

HANDWRITING

***Strategies to
Develop and Remediate
Students' Written Work***

**Henrico County Public Schools
Occupational Therapy Department**



Handwriting Strategies:
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Introduction: Handwriting Strategies to Develop and Remediate Students' Written Work

Writing was developed as the most efficient way for people to record ideas on paper. Today, we have options of printing or cursive writing as well as keyboarding. This handbook provides guidelines for assisting students who have difficulty with the complex task of writing.

In the Henrico County Public Schools, teachers are responsible for handwriting instruction and pre-intervention strategies as noted in Henrico County's Essentials of the Curriculum. In addition, parents are responsible for daily practice through a short, simple handwriting homework assignment. Learning to write takes place in the elementary years, primarily in Kindergarten through third grade; therefore, remedial programs for handwriting are also best taught to children in these years. Occupational Therapists are not primarily responsible for teaching handwriting. However, problems with the motor components and visual perception which affect handwriting may be referred for an evaluation by the Occupational Therapist. Problems with the **perceptual** or **language** components of handwriting may be referred to the special education team. If there is an underlying motor disability, however, the Child Study Committee members (including an Occupational Therapist) may suggest an evaluation.

The most appropriate and effective time for a handwriting referral is during the K-3 years. The earlier a referral is made, the better the chances are for remediation. After the 2nd grade, handwriting patterns are fairly well established and habitual (Benbow, 2003, and 1990, Zinviani, 1987). This makes remediation extremely difficult, time consuming, and frustrating to the student. At the middle and high school levels there are few effective therapy strategies available for changing handwriting. Removing older students from academics for handwriting remediation is typically non-productive. At this point students are regularly using iBooks or desktop computers and it may be more useful to help the student find alternative methods for written language such as word processing or dictation.

This handbook is intended as a resource for classroom teachers, Child Study/Eligibility Teams, and IEP Committees. It includes ideas for use before referral to an Occupational Therapist for observation or evaluation. These strategies may also be used as part of the IEP whether or not a student is found eligible for Occupational Therapy.

Please note that Occupational Therapy in the public schools is a related service under the Individuals with Disabilities Education Act. This means that the student must have an educational disability and be receiving special education support in order to access Occupational Therapy services. Occupational Therapy can then be provided to support a student's educational goals where fine motor dysfunction significantly interferes with functional performance in the school setting.

If you have any questions about this document, specific handwriting concerns, or wish to borrow any of the specific adapted paper, please contact the Occupational Therapist assigned to your school.

IMPORTANT CONSIDERATIONS REGARDING HANDWRITING

Setting the stage for writing activities is very important and, unfortunately, something that is not thought about too much until problems arise. Prior to developing efficient writing skills, students in general have to understand and be able to interpret the meaning of symbols, particularly the alphabet. It would be fairly useless to request that a student who has no sense of sound-symbol relationships, to independently do any more than copy designs or letters. In addition to this cognitive preparation for writing, there are some physical characteristics of both tools and environment that should be considered.

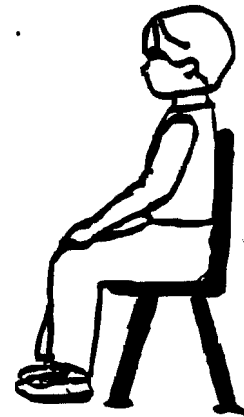
The task of writing also requires physical support from the environment. Ideally the student should be seated in a chair which allows his feet to rest flat on the floor with a back support. The writing surface should be stable (no uneven desk legs) and level. Another appropriate position for the writing surface would be a vertical slant of about 20 degrees. The desktop or writing surface should be about two inches above the level of the bent elbow so that the student's arm can rest comfortably on the writing surface. If the child is left-handed and your classroom has the attached desk/chair combination please be sure that he has a left-handed desk.

Writing implements need to fit both the student and the paper. A primary pencil (or a No. 2 pencil) is not the only writing implement appropriate for a student's use. In fact, writing implements need to match the paper in size rather than the student. If the student is making a poster on a 24 x 36 inch piece of poster board, a fine line marker would be a very frustrating writing tool to be required to use. Large crayons or primary pencils (rather than No. 2 pencils) would better fit large writing surfaces; while fine line markers and pens would be better suited to smaller spaces and work which requires more refined control.

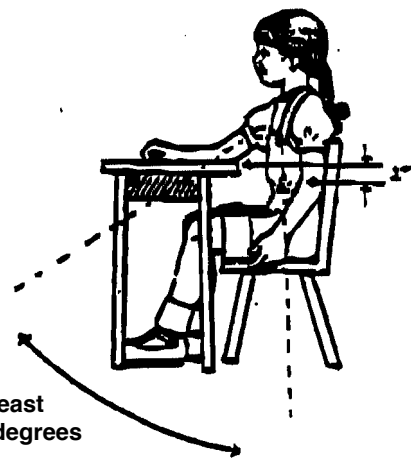
DOES IT ALL FIT?

