students receiving skill development lessons with any regularity, would be so low it would be shocking. Apathy and misunderstanding have combined to severely limit our students ability to use a powerful tool for learning.

**When Movement is Considered**

**Making a case for cursive...**

1. The process of printing legible notes or classwork; vertical, slanted or italic styles included, requires successful coordination of six different movements. These movements would produce traces similar to those illustrated below. Size and spacing demand anchoring skill.

   ![Movement Example 1](image1.png)

2. The lowercase cursive alphabet requires only three movements. Size and spacing are relegated to muscles as joining control skills replace lifts.

   ![Movement Example 2](image2.png)

3. Print movements are largely downstrokes which are muscle tightening movements. Slant and italic forms reduce the “pinch factor” to a degree, provided the child learns to use the correct muscle groups to accomplish the movements.

4. Cursive movements, especially those that control legibility, are relaxed lateral slides that lend well to human musculature and as a result, fluent application. The majority of the patterns are created easily with simple, rhythmic, out & back, sequences. The sequences needed for legibility seem to have been designed for the point-and-shoot movement strategy. Is it possible that our ancestors, with their quills and poke berry ink, understood what we have only recently managed to measure?

**Samples From the Past**

**Did they really use cursive?**

**Dear Esther**, a book on the civil war written by Ralph Haas, focuses on a unit known as The Ringgold Calvary. Mr. Haas found a family in western Pennsylvania who had saved nearly three hundred letters written by a family member who served with the Ringgold unit. The letters had been so well preserved over the years, that many of them are photographically reproduced in the pages of the book.

**Dear Esther** will not only provide a poignant and personal view of the war from a soldier’s perspective. It will also give you real examples of applied cursive writing as used by a carpenter turned soldier to communicate with the members of his family.
A Directed Lesson - Not Trace and Copy

Teacher control and direction of the lesson is the key to teaching rhythmic patterns that will transfer. Imagine you are leading an aerobics exercise group. Everyone makes the same move at the same time.

In this context it becomes clear that pupils must know what the moves are and also the correct sequence. Communication of these cognitive facts, along with the rhythm of the moves, is easy using the We Write To Read pupil books and a four step lesson sequence that is simple and quick.

**Step 1: Illustrate and Describe (With Action Words)**

**Step 2: Airwriting (With Action Words)**

**Step 3: Fingertrace & Say**

**Step 4: Write & Say**

Chant the color/rhythm, chant the Action Words, or count! A little rhythm practice each day offers opportunity to develop fluent rhythm patterns for good writing--and all other symbolic language skills.

Here are some important factors in teaching handwriting as a process of language:

1. Concentrate on teaching **lowercase letters**:
   a. Help students learn the *exact starting point, stroke sequence and stop points* used for letters.
   b. Show students how the individual strokes of small letters follow *left-to-right sequences in rhythmic "beats."*
   c. Use a descriptive “language of movement.” Teach pupils “how to move” with the vocal chant to emphasize the letter rhythm. Use the Action Words or Color Rhythm.

2. Build paper placement skill and the related position of the hand, wrist and arm and correlate with classwork.

3. Use gross motor practice and control the **rhythm process**. No matter what the level of your students, gross motor activity is needed to affect change in the internal system. Fine patterns are muscle group specific, a bit like one way streets. Gross patterns are not muscle group specific and offer multiple lanes for data transfer.

   You can illustrate this fact for yourself rather easily. Practice writing a large letter on the chalkboard. Make the image at least ten inches tall. You must be able to produce the movements with your voice to establish rhythmic movement so this would be the initial practice objective. As soon as you are able to accomplish consistent, rhythmic production, change position so you can use the opposite hand. Do the airwriting step a few times. Then touch the chalk, close your eyes and say the pattern as you move the chalk with your verbal rhythm. The initial image may not be beautiful but it should be legible. A couple of additional trials will result in a product that rivals your writing hand for accuracy.

4. Listen to the voices when you move to the Write & Say step. At first you may have trouble getting pupils to chant. Dependence on Visual Feedback blocks rhythmic movement causing voices to stop. Students have been relying on the visual system. They revert without realizing it as the pen or pencil begins to produce visible traces. Eyes-closed trials bring it out more quickly. Repeat steps 1, 2 & 3 to get the voices going. Establish movement skills with the simple basic stroke sequences. Pupils can then apply the learning to make letter production easy.

5. Initial trials will not be as precise as the pupil would like. Because children focus on the product, they need extra coaching to build confidence in fluent movement. Our objective is a process that will support fluent legibility! Regular practice with correct process will quickly improve control skills for a majority of your pupils.
Helping Children to Develop Patterns for Fluency

Our continual research indicates that **HANDWRITING IS PHYSICAL LANGUAGE**. Children benefit dramatically in all symbolic language activities (Reading, Written Composition, and even Keyboarding) if good production process training is provided in handwriting movement/rhythms.

We set our digitizer to measure ten (10) **physical process factors**. As a result, we can identify specific skills that teachers should help students to understand and integrate. Pen angle measures, indicating the importance of paper position for left-to-right movement as paramount objectives, will be discussed later. Measures of acceleration/deceleration demonstrated that rhythm is the major difference between **Visual Feedback** and the more fluent **Ballistic** type of movement. That translates to another huge need for change. Except in the most difficult perceptual situations, children **should not trace models with a pencil**. Making lines match demands visual feedback which blocks the encoding of rhythm. **Finger-Tracing**, with a grammar of action, helps children to integrate the rhythms needed for fluency. **In all grades**, with all alphabet choices (Vertical Print/Slant Print/Cursive), instructional objectives can be simplified if we focus on a three-step movement and control pattern:

1. **Good Starts**
2. **Good Movement**
3. **Good Stops**

In printwriting grades we must do everything in our power to teach good starting points, the direction of movement, and good stops (or pauses). The Peterson *We Write To Read* books provide color-rhythm movement patterns, with "action words" that help children use the right kind of movement (with controlled rhythm). The fluent (ballistic) type of movement must be completely planned in the motor pattern - from start to end - before movement begins. Learning how to use and control this pre-planned type of movement can be a step-by-step process.

**Vertical Print**

1. **hook around**
2. **small down**
3. **stop**

**Slant Print**

1. **slant**
2. **roll slant**
3. **roll slant**

**Cursive:**

In Cursive grades, the importance of lowercase letters must be continually emphasized. The “ergonomics” of cursive lowercase letters is most helpful! Even though the appearances of the four basic lowercase letter parts are visually different, **all four basic parts can use the same muscle groups in the same pattern**: Slide Right/Slant Back.

“Slide right, Slant left and Stop.”
1. **START**  (slide right)  rocker rock  rainbow-roll

2. **SLANT**  (back to the left)

3. **STOP**

Slant in cursive writing indicates **good** movement pattern development. Slant also indicates speed. The **slide right/slant back** pattern is the most efficient use of human musculature to produce left-to-right movement.

Step One - Green  Step Two - Brown  Step Three - Control

1. sharp top  2. sharp top

Cursive Handwriting Letterform Development Facts:
1. The **sharp top** basic stroke is used 19 times to help create 16 lowercase letters.
2. The **loop top** basic stroke is used only 6 times, but since it is always a beginning stroke it is used for 6 lowercase letters.
3. The **round top** stroke is used 11 times to help create 8 lowercase letters.
4. The **roll top** stroke is used only 5 times, but since it is always a beginning stroke it is used for 5 letters.

**Find sharp tops in these letters** (16 letters contain 19 sharp tops)

a b r d q i j p q s
s t u v w y

**Find loop tops** (6 - beginning strokes only)

b e f h h h

**Find round tops** (8 letters contain 11 round tops)

h h m n p a y z

**Find roll tops** (5 - beginning strokes only)

a d g o q
What Is Anchoring?

In printing, at the cognitive level, children learn how to build letters one stroke at a time - lifting the pencil and finding a new place to “anchor” it for each subsequent stroke:

The Next Step - Threading:

Once they have learned the correct sequence, children can learn to connect strokes in some lowercase letters. As control skill develops you can continue to emphasize the stopping point, then introduce “threading,” keeping the pencil on paper and retracing to add the next stroke. This helps build more rhythm and makes the process easier for most children. If they can handle the lateral movement needed, it can be particularly helpful for those who have had trouble with left-to-right tracking.

After Printing . . .

When Should You Begin Cursive?

Usually the child answers that question by starting to show interest in “curvy” writing. But the best answer to the question is to start cursive readiness about a year before you expect the children to write extensively. Printing, by its very nature is a muscle tightening process . . .most of the strokes are oriented top-to-bottom . . .so when you write 60 words or so at one sitting you are bound to get a muscle cramp!

Cursive is more relaxing because the motor pattern relies on opening muscles for 4 out of the 6 legibility subskills! Also, the engineering of cursive lowercase letters makes them “fit” the muscles and hinges of the arm, wrist, hand and fingers. The research data shows it is definitely faster and more durable for children and adults if they have learned the muscle pattern. (Editor’s Note: Teaching an efficient process is the key. If children must invent their own way of writing they are doomed to frustration! Always remember, symbolic language is artificial. The patterns were not created with the innate tendencies of a young child in mind.)
Print And Cursive Cousins

Time spent teaching printwriting will not be wasted! The cognitive facts about cursive can be related to the print alphabet...plus one very important skill that is essential when learning a cursive movement process that leads to fluency and better transfer of learning: CONTROL.

The computer digitizer research revealed that children need to learn CONTROL (where to stop inside of letters and words in cursive) as much as the movements themselves.

In the standard printwriting alphabet, fourteen (14) lowercase letters are directly transferable to cursive. That is why so much emphasis is placed on starting the first stroke of print symbols “top-first.” The only new learning required for the cursive “cousin” is to learn the rocker or rainbow joining stroke.

Print Patterns Directly Transferable to Cursive:
Please note the control pause dots on both models.
All of the “other” lowercase letters can be taught using the print/cursive cousins as “roots” for new letters.

Read on... We will satisfy your students’ burning desire for cursive much more easily than you can imagine!

Find out about “Evolutionary Cursive!”
Evolutionary Cursive

Analysis of cursive motor control patterns has proven that the cursive lowercase alphabet can be very easy to learn if a patterning approach is used. This scientific approach maximizes the use of human muscles (and “hinges”). The motor control psychologists call this approach “BALLISTIC” movement. It is really beautifully simple. . . .

First
We teach the child (very large at first) how to slide to the right for each beginning stroke:

You can actually build readiness for cursive using these rockers and rollers:

You will be surprised. . .this exercise helps reading too! Notice the little roof we made in the lowercase r. . .and the r is not a cursive cousin!

The Important Objective for Fluency is Left-to-Right Movement.

Second
We teach the importance of slanting the following down-strokes “back on track” . . .using a retracing movement that minimizes muscle involvement. One set of muscles can learn to control the rhythmic movements.

All four of these strokes use the same muscle pattern, even though they look different!

The Important Objective for Fluency is the Rhythm Pattern — “Slide Right/Slant left”

Establish position confidence and rhythmic control of these basic strokes first and development of letterform patterns will be easy and fun!

Third
We teach children “CURSIVE PRINTING.” Originally cursive handwriting did not always join. Quill pens and sharpened sticks had to be inked frequently! Historically cursive was a newly engineered alphabet that maximized speed, rhythm, and control with widely available tools for the time. The idea that cursive was continuous movement, did not become prevalent for more than one hundred years and after the invention of new writing tools!

The Important Objective for Fluency is THE RHYTHM CONTROL PAUSE

This is cursive print—joining control is established without problems.

Gross Motor Patterning
Scientists have validated the importance of large muscle involvement for “internalization” of the symbols of language. Comments from Dr. Teulings are important for our understanding:

- When the learner uses big muscles for rhythm and movement training the motor control pattern is generalized. . .stored in several areas of the brain that complement visual discrimination. Conversely, if the child uses only small muscles, the learning is only muscle specific. . .not shared.

- Lesson planning should always include directed, specific large muscle rhythm and control practice (even in upper grades). Airwriting and fingertracing help to accomplish this objective.

- Directed/airwriting establishes the rhythm of movement for internalization.

- Fingertracing improves trajectory information.
Section II - PHYSICAL POSITION IS A MAJOR OBJECTIVE

Paper And Arm Position For Right-handers

When children learn to hold the paper, the angle of the paper placement should allow them to keep the writing arm at the bottom of the paper rather than to the right side. Arm entry is the crucial objective. That is why writing position differs from reading position. When the writing hand is under the baseline, lateral movement is not blocked.

YOU AND YOUR STUDENTS CAN BENEFIT from a simple device to help the practice and application of this skill. Peterson Handwriting self-adhesive PAPER POSITION DESK TRIANGLES or a generic equivalent will make this task easier for pupils to learn and easier for you to monitor in application.

The triangle is used as a guide to slant the book for fingertracing and the paper for writing. It makes it simple for you to spot students who need a reminder during language work. It also provides color/rhythm models in writing position.

Thousands of digital samples, written by pupils at all grade levels, revealed this PAPER, HAND, ARM-ENTRY position skill to be crucial for fluency!

When right-handed pupils hold the paper in a “square” reading position, the right arm enters the paper from the right side causing a right-hand hook. Research has shown that this blocks left-to-right movement and may be the major cause of reversals! This photo shows how the writing hand and arm are blocking rightward movement. This approach negates legible fluency.

Paper/Arm Position - Left-hand

RECOMMENDED NON-SMEARING SIDESTROKE METHOD

In order to write without covering letter-forms, left-handed children must learn to write sideways. This also means they must be able to recognize forms when the paper is turned for writing position. The Peterson self-adhesive POSITION GUIDE TRIANGLES also include instruction for this special method.

The left arm must enter the paper from the bottom right as illustrated. If the arm and elbow are positioned properly, the child can learn to push letter downstrokes to the left using natural movement.
Turning the paper is only part of the objective. Many children will rotate the paper but then adjust the placement of their arm to get the wrist and hand into the “old-habit” position. This reaction to the new paper position can be harmful. The spine is usually twisted and the head is usually pulled too close to the paper for good eye distance. The picture shows a left-hander, but many right-handed students also make the same type of adjustment to approach the slanted paper. In both cases the paper is usually pulled close to the body. Position guides place the spot for the paper high on the desk.

We must address the relationship between the paper position, arm placement, wrist and hand orientation, and the pencil grip.

Exaggerated Remedial Position for the Sidestroke Process

If you try the regular paper position for sidestroke writing and discover that children have difficulty learning to push letters to the left, you may need to teach the extreme perpendicular paper position illustrated. This extreme, exaggerated position improves the pushing movement. To right-handed people this position looks unusual. However, it may be the only way to overcome inversions and “overhanded” habits.

Some pupils may have difficulty learning to write sideways. If a child continually turns the paper to a square reading position, he or she will develop an inverted movement process. Children who invert with the left hand are using right-handed movements!

Remediate the Harmful Hook and the Typical Approach to Inversion

The computer-assisted process research indicates that if a left-hander must use the “inverted” movement process THE PAPER SHOULD BE TURNED EXACTLY LIKE A RIGHT-HANDER. The left elbow can then be held close to the body and the child can flex his/her wrist to create a satisfactory muscle pattern.

It must be noted that this “best” position for inverting will still cause some smearing. But because the hand and arm are above the current writing space, the pupil will be able to view a full line of writing. Using the typical “reading position inversion” causes the hand to cover letters even before a word is completed.

For more detailed information on left-handed approaches to handwriting see the section titled: The Left-Handed Writer
“. . .training the correct (movement) strategy from the beginning is obviously the most efficient.”

Dr. Hans-Leo Teulings
Ballistic Handwriting

Arm, Hand, Elbow Placement
One important key to developing left-to-right movement is to help each child develop good paper/arm position. **Writing Position is Different from Reading Position.** There is nothing natural about symbolic language. All aspects of reading and writing are learned. Children tend to hold the paper at body midpoint. This works for reading position, but it blocks essential left-to-right movement required to write with fluency.

Teach Children to use Writing Position
You are providing countless coloring activities for the children before, during and after you begin formal reading and writing activities. These experiences offer a great opportunity to help pupils discover the movement advantage offered by good writing position because they are relaxed and non-threatening. They can also be great for helping kids learn good pencil holding skills - particularly if you can provide thick triangular crayons, coloring pencils or markers instead of the usual variety.

The illustrations above show *poor* arm/hand/elbow position. . .it leads to “hooking” for both left-handers and right-handers. When the writing arm and hand are positioned to the side of the image area, the correct movements are blocked. Ideally, the writing arm should enter the paper from the bottom to place the writing hand under the image area.

It makes sense to teach the children the ergonomic skills early on during simple coloring activities.
Special Information About Left-handed Movements

Many children who come to Kindergarten and pre-first classes may not have established hand dominance. Apparently about 5-6% of pupils at age five are strongly left-sided. That is, all manipulative activities are performed exclusively from the left side (throwing, drawing, kicking, scissoring, eating, pointing, etc.). There appears to be another 5-10% of pupils that vacillate between their left and their right.

In addition, many of the pupils who have some left-handed tendencies are right-eyed. Ideally, the left-handed pupil would also have a dominant left eye so that the paper would be held to the left of the body midpoint. Writing left-handed can be very efficient if a child can learn to hold the paper so that “down” strokes move leftward, away from the body.

Unfortunately, pupils who color left-handed may have been completely blocked in their unschooled coloring movements because no one knew they should be sidestroke-oriented. The Kindergarten teacher can help to establish correct movements.

Note the position of the left arm. This position forces the child to rely on a “pulling” movement. Leftward sliding movements, pushing away from the body, are completely blocked.

This “incidental” learning establishes an inverted movement that soon becomes a habit. When the preschooler begins to experiment with handwriting symbols, the inversion continues and the child is forced to use a pulling movement for downstrokes, just like right-handers! If the child tries to reproduce a series of letter-forms using a left-to-right process, the left hand covers the symbols on the left side of the paper and the stage is set for establishing a habit that interferes with the nonsmeareing movement process that we should use in first grade! As a result, most left-handed children never have the opportunity to learn the correct way to write.

All bad habits feel good. Therefore, when the child comes to school the teacher faces a difficult problem. Left-handed children require special attention and gentle persuasion. If we are to succeed in helping the left-handed children we must direct their practice very carefully. Most children will need to learn a completely new approach to coloring and writing.

When a left-hander colors, be sure to establish leftward orientation. Notice arm, elbow, hand position. The writing hand is under the image and lateral movement for coloring can be natural and easy.