Adjusting each student's desk and chair is the single most important adaptation a teacher can provide for each of the students in the class. With a properly fitting desk and chair, a student begins with a stable foundation from which to produce quality written information. So how do you know if the desk fits?

First, fit the chair. The student's feet should rest flat on the floor. The front edge of the chair should not be pressing against the back of the leg. If it is, the chair seat is *too deep*. If this is a problem and other chairs are available in your school, you can place a book on the chair back (phone books work nicely – wrapped in masking tape and secured to chair with tape) to decrease the depth. If the heels do not rest flat on the floor then the chair is *too high*. You will need to put a firm stable object (phone books again work nicely if anchored to the chair or floor) up under the feet.



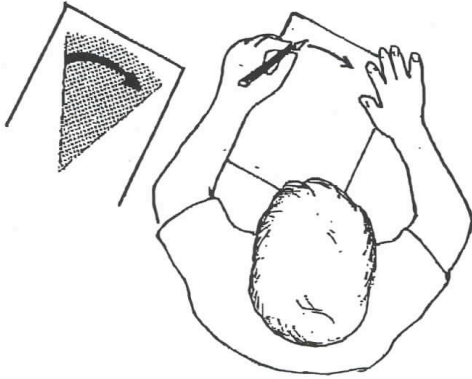
After you have secured the proper chair, the next step is to fit the desk. Desks should be adjusted so that the top of the desk is approximately 2 inches above the level of the student's bent elbow. The student should be sitting in the properly fitted chair when measuring for this distance.



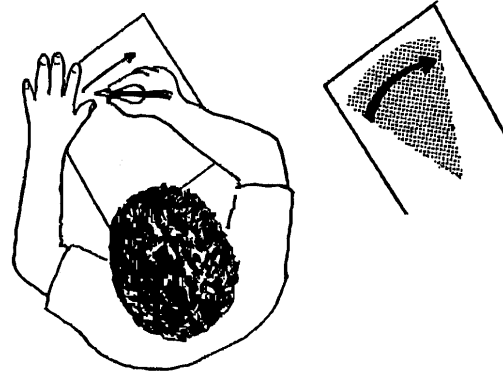
Ideally, a classroom will be filled with desks/tables of varying heights, due to the ability to accommodate students of various sizes. Students have a learning advantage when they are placed in appropriate sized furniture. Proper attention should be given to this size detail; it could be the answer to many handwriting difficulties.

PAPER POSITIONING

The slant of the paper will differ for the right- and left-handed writer.



Slant for the left-hander



Slant for the right-hander

A line of tape on the desk angled in the proper direction can serve as a guide for students to line up their papers or workbooks on when working. This will reduce the need for verbal reminders.

Ideally, a left-handed student should sit on the left end of the row of desks or tables. This position gives the lefty the most amount of elbow space, without bothering students nearby.

STUDENT DOES NOT MAINTAIN AN UPRIGHT POSITION AT THE DESK

Comments:

One of the more easily observed reasons that a student might have difficulty with writing tasks is poor positioning. Although it is true that most students learn to write regardless of their body position, if a student has limited stability, seating and writing surfaces which do not fit can be a major obstacle to the production of written work. When a student slumps all over his desk, wraps his feet around the chair legs, or changes positions constantly, he may be showing you that he is not getting enough support from his classroom desk and chair. Supporting his head with his non-writing hand is another indication that a student requires more postural support. This head position hinders the student's ability to use vision to guide written work and so has a negative effect on the writing process. An additional bonus of positioning the student well for writing is that it will free the non-writing hand to stabilize the paper.

Strategies to Try:

1. Check the desk height. It should be approximately 2 inches above the level of the bent elbow (see page 4).
2. As well as checking the desk height, look at the chair height in relation both to the student (can his feet rest flat on the floor?) and to the desk. If the student's feet rest comfortably on the floor but the desk is too high or too low, he will not be able to comfortably see desktop work. Your custodian should be able to help you adjust the desk height with an Allen wrench. You might even want to consider getting your own Allen wrench. This eliminates the "wait time" in making adjustments that are needed "now". You may consider trying other students' desks for fit before making adjustments.
3. When a student is wrapping his legs around the chair legs, it is often an indication that the chair is too high for student to rest his feet on the floor. Try finding a smaller chair (and lowering the desk) or use an old telephone book wrapped with contact paper for the student to rest his feet.

4. When the chair and desk appear to be appropriately sized for the student and he still leans on the desk, consider turning the chair backwards and allowing the student to straddle the chair. Positioned in this way the chair back provides support at the chest for an upright position allowing the student to concentrate on the writing process.
5. The use of a more upright surface for writing can sometimes facilitate better positioning. You might consider a slant board or other slanted surface. A slant board can be improvised by using a three ring binder turned sideways with the rings facing away from the student. Another “socially acceptable” alternative for the older student is a legal size clipboard propped against the edge of the desk.
6. Many schools are using tables instead of desks. It is important that the students’ chairs are fitted individually for them, since the table can only be minimally adjusted.
7. Movement breaks/periods of standing are important for this type of student to alert him and allow him a postural change.