Teach a Leftward Pushing Movement

In printwriting, the predominant movement pattern is “downstroke” oriented - the pencil moves from the top of the letter downward toward the baseline. This is exactly why many left-handers have difficulty. They never learn to move leftward for those downstroke movements. The arm/hand/paper relationship is the key. Exercise this movement every day, and do not hesitate to exaggerate the paper position to help pupils establish the sideward movement.

The illustration shows the paper is turned almost upside down! When the table surface is high it forces the arm wide. To push strokes leftward, from the top line toward the bottom of the page, the paper must be turned like this. The arm position causes the problem. Is it any wonder most left-handers learn inverted movements and write with a hooked wrist?

Learning to use good position can move your students several steps ahead. They may begin to produce letters that slant forward if letter fluency begins to emerge. Consistent forward slant shows good lateral movement with the correct muscle groups.
Pencil/Crayon Position

Many kindergarten teachers have been reporting a steady rise in the number of beginning pupils who are using bizarre pencil/crayon position. Poor position usually results in excessive pressure. Children squeeze and pinch, which overburdens the small muscles. The single most important pencil-holding objective is to develop a habit of holding the pencil away from the point. Always encourage pupils to keep fingers back on the paint. Avoid touching the sharpened part of the pencil.

The extensive fingertracing activities in this program will help children to learn that the index finger is the writing finger. The index finger should rest, from tip of finger to the second knuckle, on the pencil. The following illustrations show that the index finger is gently rounded and the barrel of the pencil crosses on the finger side of the fist knuckle.

Notice the position of the thumb. Have pupils bend the thumb and place the tip of the thumb in back of the index fingertip (farther away from the pencil point), on the side of the pencil.

Extensive preschool experience, essentially unguided, creates ample opportunity for poor gripping to become a habit that may prove to be very difficult to break.

The early gripping postures are often far from the best due to natural progression of small motor development. Really bizarre grips are not uncommon but can be very debilitating later on. The amount of time a child spends writing during the school day at the third grade level would surprise many people. Writer's cramp can become a problem much sooner than you think.

However, poor gripping postures can have far worse implications than writer's cramp. They often interfere or prevent use of the best muscle group for the writing task and can block integration of rhythm information needed for integration and eventual fluency. Internalization of letter movement patterns is often blocked so the production process remains cognitive for far too long. This condition will interfere with development of parallel written language skills like spelling and vocabulary because the student is relegated to visual production of symbols.

When Transcription and Text Generation skills begin to gel in third and fourth grade, the student seems suddenly to fall behind the majority.

At any age...

If your student struggles to produce written language with pen or pencil, at any age, the first thing to check for coaching should be these relatively simple position skills.

Personal experience and several thousand digital samples show that the majority of students in intermediate grades who are identified by teachers for help, need first to make some simple adjustments to physical position habits.

Posture skills are all related. The pencil grip can affect wrist, arm and body postures which may well combine to prevent fluent processing. Something as innocent as gripping the pencil very close to the point can set the stage for debilitating habits that cause great frustration in the best case, and block language skill development in the worst.

Ask any of the many professionals who have used our products to improve personal skill. They will say that they wished they had learned correctly in the beginning.

Please do not give up on your students. When you believe they can learn and continue to support the effort, they can have some semblance of confidence in a positive outcome.

What message do you send when you ignore poor position?

When the opportunity arises, to compliment an adult for nice handwriting, the conversation eventually leads that person to say something like, "I had a great teacher in grade..."
If children were able to write with the index finger alone, handwriting would be far easier to teach and learn. Emphasize the importance of establishing index finger dominance. **Our most important goal is to hold the pencil back far enough from the point to allow the hand to relax and move easily.**

**We do not say, “I can’t.”**
**Instead, we say, “I’ll try.”**

**Avoid Writers Cramp!**

This “thumb-dominant” grip signals a need for arm and wrist movement practice. The writer is using the thumb to push the pen or pencil sideways - **WRONG JOINT, WRONG MUSCLE GROUP!**

**NOTE HYPEREXTENSION OF THE FINAL JOINT ON THE POINTER**

This “thumb-dominant” grip signals a need for arm and wrist movement practice. The writer is using the thumb to push the pen or pencil sideways - **WRONG JOINT, WRONG MUSCLE GROUP!**

**THUMB FORWARD CAUSES WRITER’S CRAMP!**

**CORRECT FINGERTRACING CAN HELP TO PROMOTE POINTER FINGER DOMINANCE FOR PENCIL GRIP**

The following picture series is intended to demonstrate the natural, relaxed hand position that can be learned for pencil holding...

The hand is dangling at the end of the arm. The muscles are all relaxed as if walking along the street.

Here the wrist is rolled outward to reveal a little better view of the finger positions in this “resting” state.
Here the “resting position” is maintained for the hand but the wrist is rolled outward still farther to show more of the fingers.

In image 4 the hand remains in the same position. I simply bent the arm at the elbow and placed the forearm on the table.

Compare pictures 4 & 5 to see that the only difference is the pencil. I simply slid it into place between thumb, pointer and middle finger without changing finger positions. A slight adjustment of the camera angle provides a better view of the middle, ring and pinky fingers in picture 5.

Note that the wrist is rolled out slightly in the image below. The fingers are in the same relaxed position but look at the writing space defined by the lines on the paper. My hand is positioned in the writing space blocking movement.

The objective of paper and pencil holding is lateral movement. When my wrist is rolled out as in image 6, it's a pretty good bet that I will be using finger and/or wrist muscles to move the pencil from top line to baseline. The hand position shown in image 6 won't cause much trouble while I'm building words one letter at a time. But later on, when language skills allow more fluent left-to-right tracking, this habit will have a negative effect on the product - particularly if I have only been using my fingers.

The lines pictured are more than one half inch apart. I mention this to emphasize again the need to keep writing large for the little ones. Few pupils in primary grades are ready for building fine motor skills. Work to maintain arm movement for as long as possible.
Note the difference between the hand positions shown in images 7 and 8. Look closely at the wrist position shown in each view. Your pupils can learn to use good position skills if you teach them. But without your instruction, innate tendencies will probably prevent them from inventing these skills on their own. By the time poor position causes the child trouble, poor habits are very difficult to break.

The position above is easily overlooked. Pencil grip is fine. The wrist is not hooked. There is little to catch your attention. Can this student use the arm to make the movements? Yes. Will the arm be used? The answer will probably depend upon the size of the writing we demand through the paper we provide for practice.

Will lateral movement be enhanced when the wrist puts the hand under the image area? Yes. Most of the lateral movement in printwriting occurs between strokes when the pencil is not touching the page. Learning to move the pencil to produce lateral strokes will be something new if the child has only been using fingers. Fingers move the pencil in vertical planes but do not move it sideways. Slant print offers an interim step because the print strokes are more lateral. Slanting a simple stroke for lowercase I means learning to move the pencil sideways with arm or wrist muscles.

**A Big Developmental Step**

Entry level children seem locked in a world that is vertical and horizontal. When will your pupil be able to apply the movement or sequence to a page that has been rotated into writing position? Experience in classrooms has shown that students in K and grade one may easily accept the writing position for coloring a picture. But most of those revert to square placement as soon as they are given paper for writing, particularly when the paper shows lines.

In the beginning it seems, we must work with the square position as mandated by perception. Let's look closely at the movements and their application over a span of time. It will emphasize the impact of size - keep the writing as large as possible for as long as possible.

Image 9: Clinging to reading position...
Body Posture at the Desk

Learning good position at the table or desk is important for health and for the ergonomic relationships between body posture and the skills for paper and pencil holding. There are some little things that can have a big effect on the learning process.

Table Height

It's a given that the height of the writing surface is relative to the height of the chair seat and the body torso of the student. Do the best you can to fit students to the desks and chairs. The following pictures illustrate the impact of table height on the elbow position. I am using an adjustable steno chair to change the seat height at the desk.

I have been in hundreds of classrooms where the table height for pupils was far higher than the picture on the left. I have often seen children sitting with arms on the table and the upper arm is parallel to the floor! Control decreases as the elbows are spread away from the body. That's one reason why steno chairs and piano stools are adjustable.

![Low Chair Setting = High Table](image1)

![Chair Setting = Table at Bottom Rib](image2)

The language hemisphere is more auditory, the spatial hemisphere visual. Good handwriting lessons build bridges that will allow the two hemispheres to work together more readily to process symbolic language. Can you read when the page is turned sideways or upside down? I'll bet that you do it every day as you move through the class to assist individuals.

We placed the alphabet in writing position on our position guides to create a simple reading exercise. How quickly can your pupils touch the writing-position letter when you name it?
Body/Desk Position

Posture is important because it helps maintain balance and control. This position skill is for good health as much as it is for good writing!

Check eye distance.
(11-14 inches)
When the head is down, it usually indicates that fingers are too close to the point of the pencil.

Check desk height.
The top of the desk should not be higher than the lower rib. When the desk is high it forces arms away from the body toward the sides of the paper. See paper position/arm entry.

Lean forward so the arms support the upper body.

Chair back, front legs just under desk.

Space between stomach and desk.
When the child sits too close to the desk, arms are forced away from the body toward the sides of the desk. See paper position/arm entry.

Fitting Pupils to Desks
At every level you will face the same basic problems with regard to position skills. Changing habits is no easy task for you as coach or for the student. Time spent creating the best physical situation for pupils will have a positive effect on everything. On the other hand, if we ignore position issues many of our pupils will be struggling to accomplish movement objectives with factors they can’t control working against their success.

1. The fact that desks are built to different specs for different grades is often forgotten as furniture is moved about the building. The first step is to move pupils, desks and chairs around to minimize adjustment. See if you can trade desks and chairs from storage or another classroom. Plan your attack. If you have the measurements, tools and desks ready in advance, it will only take a few minutes to change a desk or two after students leave for the day.

2. Seat the pupil and use a ruler to take some measurements:
   a. The distance between the writing surface of the desk and the students bottom rib. . .
   b. The distance between the bottom surface of the desk and the child's legs. . .

3. Write the measurements on a post-it and stick it on the desk. Check the examples below to figure the amount of adjustment. Generally manufacturers provide preset mounting holes in the legs that will come close to the adjustment you need.

4. Leg adjustment is easy and quick if you can turn the desk upside down on another. Provide a box for the contents of each desk in need of adjustment and have pupils empty the desk before they leave for the day.

5. Check the type of mounting screw or bolt and have the appropriate driver ready. Ask for help - your maintenance person will enjoy helping you and the kids.

Example 1:
Distance (a) top surface to bottom rib 6 inches. This might be the ideal adjustment but the book shelf must be considered.
Distance (b) bottom surface to child's legs 7 inches. In this case we could lower the surface 6 inches and still leave an inch leg clearance.

Example 2:
Distance (a) top surface to bottom rib 5 inches.
Distance (b) bottom surface to child's legs 5 inches. In this case we could lower the surface 4 inches and still leave an inch leg clearance. We have not achieved the ideal but it should be close enough. A four-inch vertical change will make a big improvement in the elbow angle. Do your best to get everyone to fit between the high and low elbow angles shown on the previous page.
Handwriting Songs

Singing lines

1. I have three friends who are very fine, they help me stay on the right lines.
2. I have three friends who are very sweet, they help me write and make it neat.

The Pencil Song

1. Do do do, One finger on top! Back on the paint! Don't pinch! Don't pinch! Don't pinch! No, no not!
5. Pointer on the paint. Thumb on the side.
8. Keep your middle finger, hanging down beside. Pointer on the paint!
12. Thumb on the side. Curve the other fingers, and make them slide.
15. Slide, slide, slide. Do do do, slide, slide, slide.

The Position Song

1. Do - do - do Space be-tween the desk and you helps to keep your bo-dy true,
2. Do - do - do Keep your feet flat on the floor, lean your bo-dy more-more-more!
3. Do - do - do Hold your pa-per at the top, point the cor-ner to the spot,

Check your eyes, don't catch the slumps, nev-er get down in the dumps.
Check your el-bow, keep it in, then you'll see the teach-er grin!
Keep your arm and hand just right, make your let-ters slide left-right.

4. Slant your paper quite a lot, Point the corner to the top. Always keep your elbow down, Or you'll make your teacher frown.
5. Slant your paper quite a lot, Point the corner to the top. Always keep your elbow in, Then you'll see your teacher grin.
6. Slant your paper quite a lot, Point the corner to the top. Practice moving to the beat, And you'll keep your writing neat.
CHALKBOARD WRITING

Large muscle involvement is particularly necessary as a first step in learning handwriting skills. The convenience of the chalkboard is unmatched for this purpose. Practice sessions provide excellent feedback for teachers because of the opportunity to: 1) observe pupils’ “body language,” 2) identify process areas that need to be improved, and 3) provide instant help for needs that are identified.

General Recommendations:
1. Place as many pupils as possible at the board simultaneously (every three feet of lateral space).
2. Pupils at their desks can practice the same exercise on paper for good time-management.
3. Rotate the “board writers” every three minutes.
4. Practice an exercise that focuses on one concept at a time.
5. Consider having pupils use a brush and water instead of chalk.

Establishing Good Chalkboard Position
1. **Right-handed pupils** stand erect with the body and feet facing to the right. Spread the feet apart. Always start writing at eye level.

2. **Left-handed pupils** stand erect with the body and feet facing to the left. Spread the feet apart. Begin left-to-right movement with the left arm extended and begin writing at shoulder level so that a downstroke is made with a pushing movement. As writing moves toward the body, move the feet so the arm never hooks.

3. Hold chalk between the index finger, middle finger, and thumb with the back of the chalk pointing toward the heel of the hand (do not hold chalk like a pencil).

4. Be sure the hand and fingers are suspended away from the board. Only the point of the chalk touches the surface.

5. Keep the nonwriting hand on your hip, or place the arm behind your back. Lines on the board should be about 3 or 4 inches apart. Use three lines so that writing is large, requiring arm movement.

Special Chalkboard Activities
Play “On The Spot” to check student Letter Formation Process! Players place a spot on the board and touch the chalk to the spot. You call out a target letter. Player must slide the chalk from the spot to create the first stroke of the letter. Watch closely! The game is full of surprises.

When the dot reveals correct start point and direction of movement the player or team gets a point!

Project-A-Model
1. Use a projector to place an image on the chalkboard.
2. Allow the player to **Fingertrace & Say** the projected model (make it at least 12” tall) several times.
3. Have the player “dot” the start point and turn off the image.
4. Write & Say.
5. Turn projected image on to compare written and projected images.
6. Try again, eyes-closed.

**Variation:** Project several images and have consecutive players mark start points/end points.
Section III - Evaluation for Coaching Skill Development

Some basic tenets:

1. Pupils, and teachers too, are prone to compare the work of one child to another rather than focusing on individual improvements and setting new goals. It is easy to foster the right kind of environment for individual analysis and setting new goals for improvement. Have pupils keep samples of their work in a folder. Periodically compare a current sample with the previous one to demonstrate progress and select new goals. The unit test samples provided in the _We Write To Read_ books are designed for this purpose.

2. Coaching in applied situations is very important for transfer of learning. We do not want to create the impression that practiced skills only count in handwriting class.

3. The handwriting process can be observed and specific goals for improvement selected, by considering six different but interrelated subskills: Form, Slant, Size, Spacing, Smooth Rhythm and Control. It is much easier for the child to focus on one idea at a time and the subskills that enable that approach. Because they are all related by movement rhythm and control, practice focused on one concept will reinforce all of them. We simplify the task of setting goals by providing more specific illustrations in the product.

4. Remember to include position skills in this process. If you use the Peterson self-adhesive position guides it will be much easier to teach, evaluate and correlate position skills.

5. The pictures below and in the next column serve as icons for the subskills throughout the lesson plan outlines. When you see the icon emphasize the subskill during the lesson.
Coaching Skill Development - Printwriting

A golf or tennis coach looks at specific parts of the whole when looking for ways to improve your serve or your swing. There are no traces of the movements created on the court or the tee. It might be easier to coach you if it were possible to look at traces of the movements you executed. Is that one of the reasons so many football coaches use video? As a handwriting coach you do get traces of the movements made during the writing process.

You can look at a handwriting sample with a focus on process by considering the traces as a pattern of the movements used to create the shape. With this perspective we can look for subskills of the movement process. You can also use direct observation to check the movements as they produce the traces.

• Form
If you had a digitizer in your classroom you would really be able to assess the skill of form from a process perspective. You would be able to play back the actual movement sequence to see if the student really did start in the right place, move in the right direction, build the letter with the correct, left-to-right pattern of movements.

There are visible clues on paper samples too. It is rare when a child joins the beginning and end of a letter so perfectly as to hide the start point. If the break is at the bottom, the start point is misunderstood. If the letter starts at the bottom, how many other letters are misunderstood? Starting at the bottom and moving up is a natural tendency for a three-year-old but our students need to learn a new process for fluency. Our language reads from the top, down - moving left-to-right. The form subskill involves knowledge and application of the correct movement sequence for each of the letter patterns.

Above are some traces that provide reason to closely observe the movement sequence being applied by the child on all of the letters. I have circled the possible start points. They indicate two possibilities. The child is starting at the bottom and moving up. Or, in the case of the a and d, the letter is being built using a right-to-left stroke sequence. Either way, the dynamic information in these movement patterns conflicts with top-down, left-to-right ocular tracking for the reading process. There is another consideration.

Correct print patterns can transfer easily to cursive.

• Downstrokes
Does the pupil perceive the direction of movement and the concept of consistency when one movement follows another?

Inconsistent movement direction is a good clue to check pencil holding and paper holding as well as the direction of movement. A close look may show this child is starting at the bottom. You may also discover that the wrist is rolled outward and hooked, placing the writing hand beside or even above the image area. Often these movements are made using primarily the finger muscles. The hand is “rooted” to the paper as the fingers attempt to create the strokes.

The consistent slope highlighted above, frequently indicates a reversed stroke sequence as illustrated below.

Digital samples collected from first grade pupils during the last three months of the school year, revealed that more than 70% of the children were reversing stroke sequence for at least two letters.

Please note: The right-handed hook is often associated with mixed dominance, i.e., left eye is dominant, writes with right hand, kicks with left foot. These children have more trouble learning the laterality of our language. They need more attention. They can learn but require more guidance. A visual therapist or occupational therapist would prescribe lots of top-down and lateral movement exercises.