There are times when a student does not possess the postural control required to maintain an upright position for writing tasks because of low muscle tone or other physical limitations. If you have tried these positioning strategies and the student is still slumped over his desk for the majority of the time during writing tasks, consult with your occupational therapist about strategies for providing additional support for tabletop tasks.

GRASP PATTERNS

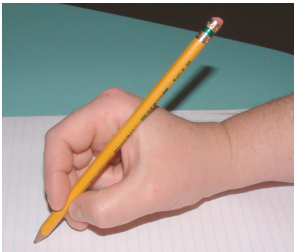
How a writing tool is grasped has a significant impact on how well it is controlled. To control a pencil efficiently, the student will need to be able to:

1. Make small movements of the finger joints.
2. Hold the pencil firmly enough to control it but not so tightly as to restrict movement.
3. Hold the pencil angled toward the shoulder.

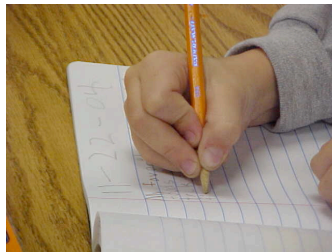
A variety of grasp patterns are shown below. Choose the picture of the one that best depicts the one your student is using. Specific information regarding that grasp and possible adaptive strategies are listed on the pages following this introduction.

Functional Grasps

A. Tripod grasp
(three fingers)



B. Quadrupod grasp
(four fingers)



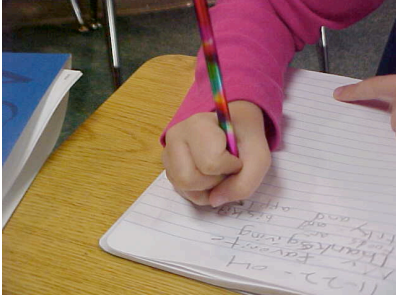
C. Stenographer's grasp
(adapted tripod)



These grasps are considered within the normal range. Unless your student is having a specific problem with handwriting there is no need to suggest change. Remember "You don't need to fix what isn't broken!"

Dysfunctional Grasps

A. “Thumb wrap” grasp with a closed web space



B. Dagger grasp (transpalmar)



These grasps are considered immature and are often the source of many problems a student is experiencing with handwriting. But it is possible that a student may be successfully using one of these without any difficulty. If you notice these dysfunctional grasp patterns during the early primary grades (K/First), it may be advantageous to go ahead and try to introduce a change, even in the absence of a noted problem. This child is likely to develop difficulties when increased demands are made in later years or when cursive writing is introduced. If you have questions regarding whether or not to suggest change, consult your school Occupational Therapist who can discuss the pros and cons in more detail.

Information regarding specific grips, pens, crayons, etc., can be found in the resource section.

STUDENT USES A THUMB WRAP GRASP

Comments:

The thumb is tightly wrapped around or under the index finger. The web space (that area between the index finger and thumb) is completely closed. In the mature grasp, the web space is open in a circle shape. This encourages/promotes the small movements of the fingers necessary for refined pencil strokes. Some students are functional with a thumb wrap grip, but it does limit ability to make the small finger movements, particularly when using/learning cursive. Students with this grasp pattern may do well enough with manuscript, but may have more difficulty when they attempt cursive.

Strategies to Try:

1. Experiment with The Pencil Grip, Stetro, and triangular pencil grip.
2. Experiment with a variety of writing tools. See Reference page for examples.
3. Try a weighted pen or pencil.
4. Try short pieces of chalk or crayon.
5. If handwriting is very small, use of a mechanical pencil with a thin lead is often helpful to “open up” the appearance of the writing.
6. Hold a penny or small object in the fourth and fifth fingers for stability.
7. Practice finger-tip pinching exercises such as picking up coins/beans from the floor, stringing small pony beads, etc.

STUDENT USES A “DAGGER” GRASP

Comments:

The pencil is held in the palm of the fist hand. This position greatly limits pencil control. The use of this grasp pattern suggests very immature hand function. It is likely that a student who demonstrates this type of grasp is having difficulty with a variety of other fine motor manipulative tasks. You may want to consult the occupational therapist at your school for more specific exercise suggestions.