• Slant (Letters lean forward in the direction of movement)

This is the goal for the beginning of grade two. Forward slant is not a style as it is with your computer fonts. It results when a combination of good things happen - correct paper position, good pencil grip, good movement with arm involvement and fluent letter patterns all combine to allow natural lateral movement and word production.

Although rare, slant sometimes occurs in first grade. It is a good sign of advanced motor and perceptual development. Encourage rather than insist on verticality. The majority of grade one pupils will resist the paper position necessary for this natural kind of laterality. It seems they are locked in the vertical/horizontal planes of perception until they have fairly automatic patterns for producing and decoding the letters. By the time they charge into second grade, virtually all seem ready to learn how to rotate the paper into writing position - with instruction and directed movement experience.
• Size
Teaching a process for size skill involves communication relating to place-in-space and understanding of start points.

In the illustration above, the word on the right looks better because of the consistency of the proportionate letter parts.

In the illustration below, the word on the right looks better because the place-in-space of the letter g is much better than in the word on the left.

big...big

Using paper with lines can make it easier for children to learn but it doesn't do the job all by itself. We need to be able to efficiently communicate start points during practice. Teach the children names for the lines - see “The Lines Song” in the K section of the lesson plans.

I have three friends,
Who are very fine.
They help me start
On the right line.

Topsy Top Line
Mopsy Middle Line
Buddy Baseline

It may be impossible to explain the concepts of proportion and place-in-space to a first grade class, but directed exercises with basic strokes can help the child to integrate a process for selection of start points that will allow success with tall, small, and tail letters.

It is much easier for a child to use lines for place-in-space and good size when the movement pattern is already established. The initial applications of letter patterns to lines can focus on the start point when pupils know the names of the lines.

Top, slide ___________ Top Line, Tall Down
Middle, slide ___________ Middle Line, Small Down
Baseline, slide ___________ Middle Line, Down Tail

Hook Around, basic stroke - tall and small

The child must know where to start and where to go for different sizes of letters. Practice until pupils can chant “action words” as they write the stroke with the pencil.

Your pupil may not be able to understand “proportion” but they can understand the concept of touching lines with the strokes of the letters.

• Spacing
The sample below is very similar to one of the lines on the unit one model test for grade one in the Peterson pupil book.

till fill tall late

The line below is a representation of a student sample seen as we review the papers from the class as part of our diagnostic service.

til lfil tall late

When an occasional pupil paper in the class demonstrates this application of the spacing skill it indicates a need for more patterning help. The child is so busy thinking about drawing each letter, he or she is not able to think about the word packages. Despite the directive help given by the teacher, the child falls behind the production rate due to labored process.

When there are many students in the class exhibiting this level of skill, it's a pretty good bet that the teacher had the children copy the sample from a chalkboard display without direction of the letter-by-letter production process. Generally these same papers are also filled with patched or retraced letters and erasures. A trace & copy approach to handwriting lessons will leave a lot of pupils behind those who receive the directed guidance that will speed pattern integration and subsequent word processing skills.

• Rhythm
All the subskills are related and rhythm is a key player. As discussed in previous sections, learning to use a fluent kind of movement involves integration of rhythm information into the motor patterns. The problem here is quite delicate.

Children will want to make letters that look good. They will sacrifice everything about the process to get a good product. They will erase until holes are worn through the paper. They will patch extra strokes onto forms they would like to look better. They will twist little fingers into terrible contortions along with the neck and spine. They will constantly revert to early patterns unless you motivate them to learn how to move as you direct the action.

The quest for fluency puts you on a tightrope stretched along the line of skill development. Like a high wire performer you dip your balance pole to one side then the other - product goals on one side and process on the other.
We are all aware of the varied rate at which “Mom Nature” spreads maturity among individual pupils in our classes. Part of the coaching task is to separate the cause of miscues which result in poor product. It is all too easy to lead your pupil into a visual-feedback trap in the quest for precision.

As they begin to learn fluent movement, few children will be able to touch lines or reproduce form shapes precisely. It will require practice to improve control skills that will allow more precise production using a rhythmic type of movement.

Students will quickly abandon any attempt to move with rhythm because they want to make perfect letters. On the other hand, we don't want to give the impression that accuracy is not important. It is difficult to explain the idea of an ongoing quest for perfection. Let's examine a scenario based upon the simple letter exercise below.

1. Tall Down
2. Roll Around

We explain the following “rules” for the exercise and our objective is to get the pupils to “write & say” four letters in a row.

Rule # 1 - Absolutely, positively no erasing.
If you erase when your muscles goof a little bit, you will not be able to see if the next letter is better.

Rule # 2 - Chant the action words as you write the strokes. We want to practice moving our muscles with our voice.

Rule # 3 - Touch the top line when I say, “On your mark.”

Rule # 4 - Begin to write & say when I say, “Say it.”

Rule # 5 - Put your pencil down when I say, “Stop.”
“Count the number of b’s on your paper and show me a sign for the number with your fingers. We should all have the same number of letters.”

Observations:
1. Watch for the pupils who stop to erase. They're still writing after you call stop.
2. Listen for the voices. When visual feedback takes over, the voices will stop because the movement is not rhythmic.
   • Reiterate the rules, do some airwriting to get muscles and voices moving together, and try again.
   • Ask them to circle the letter that touches the lines the best.
   • Now, let's try again and see how many we can get to touch the lines.
   • Remember to focus on the voices and the action words.
   • Have students save the paper for the next day.
   • Review and repeat the same exercise the next day. Both you and your pupils will be surprised at the improvement.

The goal of the exercise is to work for control of rhythmic movement. If we simply instruct pupils to practice touching the lines, without directing the activity, they will practice drawing instead of writing.

You could use the same type of exercise adding different subskill goals and continuing to include rhythm and control objectives.

Write sets or pairs and focus on spacing - members are close together, groups are spaced apart.

Write sets or pairs alternating tall and small letters to combine size, spacing, rhythm and control.

You could teach all of these skill concepts using relatively simple basic strokes that are not likely to be associated with the troublesome patterns left over from early experimentation.

When pupils recognize the clues to legibility subskills, you can easily correlate with applied work to improve transfer of learning.
Coaching Skill Development - Cursive

Legibility is a relative term. We prefer to say that “handwriting must be easy to read.” There are six specific subskills that combine to make handwriting easy to read and easy to write. We offer the posters pictured below to help pupils understand the legibility subskills and to make correlation to applied work easy:

<table>
<thead>
<tr>
<th>#1 Letter Formation</th>
<th>#2 Downstrokes</th>
<th>#3 Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Start letters in the right place.</td>
<td>Slant back to the left evenly. “Chop” the baseline.</td>
<td>Start letters correctly for better size.</td>
</tr>
<tr>
<td>Move in the proper direction.</td>
<td>Check paper holding, arm and pencil position.</td>
<td>Study the “tall” and “small” letters.</td>
</tr>
<tr>
<td>Make basic strokes correctly.</td>
<td></td>
<td>Check your pencil position.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>#4 Spacing</th>
<th>#5 Smooth Rhythm</th>
<th>#6 Line Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>Slide between letters.</td>
<td>Hold the pencil softly. Study the beats for each letter.</td>
<td>Use lines for control.</td>
</tr>
<tr>
<td>Check joiners!</td>
<td>Relax when you write!</td>
<td>Stop on the baseline!</td>
</tr>
<tr>
<td>Add ending strokes to words.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hold the paper and pencil correctly.</td>
<td></td>
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</tr>
</tbody>
</table>

Children have a burning interest in cursive writing. Our research shows that the majority of 7-year-olds experiment on their own long before teacher instruction begins. Unfortunately the important “motor control” processes that make cursive easy to learn have to be taught. Incidental learning is far too “inventive” and visually oriented. Children seldom “see” the process design that makes cursive so efficient. Bad habits that interfere with fluent processes result. The following suggestions and facts about cursive will help you to evaluate the product and process so you can help them to learn this advantageous tool for learning.

Examples of Cursive Invention

on on on it end out add

mom add into
Skill # 1 - Letter Formation
Explain and demonstrate how simple movements are used to develop four basic strokes.

Rocker undercurves that slide well to the right combine with slant retraces to create the **sharp top** basic stroke.

The slide-slant correlation of rockers and slants creates a very efficient muscle pattern. This basic **sharp top** is used 19 times to help make 15 lowercase letters (it is used as a beginning stroke 8 times and as a secondary stroke in 7 more letters.) In addition, the lowercase **c** uses a sharp top movement just before the “hook.”

The **loop top** basic stroke requires the same muscle pattern. A **loop top** is the beginning stroke for 6 lowercase letters.

Rainbow overcurves that slide to the right combine with a slant to form **round tops**. The same “slide right-slant left” muscle pattern is required.

**Round tops** are used 11 times in 8 letters (as the beginning stroke 6 times and as secondary strokes 5 times). Also, the lowercase **p** uses a modification of this stroke.

Rainbow overcurves, with a retraced rainbow downstroke make the fourth basic stroke called **roll tops**. **Roll tops** are used only as beginning strokes for 5 lowercase letters.

If children learn to describe letterforms using the basic stroke vocabulary in their #2 or #3 book they also learn the rhythmic process of forming the letters. The action words also reinforce visual memory of the letter shapes. This approach makes learning the process and product very simple.

Skill # 2 - Slant Consistency (Downstrokes)
One set of muscles produces slant that leans to the right. Slant problems can be traced to poor physical position, incorrect muscles (fingers only), or lack of practice of the muscle pattern needed.