Strategies to Try:

1. Provide short pieces of chalk, pencils, or crayon for writing and drawing. This will force the student to use his fingertips for increased control.
2. Try cone crayons. These may also be referred to as “ball” or “finger” crayons. The student should hold them with the ball end in the palm of the hand. In this position, the fingers naturally assume a mature position on the shaft of the crayon. You will need to remove all other crayon choices, as many children will not choose these to use spontaneously.
3. Try a variety pencil grip. The Pencil Grip, Stetro Grip encourages distal (end) finger control. Grips have indentation specific for left- or right-handed students.
4. Hold a small item, like a bead or cube, in the fourth and fifth (ring & pinkie) fingers to promote a tripod or quadrupod grasp.
5. Try a Handi-Writer – a two-piece banding system that holds the pencil back in the web space while promoting a better grip.
6. Use an upright surface, such as a slant board or large three ring binder.
7. Lay on stomach to write. When the elbow and shoulders are stabilized, it may promote increased finger mobility.

STUDENT USES A HOOK GRASP

Comments:

Hooked grasps are commonly seen with students who are left-handed. It is not necessary to ask the student to change this position, unless the writing is illegible or the student complains of fatigue. Teachers should be aware early in the school year who is left-handed so those students can purchase alternative writing pads, particularly as an alternative for composition notebooks used for journaling.

Strategies to Try:

1. Slant board or other inclined surface (which can be easily made with a large ring binder)
2. Vertical writing surfaces
3. Angle the paper with left-hand side higher, so student can see what is written.
4. Move left-handed students to the end of the row.
5. If using the attached desk/chair combinations, make sure the student is using a left-handed desk.
6. If the student is hooking to get away from the spiral binding, try using a Stenographer's notebook or legal pads.

STUDENT'S GRASP IS TOO HIGH ON THE PENCIL SHAFT

Comments:

A pencil should be held on the lower third of the shaft, approximately 1/2" from the point. If it is held too high, control is decreased.

Strategies to Try:

1. Use a small golf pencil.
2. Wrap a standard pencil with a rubber band or masking tape at the correct spot.
3. Use a Handi-Writer to get pencil back into web space.
4. Use a pencil grip positioned at appropriate place on pencil.

STUDENT HOLDS PENCIL STRAIGHT UP AND DOWN

Comments:

This particular position limits control because the wrist is not in the optimal position for writing. When the pencil is angled back toward the shoulder, the wrist is slightly extended, allowing for a more relaxed position and increased finger movement.

Strategies to Try:

1. Use the Handi-Writer to get the pencil in the web space.
2. Use small golf pencil.
3. Refer to suggestions for tight grasp.
4. Try a slant board.
5. Place a heavy novelty item over the pencil eraser to weight the top.
6. Use a grip for positioning.

STUDENT GRASPS PENCIL TOO TIGHTLY

Comments:

This type of grasp is often used as a compensation for decreased control. Another possible cause for use of a tight pencil grip is to increase the tactile information going to the brain. This type of grasp limits finger movements; but more importantly, it is the major cause for early fatigue. The student cannot physically sustain this type of grasp. A tight grasp usually results in use of increased pencil pressure and decreased legibility with prolonged writing.

Strategies to Try:

1. Wrap a rubber pencil grip that the student can squeeze.
2. Do hand warm-up exercises to increase tactile awareness to brain. Clap hands, rub together, shake out, wring hands, squeeze putty or clay, carry heavy books, run cold water on them, etc.
3. Use a pen marker or Rolling Writer, which require less pressure.
4. Wrap a rubber band or commercially made "Hold It" around the area where the student holds the pencil.
5. Use a pencil with softer lead, such as a mechanical pencil.
6. Use a weighted writing utensil.
7. Use a slant board.
8. Avoid use of smooth cylindrical pens/pencils (i.e., Round BIC). It is difficult to maintain a grip on this type of pen or pencil. Look for pens/pencils with several sides (triangular, pentagon shape) or those with hard rubber casing. Pencil grips will provide a secure surface. You may also try wrapping the pencil/pen/crayon with masking tape to provide a "rough" surface.

STUDENT HAS NO REGARD FOR MARGINS OR LINES ON THE PAPER

Comments:

Very often these students demonstrate visual perceptual and/or visual motor delays. They do not recognize their errors and therefore do not correct them. There may be issues related to *Midline Crossing*. This may be particularly true if the student frequently/consistently begins his work in the middle of the page. If the words are running off the right margin, then he may be having a problem related to motor planning and visual perception. The student may not be able to visualize the word and then plan for the space it demands. Actual visual deficits should not be ruled out unless the student has had a recent eye exam by an optometrist or ophthalmologist.

Strategies to Try:

1. Have the student draw a green line on the left-hand margin with a marker. Have the student draw a red line on the right side of the paper. Green is for “go”; red is for “stop”.
2. If the student is using primary paper (with a dotted line in the middle), use a highlighter and color in the bottom half of the lines. This is where all lower case letters are placed. All capitals are placed up into the “white” areas as well as the colored area. If using regular lined paper, color in every other line. This increases visual awareness and also assists with organization. Notetaker Notebook is one example of a commercially available. (see resource section)
3. Try raised line paper. You may also have success with photo copying this paper. This provides a darker line (increases visual regard), which for some is all that is needed. If this paper is successful, consider making a notebook in place of a composition journal.
4. Try Handwriting Without Tears paper with only one set of lines, spaced far apart. The student is taught to place the “body” of the letters within the lines. Tall “fire pole” letters extend above the lines. Long “tails” hang below the lines. The visual simplicity of this paper may help the student discriminate sizes.

Once you have decided on a particular type of paper, stick with it. Changes in handwriting may be slow. The student will need time to adjust to the paper.

5. Changing the color of the writing tool may help. Use of fluorescent colored pens/pencils may bring increased visual attention to the activity. This may be particularly true if the student has problems with attention in general.
6. Place a brightly colored index card under the writing line and move it down as the student writes.
7. Have student practice drawing vertical lines, pulling stroke down from top to bottom between lines on the paper, and then from left to right. In order for the student to recognize his own mistakes, he should circle those lines which do not touch or which overshoot the given top and bottom lines.
8. Compartmentalize words by drawing a box with highlighter or other contrast color. Student writes within those boundaries.
9. Use Wikki sticks (found at Target or catalogs) to provide visual and tactile boundaries.

STUDENT SHOWS POOR LETTER FORMATION

Comments:

Very often this problem suggests that the student learned letter formation by inventive or unsupervised copying rather than by movement patterns. This may occur when workbooks are used as the only tool to teach handwriting. A student who copies a letter from a model or traces the letter, without careful supervision, will naturally use a tracking procedure in which he/she will draw lines in small segments. This inhibits the more successful patterns in which the hand moves in one fluid motion to complete a letter. Early unsupervised copying also allows the student to reproduce a letter using inappropriate movement sequences (i.e., students learn the “O” by starting from the bottom and going up as opposed to starting at the top and going around counter clockwise). This is a difficult habit to break once the student has repeatedly practiced the wrong approach and leads to a multitude of writing problems. Orientation of writing should be top to bottom, and left to right.

Other possible reasons for poor letter formation are visual motor delays, poor organizational and motor planning skills, weak visual perceptual or spatial skills, poor attention to task, weak fine motor manipulative skills, poor memory, or poor reading skills, which makes writing letters together to form a word meaningless. Students with poor organizational difficulties, such as those with Attention Deficit Disorders often have problems with letter formation due to decreased focusing ability and trouble learning in a distractible environment. These children often will produce legible handwriting in a one to one situation, in a quiet environment, when motor issues are not compounding it. Often children who have not memorized patterns are copying letters from a model in the classroom or on their desks; they are not storing the memory longterm and cannot recall it quickly when other language arts tasks like spelling tests are involved.

Strategies to Try:

1. Re-teach the stroke sequence for letters identified as inappropriately drawn. Assign a parent or volunteer to provide specific instruction if time in the class is limited. The student must have direct supervision when writing is occurring if the problem is to be corrected before patterns are established. This may include a brief period of supervision even during “draft” writing time when you normally may not monitor handwriting. Students with handwriting difficulties cannot afford to have opportunities to continue “practicing” inappropriate stroke formation.

2. Be sure the student has a writing strip on their desk and at home. Show the parents the correct letter formation. Consistency is the only way to really impact upon this problem. Nightly homework of 5-10 minutes of handwriting practice should be assigned.
3. When presenting letter formation, include “air writing” as a teaching strategy for the entire class. The teacher should stand so that the students can imitate the exact movements, i.e., teacher’s back to student.
4. Encourage students to visualize the letter. Have them close their eyes and ask if they can “see” the letter in their imagination. Ask them to write what they see.
5. If poor memory is suspected to be the problem, try ghost writing (writing with eyes shut) on unlined paper. It will show how the student makes a letter and if he has memorized the pattern at all or incorrectly.
6. Have the student place his hand “piggy back” onto the back of your hand as you write the letter on a large surface (chalkboard, easel, etc.). This allows the correct motion to be felt. Have the students close their eyes while doing this to block out distracting stimuli. Try it with eyes open as well.
7. Provide explicit verbal directions as you form the letter and have the students follow along with you repeating the same words as they make the letters.
8. Try using a multi-sensory using a variety of tactile media. For example, chalk on construction paper, shaving cream on carpet square, cornmeal on a cookie sheet, writing on the chalkboard.

STUDENT MIXES CAPITAL AND LOWER CASE LETTERS INAPPROPRIATELY

Comments:

This student may have a weak understanding/memory of how all the letters are formed. To check for this have the student first write all the lower case letters from memory (be sure all visual cues are removed from the desk/walls). Repeat this at a later time for the capital letters. This may also be related to a language-based deficit. Visual perceptual problems may also be a contributing factor. However, if mixing letters is the only problem your student is having with writing, it is likely due to a weak understanding of letter formation. This is commonly seen in students with learning disabilities, and does not necessarily require intervention from an occupational therapist. Students will write only what they can visualize and memorize. Early writers (kindergarten/first grade) often will mix letter sizes due to lack of experience. Often these students will begin writing by learning all the capitals. These are usually easier as they are all the same size (this reduces the visual perceptual demands). As they mature they will begin using the correct letter sizes more consistently.