“Slide right/slant left”

Check paper slant, arm and hand positions. Check beginning and joining strokes. Slide the pencil to the right and slant the downstroke back to the left. The slant retraces the upstroke, using a “hinge” movement for the muscle pattern. Make sure the child is involving the arm in the movements. This is the reason we need to keep the size large. It forces arm movement.

Practice exaggerated beginning and joining strokes to improve rightward arm movement. The sharp top shape demands a retrace. If the strokes do not move rightward, there is no “room” to slant back toward the left.

Skills # 3 & 4 - Size & Spacing
Beginning strokes and joiners slide to the right and up to create proper size.

**Beginning Cursive Proportion**

The “size targets” change for adult proportion. Our experience shows that grade four students are able to handle the concept of thirds. The result looks much more mature and allows many more characters per line of writing.

In grade six many students will be able to handle another size reduction - the “thirds proportion” remains. We don’t want to get too small. Tall letters should be at least 3/4 of the space.
Cursive spacing is controlled by the movements that create joining strokes. This makes cursive much less demanding of eye-hand coordination enabling better legibility at fluent application speeds. The muscles can space letters without the eyes when the motor pattern contains the correct information.

The Peterson letter-rhythm-pause is the key pattern ingredient for control of form, slant, size and spacing movements. After pausing on the baseline, lengthen the joining stroke to increase spacing. Teach definite baseline pauses for correct letter rhythm, then slide right. Practice of exaggerated joiners will usually result in better spacing movement in applied work.

Turn paper sideways to provide targets for increasing lateral movement.

Judge spacing between letters at the height of vowel-sized letter parts. Work for consistent space at this point.

Word endings are natural spacing strokes. Beginning strokes start under ending strokes. It is not necessary to visually space words apart as in print writing.

Skill # 5 - Smooth/Rhythm
This skill is demonstrated by relaxed, rhythmic movement and the ergonomics of position skills are often a factor. If the grip is tight and cramped or the arm position relative to the paper is poor, it can prevent the use of the correct muscle groups or retard movement to the point that the pupil is unable to use rhythmic movement. In order to develop skill that has a chance to be automatic, good position and the rhythmic muscle patterns that are designed in the cursive alphabet must be carefully taught.

Clues for identification of rhythm needs:
We can group clues for needs identification into two groups - product clues and process clues. When correcting papers you are looking at the product on the page. When observing the students as they write you are looking at the process that creates the product.

Product Clues:
1. Dark heavy lines are usually an indication of a tight, cramped pencil grip which causes undue pencil pressure. It might well be something as simple as the fingers positioned too close to the point or it could be an indication of a grip that will really cause debilitating writer's cramp later on. When you see dark heavy lines and/or smeared erasures (sometimes holes are rubbed through the paper), you should take a close look at the child's grip.

Be sure everyone holds the pencil back away from the sharpened part of the pencil - one to one and a half inches from the point.

“Write softly please, write softly please.
Write softly, please don’t squeeze.”

2. Patched and retraced letters are a good clue to a need for better rhythm patterns. Everyone makes an occasional mistake but when the paper shows frequent corrections like these it is a good bet that there is a need for more rhythmic practice to improve internalization of the movement pattern.

Practice rhythm patterns and brisk verbalized action words. Use the four-step Peterson format:
1. Illustrate and describe.
2. Airwriting (trace and say chalkboard model).
3. Trace and say (pupil book models).
4. Write and say.

Practice larger than actual size to use large muscles, also using the rhythmic action words. When a student is having more trouble than the others you need to work on gross patterns. The letter card from your wall alphabet will provide a large movement model for fingertracing that will get the arm moving.

Make sure that the child is chanting the action words with the stroke movements as he or she does the airwriting and fingertrace steps. When you go to paper for the write and say step, make sure the pupil can verbalize the action words as the pencil creates the strokes. If the pupil is unable to chant with the pencil movements, find out if the voice will work with the eyes closed. If not, go back to the fingertrace step. Alternate between fingertrace and write and say until the voice will work with the eyes closed and eyes open as the pupil writes the strokes.

Practice write and say joining the target letter in pairs or triplets with eyes closed. Emphasize the slide/slant muscle pattern and control pauses. Repeat with eyes open and make sure the pupil can verbalize all the way through each joined group. This activity leads us into the subskill of control. If the child can verbalize the action words for each letter in a triplet, he or she is moving with rhythm for each letter in the set. When the vocal dies before the set is completed, there is probably need for clarification of the joining-control point.

Visit our web site Resource Library to download the Word Challenge activity from the Ideas section.

Visit our web site Resource Library to download the Word Challenge activity from the Ideas section.

www.peterson-handwriting.com - Information Directory
Skill # 6 - Control
Research shows that the child’s ability to learn how to control writing is as important as letter formation itself. The most significant thing a teacher can do is to explain and show each child how very simple this can be. The concept of control is completely intertwined with that of rhythm when fluency is the goal.

Remember that the difference between scrawl and legibility is consistent rhythm. We want the brain to be able to choose rhythmic movement which can be adjusted to a speed best suiting the current application. To enable this choice, we must provide target information within the motor pattern - targets to allow the point and shoot strategy. The targets become the end points for batches of information that are sent to muscles in advance of movement. The cursive lowercase letters were actually designed to make it easy.

Baseline targets (pauses between letters in words) - 18 letters
When introducing and practicing these letters we recommend making them without traditional ending strokes. Explain to pupils that our main goal is to be able to write words.

Eventually we will learn to join letters, but ending strokes will only interfere with developing the control that we need.

Above-line targets (pauses between letters in words) - 4 letters
Four small letters join from the top of a secondary stroke. We call them Tarzan letters.

Like Tarzan swinging from tree tops, we must swing above the line to join these letters. These letters present a new challenge for development of joining-control skill.

Show the pupils that the high swing will be used as the first stroke of the next letter.

The above-line end point causes two problems. The rhythm of the letter is different from the baseline letters and the end point creates a new start point for adjoining forms. Notice the movements needed to make a fluent rightward joining stroke.

Children learn the single letters easily but will need patient direction and practice when applying them to the joining control process. The ending strokes or joining strokes are important for decoding. When the forms are presented without finish strokes (for movement rhythms), the potential for confusion is easy to see.

Finish strokes identify but...

Use “CURSIVE PRINTING” for Diagnosis
Most pupils respond well to the security of pausing between letters. Do not hesitate to exaggerate this concept. Avoid the actual joining of letters until the child demonstrates the correct application for a good joining-control habit. Thereafter, joining becomes a natural process!

Below-line targets (Roller - Tail Pauses - 4 letters)
The last four small letters use a joining stroke that begins like a rainbow - from the bottom of the “tail.”

As with the Tarzan letters, these “submarine” joiners require a little extra attention. The extended laterality of these strokes contributes to the problems. Control of these movements is greatly enhanced by the correct rhythmic pattern for the letter. Few pupils have trouble with recognition of these forms when presented without ending strokes so the control concept is usually not a problem. More often, difficulty can be traced to position habits.
SCOPE AND SEQUENCE OF SPECIFIC HANDWRITING SKILLS

We Write to Read by Charles H. Trafford & Rand H. Nelson

The Peterson Directed Handwriting curriculum is carefully designed to help teachers present learning patterns in a sequence that recognizes developmental processes and cumulative skill patterns.

The following delineation provides classroom teachers at all levels with measurable observable behaviors and skills that will help guide instruction, evaluation, and remediation. Many school districts use this skills listing as a curriculum guide. We hope you will find it a valuable resource for effective time on task lesson planning.

Please note that the suggestions herein can be used to diagnose needs as well as to plan lessons. Peterson Directed Handwriting focuses on the process of writing as much as legibility. The program emphasizes “how” to write, including basic physical skills such as paper and pencil holding. This is a vital ingredient.

If we do not treat physical skill development, many pupils will not be capable of writing effectively as a fluent tool. The ability to write for communication is the highest form of language development. Because of this, handwriting movement patterns must be learned to an automatic level. Practice should be thoughtful. Students should know why the practice recommendations are important. Rote “copybook” practice that is isolated from thoughtful comparisons and efforts to improve physical processes will produce boredom at the very best. Unfortunately, it may also result in making bad habits permanent!

Delineation of Specific Skills and Behavior

The We Write To Read handwriting program is designed to help children reach minimum competencies in the following specific performance areas.

Specific Skills and Behaviors, Levels K and 1

Initial Readiness Factors

The child should learn to:

1. Use one hand consistently for holding pencil or crayon.
2. Demonstrate good eye-hand coordination using scissors.
3. Listen to and follow directions (including march in place while chanting “left - right”).
4. Write in the air rhythmically in concert with teacher and class.
5. Hold a crayon/pencil with relaxed grip, one finger on top, back from the point.
6. Hold and move paper about the work space with the nonwriting hand.
7. Keep eyes at least 12 inches from the paper.
8. Rotate and hold the paper when coloring to facilitate lateral writing arm movement.
9. Touch with pointer finger, specific spots/items on a page as directed by teacher.
10. Identify left and right, top and bottom in visual field, on work space and on a page in the work space.
11. Use both top-down and left-right arm movements when coloring (crossing body midline, laterality).
12. Fingertrace rhythmically sequential patterns using top-down, left-right movements.
13. Make curved strokes top first, moving counterclockwise (from 2:00 position on clock face).
15. Line up five sticks/straws/crayons in a consistent pattern (vertically and horizontally).
16. Recognize the alphabetic/linguistic connection - letters represent sounds.
17. Recognize labels for things (name cards, objects in the room, etc.) as representing spoken words.