Strategies to Try:

1. Have an informal writing center for students to practice. Try the Handwriting Without Tears methodology paper for a visual reminder.
2. Place a letter strip on the student's desk and send one home.
3. Consider photocopying writing paper with an alphabet strip on the top. Place all capital letters on one line and all lower case letters on another line.
4. Check with kindergarten and/or LD teachers for additional strategies.

STUDENT REVERSES LETTERS OR NUMBERS WHEN WRITING

Comments:

Reversals are a common problem among typically developing kindergarten and first grade students. When reversals continue after the second grade, it may be an indication of a learning disability. Before attempting to remediate reversals, it is often helpful to identify and record the letters and numbers with which a student has difficulty. This can be done by having the student write numbers and letters from memory through dictation and surveying work samples. The letters which generally present the most difficulty are S, M, W, Z, N, P, u, n, w, m, b, d, p, and g. It should be noted that students with auditory processing disorders may continue to have difficulty with b/d reversals well into third or fourth grade.

Strategies to Try:

1. Use the cues of touch to assist the student to produce letters by tracing them on the blackboard, in clay, on fine sandpaper or in playdough. Be sure that the student is tracing the letters correctly when he does, though. Practicing a letter incorrectly will simply compound the problem.
2. Teaching the student cursive will often reduce letter reversals.
3. Provide the student with visual/ directional cues such as: to differentiate lower case b and d, when placed in the word "bed", form a bed; when making a "d" make a "c" first, then add the line on the right; physically, the left hand can form a "b" while the right hand forms a "d".
4. Teach manuscript letters by showing students the strokes in sequence from left to right, and top to bottom. ("Line down", "circle around" for b, "down" "up and over" for n, m, h, etc.
5. Put a letter line on the student's desk for a handy visual reference; put a green dot for a starting point for each letter.
6. For some students it might be helpful to put a green ("go") signal on the upper left-hand corner of the desk and a red ("stop") sign the upper right corner. This will sometimes help clarify directional confusion.
7. Use of Handwriting Without Tears curriculum. This method of teaching has research on decreasing frequency of reversals (see website for specific research www.hwtears.com).

WRITING IS TOO DARK/TOO LIGHT OR HAS WAVY LINES

Comments:

This could be due to a variety of problems. The writing tool may be a contributing factor. **If the pencil lead is too hard, the strokes made will be light.** Conversely, if the lead is too soft, the writing sample may be too dark. More likely, however, is the fact that this student may have a tactile/proprioceptive problem. The student's brain may not process the sensation from the fingers appropriately.

If the writing is too light and the pencil/pen is a standard pencil/pen, then the student may:

1. Not like the feel of the pencil in his hand
2. May not like the feel of the writing point as it is moved on the paper to make the mark
3. Have weak hand muscles which result in a light grasp of the tool
4. Have weak upper body strength limiting the ability to sustain grip for any duration
5. **Not be holding the paper still with the non-dominant hand**
6. Be holding the writing tool too high on the shaft

If the writing is too dark and the pencil/pen is a standard pencil/pen, then the student may:

1. Have weak hand muscles and be trying to over compensate for this by maintaining a "death grip" on the tool
2. Have decreased sensation in the hand. By using more pressure he increases the tactile input to the brain.
3. Have a visual problem and will write darker to increase visual input
4. Have decreased upper body strength, which requires him to tighten up all the trunk, arm and hand muscles to enable him to perform writing tasks. Due to the increased need for stability, overflow is seen in the pencil/pen in the form of increased pressure.
5. Be holding the writing tool too close to the point

Strategies to Try:

1. Try a different pencil/pen/crayon.
2. Try a foam or rubber grip (see Resources list).

3. Provide frequent breaks during writing assignments to wiggle fingers, briefly play with a “squish” ball, or manipulate putty or playdough.
4. Chair push-ups are great. Place palms on each side of the chair seat, directly to the side of the upper legs. Push upward to raise bottom upward, just clearing the chair seat. This may also be achieved by pushing against the desktop when in a standing position (feet do not leave the floor). Wall pushes can also be performed to allow extra movement as well as proprioceptive input.
5. Play with clay, putty, playdough or other resistive type materials.
6. Try teaching finger spelling to the class. This is a great strategy to help with isolation of finger movements and coordination of the fingers.
7. Try a vertical writing surface, such as a slant board or tape writing paper to the wall.
8. If the student is right-handed, have him squeeze a ball in the left hand while writing.
9. Try holding the student’s wrist as still as possible while writing, or try a weight placed on top of the student’s wrist.
10. Try a weighted pencil or pen.