Printwriting Readiness

The child should learn to:

1. Recognize sequence: first-second-third-fourth (left-to-right and top-down).
2. Recognize and count the lines on paper and identify sets of lines and spaces.
3. Demonstrate understanding of concepts "top" - "middle" - "bottom" and the relationship to lines and spaces.
4. Hold lined paper in proper relation to body and arm.
5. Place pointer finger on lines (top, middle, baseline) (tall space, small space) as directed orally by the teacher.
6. Hold pencil lightly, keep one finger on top, about one inch from point (stay back on the paint).
7. Form large geometric shapes using basic top-down and left-to-right movements with directed sequence.
8. Discriminate differences between confusing letterforms; t-f, b-d-p, n-h, w-m, W-M, n-u, z-s.
9. Demonstrate ability to write basic strokes in the air moving to verbal rhythm in concert with the group.
10. Demonstrate ability to write basic strokes, tall and small, on paper moving to verbal rhythm.
Printwriting Cognitive Level
The child should learn to:
1. Place letterforms in figure-ground field (relate start point and end point with proper lines on paper).
2. Discriminate size differences and relationship of letter parts to lines and spaces.
3. Name basic strokes used in forming all letters of the alphabet.
4. Identify exact starting points, direction of movement and stop points used for building letterforms.
5. Recognize all letter shapes and whether they are upper or lowercase.
6. Recognize and write own name using capital and lowercase letters properly.
7. Understand how the hand and arm move to form letters - can say "action words" aloud as strokes are written.
8. Explain pencil holding (POINT! - DON'T PINCH! - ONE FINGER ON TOP, etc.).
9. Keep eyes at least 12 inches from paper.
10. Keep writing arm on desk (except bone of elbow) by adjusting paper position.
11. When getting prepared to write, remind him/herself of the three position factors (holding the paper, holding pencil, establishing good posture).
12. Demonstrate perception and understanding of sight/sound of letterforms in various positions in words (beginning, medial, ending positions).
13. Apply concept of "eveness" to downstrokes, and identify "even" vertical or "even" slanted.
14. Perceive proper line placement of letters (placement of lowercase tail letters, for example).
15. Demonstrate understanding of word "packages" - letters within words close together, spaces between words.
16. Copy words and sentences from desk copy.
17. Copy words and sentences from chalkboard or chart.
18. Write high frequency words without copy (I, am, is, are, we, he, she, it, you, me, etc.).
19. "Unscramble" high frequency words.
20. Demonstrate ability to produce graphemes with rhythmic movement as illustrated by verbalization of strokes as movements are accomplished.
21. Demonstrate accurate letterform sequences of parts and direction of movement by writing the following lowercase letters with eyes closed - a, c, d, g, h, m, n, o, p, q, u.

Semi-Automatic Level - Printwriting, Level 2
The child should:
1. Properly position her/himself, paper and pencil - 9 times out of 10 without reminder.
2. Use proper letterform cases (for example, begin sentences with capitals).
3. Write original sentences given a list of ten words.
4. Demonstrate fixed patterns by writing downstrokes evenly in work prepared in other subject areas.
5. Demonstrate ability to use all letters in alphabet by writing them without cues or copy.
6. Not lift pencil between strokes in the following letterforms - a, b, c, d, e, g, h, m, n, p, q, r, u (threading improves rhythm of sequence).
7. Develop personal pride in neat work.
8. Recognize own miscues.
9. Judge his/her work and that of others using legibility subskills chart (Form - Downstroke Evenness - Size - Spacing - Smooth Gray Lines - Baseline Control).
10. Identify letterforms that begin with the various basic strokes.
11. Write with speed and relaxation.
12. Write independently without tension or frustration.
13. Demonstrate understanding of letterform proportion by writing letter sizes accurately (in relation to a word process) on unlined paper.
14. Reduce size of writing without regression to tight, pinched pencil holding.
15. Unconsciously slant the printwriting and may unconsciously and consciously try to connect letters together.

Cursive Readiness, Level 2
The child should:
1. Know how to "fingertrace" and "write in the air" while chanting action words.
2. Show good pencil/paper position by making long line exercises all the way across the page with speed and some accuracy (long slide in space, overcurve/undercurve two spaces tall).
3. Recognize after discussion and demonstration that the joining stroke is the "new" process we must learn in order to connect letters.
4. Recognize that all letters in cursive slant the same way.
5. Hold pencil in relaxed position and slide on the line (to the right at least 3 inches without "sticking").
6. Respond to verbal rhythm direction from the teacher with air writing, fingertracing and gross motor writing.
7. Recognize and name the three strokes used to construct cursive letterforms (rocker, rainbow, slant).
8. Write key basic strokes (sharp tops, loop tops, round tops and roll tops) with eyes closed following rhythmic verbalization in concert with teacher.

9. Verbalize on his/her own while writing key target letters using basic stroke vocabulary.

10. Demonstrate understanding of control skill by consistently pausing just before a joining stroke (shows rhythmic application one letter at a time).

11. Join sets of letters together with ease and fluency, pausing only at points of control (just before joining).

12. Recognize all lowercase cursive letters.

13. Recognize unusual letterform characteristics (the hook of the c, the roof of the r, etc.).

14. Recognize the point of control and joining required to connect letters following the o, v, w, b and g, y, z, j.

15. Start each capital letter at the proper place.

16. Recognize each capital letter, know which capitals should never join to small letters.

17. Identify start points of capital letters.

18. Write name accurately with rhythm and fluency.

19. Write simple words from memory using rhythm and control.

**Cursive Application to Daily Use**  
*(Cognitive) Level 3*

The child should learn to:

1. Demonstrate pencil holding "back on the paint." Explain why this is important (left-to-right movement).

2. Demonstrate understanding of concept "1/2 space tall" for 18 lowercase letters - i, s, u, r, c, e, x, n, m, a, q, w, v, o, j, y, z, g.

3. Demonstrate formation of each lowercase letterform, using proper COLORSTROKE/RHYTHM vocabulary (round tops, roll tops, sharp tops and loop tops).

4. Properly identify family groups of letters (8 out of 10 times).

5. Legibly write high frequency words without a model.

6. Identify starting point and initial direction of movement for all capitals.

7. Explain why standard capitals D, F, L, O, P, Q, T, V, W should never join to small letters.


9. Demonstrate internalization of target word transcription by writing legibly as the word is spelled aloud.

**Cursive Maturity**  
*(Emerging Automatic Processes)*  
**Levels 4 and 5**

The child should learn to:

1. Demonstrate further size differentiation by explaining concept of adult proportions and lettersize families:
   a. 1/3 of a space for 18 smallest letters (vowel sized)
   b. 2/3 of a space for trace top family small letters (t, p, d)
   c. full space for upper loop group small letters (l, b, h, k, f) and all capitals
   d. Descending loops for "submarine letters."

2. Automatically turn paper to permit proper leverage in left-to-right movements.

3. Automatically write name and "class heading," within lines, at the top of the paper.

4. Write all 26 lowercase letters with rhythm from memory, demonstrating exact starting points, direction of movement, control points.

5. Write all 26 uppercase letters with rhythm from memory, demonstrating exact starting points, direction of movement, control points.

6. Sustain written work for ten minutes at age 9, fifteen minutes at age 10, twenty minutes at age 11, without showing excessive fatigue.

7. Identify miscues in all six Legibility Subskill areas:  
   1) Form 4) Spacing  
   2) Slant 5) Smoothness, Rhythm (relaxation)  
   3) Size 6) Line (and joining) control.

8. Rewrite work easily, demonstrating improvement in neatness, margins, correlation of spelling and grammar.

9. Demonstrate all joining stroke control patterns (pauses just before joining stroke) sufficiently that spelling and vocabulary practice can be accomplished by practicing with eyes closed, producing a very legible product.

10. Demonstrate ability to use “cursive print” as an initial step for learning new words.

11. Demonstrate near equal proficiency using pencil and ballpoint pen.

12. Choose cursive writing nine out of ten times for running writing in daily work.
Cursive - Advanced (Automatic Level)
Levels 6, 7, 8

The child should learn to:
1. Demonstrate understanding of "science of handwriting:")
   a. family groups of letter formation
   b. sizes
   c. rhythm as a left-to-right process (slide right, slant left, stop)
   d. explain why cursive is a non-visual skill, easier than printwriting (movement patterns, control)
   e. demonstrate self-evaluation skill by identifying miscues and setting specific goals for improvement.
2. Demonstrate a high degree of internalization by accurately writing high frequency words with eyes closed while spelling aloud - with pen or pencil.
3. Demonstrate individual consistency in page writing; daily work almost as good as practice papers.
4. Sustain writing for a minimum of 25-30 minutes without tiring.
5. Tutor other students after minimal help from teachers.
6. Evaluate own work and work of others with a high degree of accuracy.
7. Show pride in personal communication.

http://www.peterson-handwriting.com
Please review the information directory on our website. The animated presentations bring static illustrations in lesson plan manuals to life.

An on-line community, The Physical Language Network, provides a message board for member cooperation. Make some connections. Join the network and work with others to improve instruction.

Peterson also offers a toll-free line for support.
Ask for one of the authors:
Charles H. Trafford
or
Rand H. Nelson
800-541-6328
Office Hours: Weekdays, 9:00 AM - 4:30 PM, Eastern
Suggestions for Report Cards from C. H. Trafford

Individual school districts have different philosophies regarding the grading of handwriting. Check to be sure that the following ideas do not conflict with district policy.

Grading handwriting may be very difficult for several reasons. One must be a bit subjective because the capacity for superior skill relates to the physical processes involved and individual rates of development. As a general rule, we do not recommend a “failing” grade, nor would we want a handwriting grade to prevent honor roll recognition.

On the other hand, there are numerous “handwriting facts” that every child should know. You can base grades on cognitive facts as well as performance. Please refer to the teacher handbooks and the pupil books to identify such facts as letterform families, basic strokes, etc.

1. **Letter Grades**
   We would suggest that outstanding work be recognized. At a minimum we recommend three options:
   
   - A or O • Outstanding
   - C or S • Satisfactory
   - D or I • Needs Improvement

2. **Subdivisions**
   To communicate with parents, we suggest that teachers consider some or all of the following subdivisions:

   - Can identify exact letterform start points, direction of movement, and sequence of strokes
   - Writes with consistent downstrokes
   - Uses good size and proportion
   - Spaces words and sentences properly
   - Writes with fluency and relaxation
   - Uses line control while writing
   - Writes neatly and legibly in daily work
   - Uses good paper, pencil, and body position

Handwriting is a combination of visual and muscle skill development. To achieve maximum individual skill pupils also need to understand that practice is intended to develop and improve skills. Using the skills for applied work shows you how much they have learned.

**Grading Handwriting: Computation**

The six Peterson subskills combine to make handwriting easy to read and write. You may compute grades using this “value” chart:

<table>
<thead>
<tr>
<th>Form</th>
<th>Slant</th>
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<th>Spacing</th>
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<tbody>
<tr>
<td>50</td>
<td>10</td>
<td>10</td>
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</tbody>
</table>

**Letter Formation (Skill #1)**

This skill is clearly the most important. Give it a potential value of **50**. Examine the child’s paper and deduct a point for each letterform that is made with poor sequence or the wrong parts. It is important to remember that rhythmic execution of the form pattern is an integral part of the form objective. If the child’s process is really labored and slow there could be a deduction here in addition to the amount for Rhythm when it is addressed again below.

**Downstroke Consistency (Skill #2)**

Downstrokes are important to allow the reader to scan quickly along the line. Consistency in writing indicates good muscle patterning for speed and fluency. Give it a potential value of **10**. Deduct points for obvious inconsistencies.

**Size and Proportion (Skill #3)**

Manuscript size depends on proper starting points and the proper use of the lines. Cursive size depends on upstrokes used for tall sharp tops and loop tops. Give size value of **10**. Deduct for size discrepancies.

**Spacing (Skill #4)**

Manuscript writing depends on good eye-hand coordination. Spaces between words must be distinct in order to read sentences easily. Letters within words should be close together without touching. Cursive spacing depends on the length of beginning, joining, and ending strokes. Children need to slide the hand rightward for spacing. Give spacing a value of **10** and deduct according to the degree of the problem.

**Smooth Rhythm (Skill #5)**

Position and the rhythmic movements required to write fluently work together to create smoothness. Patching, retracing, heavy dark lines and lots of erasures are indications of need. Give this subskill a value of **10** and deduct for discrepancies.

**Line Control (Skill #6)**

In manuscript, children must control the starting points and downstroke movements in relation to the lines. In cursive, baseline or joining control contributes to the development of the other five skills. Give control a value of **10** and deduct for discrepancies.

Legibility should be reflected by a total of at least **50** points. Excellence should result in a total of at least **90** points.

- **50-59** • Many needs, but legible - consider knowledge of facts to determine grade
- **60-69** • Passing, but needs grade
- **70-79** • Satisfactory
- **80-89** • Above average
- **90-100** • Outstanding
CLASSROOM ORGANIZATION AND PREPARATION

Individual Handwriting Folders
We recommend making a file folder for each child (preferably with pockets for easy storage). Children can keep their handwriting book, practice paper, and a writing class pencil in their folders to help save time in preparation for lessons. It can also serve as a “progress folder” if you have pupils save papers for periodic comparison.

Pencil Diameter
We recommend a bigger sized barrel pencil for two reasons: First, the larger barrel separates the muscles, encouraging more freedom of movement. Second, the bigger graphite slides more smoothly on the paper, producing a wider light gray line that is easier for a teacher to read. If you can only use a regular #2 pencil be sure pupils do not sharpen it to a point. A dull-pointed regular pencil produces a smoother relaxed grip.

Seating Arrangements
Place desks in frontal position so that pupils have a clear view of the chalkboard while the teacher is demonstrating or if pupils must copy assignments from the chalkboard, overhead, or easel. This does not imply the desks must be strictly regimented. You may arrange desks in many different patterns that allow straight-on visualization for the pupils. Left-handed pupils who are attempting to learn to write in the “sidestroke” position should sit on the right side of the class as they face the chalkboard.

SELECTING PRACTICE PAPER
Most school supply houses offer economical paper that meets these recommendations - Peterson Directed Handwriting does not manufacture paper.

General Practice and Model Testing Preparation
For grades one, two and initial units in grade three, please use 8-1/2 x 7” manila paper ruled the long way with half-inch spaces. Use the white paper, 3/8” ruled version for ink practice in upper grades.

This paper size correlates with the models provided in the Peterson handwriting books. It makes the learning of proper position easier for the children and correlates size and spacing objectives with the model.

SPECIAL NOTE: Grades One and Two
Half inch spaces preferred
Although many workbooks provide 3/8” ruling, or even 1/4” ruling, we strongly recommend that directed handwriting practice be as large as possible for as long as possible. Research shows that early demands for fine motor activity is debilitating for seven and eight-year-old children. Smaller vertical spaced lines must definitely be avoided in printwriting until after cursive readiness has begun.

Work for gross motor as long as possible. If your intermediate level student is having trouble, you may find that 1/2 inch ruled paper will make a difference for that child.

OUR PUPIL BOOKS ARE SUPERB - SIMPLE AND SUCCESSFUL

The picture illustrates how our book and self-adhesive Position Guide are designed to fit on a standard size school desk. This makes teaching and learning the physical position skills much easier. Fingertracing the movement models greatly speeds integration.

The We Write To Read books have other advantages. They are designed for simplicity and ease of use. The instructional plan makes it possible for you to communicate goals and objectives to the entire class during each short, directed activity.
## High Frequency Words and Cursive Counts

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*Teaching Physical Patterns for Reading and Writing Fluency*
Print Rhythm Leader - Lowercase Letters

a 1. Hook Around 2. Down Tail
1. Tall Down 2. Roll Around
b 1. Hook Around
c 1. Hook Around 2. Tall Down
d 1. Hook Around 2. Slide
e 1. Hook Around 2. Cross
f 1. Hook Around

g 1. Down Tail 2. Dot
1. Tall Down 2. Roll Down
1. Small Down 2. Dot
h 1. Tall Down 2. Slant In 3. Slant Out
1. Tall Down
1. Small Down 2. Roll Down

i 1. Down Tail 2. Roll Around
j 1. Hook Around Close
1. Small Down 2. Roll
1. Hook Snake Around
k 1. Tall Down 2. Cross
1. Small Down Curve Up 2. Small Down
l 1. Slant Right 2. Slant Tail
m 1. Slant 2. Cross
o 1. Hook Around Close
1. Down
p 1. Roll Slant 2. Slide
q 1. Roll Around 2. Roll Around
r 1. Down 2. Slide 3. Down
s 1. Curve Down 2. Loop
1. Slide 2. Slant
1. Hook Snake 2. Roll Up
1. Curve Around 2. Tall Down

t 1. Down 2. Roll Around 3. Slide
u 1. Curve Around

Numerals:

0 1. Hook Around Close
1. Down
1. Roll Slant 2. Slide
1. Roll Around 2. Roll Around
1. Down 2. Slide 3. Down
5 1. Down 2. Roll Around 3. Slide
6 1. Curve Down 2. Loop
7 1. Slide 2. Slant
8 1. Hook Snake 2. Roll Up
9 1. Curve Around 2. Tall Down
Print Rhythm Leader - Capital Letters
We have used grayscale images below to simulate our unique COLOR/RHYTHM process used for our materials. The first stroke is green, second stroke brown, third stroke red, (and the fourth stroke pink for 4-stroke letters) Letterforms are arranged alphabetically for easy correlation with any reading readiness process used in your curriculum. The colors can serve as alternative Action Words.
Slant Print - Rhythm Leader

a
1. Curve
2. Rock Slant

b
1. Slant
2. Roll Around

c
1. Hook Around
2. Roll Around

d
1. Curve
2. Rock Slant

e
1. Slide
2. Hook Around

f
1. Hook Slant
2. Cross

g
1. Curve
2. Rock Tail

h
1. Slant
2. Roll Slant

i
1. Slant
2. Dot

j
1. Slant Tail
2. Dot

k
1. Slant
2. Slant
3. Down

l
1. Slant
2. Slant Tail

m
1. Slant
2. Roll Slant
3. Roll Slant
Cursive Rhythm Leader
References