STUDENT TIRES QUICKLY AND CANNOT SUSTAIN LEGIBLE HANDWRITING TO COMPLETE AN ASSIGNMENT

Comments:

Excessive fatigue may be caused by several different factors or combinations of factors. This is the student who starts an assignment and it appears as if he will do fine. However, within minutes, he has stopped writing. Encouragement to finish work may result in a completed assignment but the quality may be extremely compromised. The student may begin to shorten his work that results in shorter assignments. Additionally, students that have a diagnosis such as Down Syndrome that exhibit neurologic low to very low tone may not be able to complete lengthy assignments. Better handwriting may be seen when writing tasks are given in smaller increments.

Strategies to Try:

1. See adaptations for tight grip.
2. Give the student frequent breaks when writing.
3. Shake hands out periodically.
4. Decrease the written requirement, providing student will maintain quality.
5. Consider keyboarding as an alternative for longer assignments. (Students with organizational and/or learning disabilities may still have difficulties using the computer to complete all steps of the writing process. Additionally, students in early elementary grades should be given opportunities on the computer, but be wary that “hunt and peck” methods may become habitual if all assignments are expected to be completed on the computer.)
6. This student needs additional opportunities to increase hand strength and endurance. The student should have opportunities throughout the day to work with some type of breaks and exercises. Use of a “squish” ball periodically throughout the day will serve to provide exercise to the hand muscles. Activities should be sent home to the parents to provide additional exercises.

STUDENT WRITES WITH DECREASED SPEED

Comments:

Decreased speed may be caused by several different factors or a combination of problems. The student who has difficulty initiating writing may be having difficulty with expressive language, i.e., putting his ideas into words. He may lack sound/symbol connection or lack grade level spelling ability. If a student is unable to read and has poor sound/symbol connection, letters will not have a great deal of meaning to him. He is unlikely to be able to write letters or words spontaneously, but may be able to copy shapes and letters with accuracy, but without awareness.

Other underlying causes may include poor pencil control or poor visual or motor memory for the letters. In order to write efficiently, the student must be able to write the letters automatically with the correct sequence of strokes. Printing letters from the bottom up or with incorrect directionality will cause problems with speed and fluency. Students with handwriting difficulties should not be allowed to continue to practice inappropriate sequence of strokes.

Strategies to Try:

1. Determine if there is a grasp problem. Refer to section on grasp for specific information.
2. Determine if spelling/reading issues are impacting his speed, i.e., there is a significant difference in time copying a sentence, versus composing original sentence and getting it down on paper.
3. Add tactile techniques when teaching handwriting, such as tracing letters with fingers or “air writing”. When presenting letter formation, include “air writing” as a teaching strategy for the entire class. Stand so that the students can imitate the teacher’s exact movements. The class should repeat the motion several times with eyes open and then shut. Other suggestions for tactile activities include:
 - forming letters with clay or play-dough
 - water painting on the chalkboard or slate
 - rainbow writing – student writes the letter using several different colors of chalk and then uses his finger to blend the colors at the end
 - writing letters/numbers/shapes on the student’s back

- the student should place his hand “piggy back” onto the back of an adult’s hand as the letter is written on a large surface (dry erase board, etc.). This allows him to feel the correct motion. Have the student close his eyes while doing this to block out distracting stimuli. Try it with eyes open as well.
4. Re-teach the stroke sequence for letters identified as inappropriately drawn. The student must have direct supervision when writing is occurring if the problem is to be corrected. This may include a brief period of supervision even during “draft” writing time when handwriting is not typically monitored.
 5. Encourage students to visualize the letter that is being practiced. See if they can verbalize, with eyes shut, how to write the letter.
 6. Try ghost writing (writing with eyes shut) on unlined paper. Also incorporate a variety of different tactile media when practicing writing.

MODIFICATIONS AND ALTERNATIVES

When considering modifications and alternatives to writing for students with an IEP, please list these on the modifications/accommodations page. Prior to adding any strategies to the testing modifications page, please check with your building administrator or central office personnel for recent guidelines of allowable SOL and other standardized testing modifications.

Modifications for Handwriting

- allow more time for completion (using recess time will be unproductive)
- accept any legible handwriting, cursive or manuscript
- allow a student to copy from a model on the desk instead of the board
- accept abbreviated answers
- decrease amount of written work when possible to meet the needs of the individual student
- allow use of a felt tip or roller pen
- provide copies of classmates' or teacher's notes/lectures
- tape class lectures
- provide remedial handwriting instruction (cursive or print such as Handwriting Without Tears or Loops and Other Groups)
- allow a student to dictate material to a scribe

Manuscript Versus Cursive

1. Initiation of Cursive Writing Prior to Grade 2 or 3

The current HCPS curriculum suggests that cursive writing be taught in the third grade. Students with significant spacing/perceptual problems may benefit from starting cursive instruction during the last nine weeks of the second grade. This decision should be based on:

- the student's age
- performance over time
- reading and writing folder work samples
- the student's motivation to learn cursive
- motor/perceptual limitations
- curriculum support
- parental support

2. Continuation of Manuscript After Grade 3

Students who are developmentally delayed may need to continue manuscript and not be required to use cursive. Instruction in cursive may begin when the student is developmentally ready. This decision should be based on:

- whether the student is able to write functionally in manuscript
- the student's age
- reading and writing folder work samples
- the student's motivation to learn cursive
- motor/perceptual limitations
- curriculum support (what activity will the student miss if he is pulled aside to learn cursive)
- parental support

Typing Alternatives to Handwriting

Consider typing alternatives when:

- the student has physical or neurological impairments that affect classroom performance;
- the student's handwriting speed and/or legibility are inefficient for classroom performance; or
- the student continues to experience difficulty after having intensive handwriting instruction and modifications are not enough due to pace of class.

Research reveals that regular education students are ready for touch typing keyboarding in third grade. Ten-finger touch typing should be initiated in 3rd or 4th grade, if the student has appropriate motor control. In lieu of formalized ten-finger typing, a two- or three-finger typing program, using thumbs, index and middle fingers can be tried. Henrico County has utilized programs such as Jump Start typing and Mavis Beacon typing, as well as the PAWS program. Additionally, middle and high school programs offer typing classes.

RESOURCES FOR PRODUCTS

EQUIPMENT

- Slant boards: An inclined surface for writing which generally sets on the table or desktop. A 20-degree incline is usual, however slant boards are available at a variety of angles. A large ring binder may also be tried. Slantboards are commercially available from catalogs, such as those listed in the resource section.

WRITING PAPER

When changing the student's typical classroom paper, remember to include a sample of what is expected. Some students with spatial relation or planning problems may find initiating a new kind of paper is more difficult. A visual model can help support the new expectations. Items to try include:

- Raised line paper, such as "Right-Line Paper" is available in first/second grade style (dotted line in middle) or traditional wide ruled is available from: Pro-Ed or Therapro catalogs.
- Handwriting Without Tears – Paper which uses one set of lines for the body of the letter with extensions of letters above and below the line. Available for purchase in conjunction with "Handwriting Without Tears" program. Information is available from:

Jan Z. Olsen, OTR
8802 Quiet Stream court
Potomac, MD 20854
(301) 983-8409
www.hwtears.com

- Shaded Paper – This is available in notebook form manufactured by Norcom. Locally, notebooks can be purchased at Wal-Mart stores during back-to-school sales in August. You can also make this yourself using a highlighter marker, marking every other line. Copies can then be made on a color copier, at stores such as Kinkos. Shaded index cards are also available year round at office supply stores or Wal-Mart.

Nor Com Inc.
200 Boyd's Crossing Road
Griffin, GA 30224
1-888-814-8988
(sold in bulk cases of 24 only)

- Fluorescent Paper – Generally available in both paper and poster board weights from variety, craft and teacher’s stores. (This paper can be used in the copying machine, too.) It can also be found at Staples, Office Max, etc.
- For spacing math problems, try graph paper, or using a table made in a word processing document, or try turning wide ruled paper sideways to form columns instead of rows.
- Teaching paper – Commercially available, such as “sky, grass, dirt” which colors the areas where letters are, “stop, yield, go” which uses red, yellow and green as a visual teaching reminder. Available from Therapro (or easily made by hand).

WRITING IMPLEMENTS

Standard No. 2 Pencils – available universally. A pencil sharpened to 3/4 or 1/2 of original length is usually easier for a student to control. It is important to remember that, in order for writing to be clear and legible, a pencil should be well sharpened.

“Easy Grip” – have indentations for fingers up the shaft. These are available at supermarkets, drug stores and teacher’s stores.

Triangular pencils – brands such as “Try-Rex”, “Bobby” or “Easy Learner” provide a natural grip surface for three fingers. Some are No. 2 lead, others have softer lead. Available from Therapro catalog.

“Hand Huggers” – Jumbo (primary sized) triangular No. 2 pencils. Great for beginning writers. Available from Therapro catalog.

“Dr. Grip” offers a wide base for students with larger hands. “Dr. Grip” is available in pen or mechanical pencil at various stores, such as CVS and Wal-Mart.

Zaner-Bloser – An automatic pencil with a very contoured shaft, which has a stronger lead than most automatic pencils. This one is also available with primary lead.

Mechanical Pencils – There are a wide variety of automatic pencils, with different thicknesses of lead. Avoid the pencils with removable pencil points. If a student loses one of these pieces the entire pencil is useless. Mechanical pencils eliminate trips to the pencil sharpener and often serve to “clean up” formerly messy appearing papers.

Ball or Cone Crayons – These are available in a variety of places, supermarkets, drug stores, toy stores, etc. AVOID buying those crayons with angular bases. They are very uncomfortable to use.

Animal Shaped Markers – short, squat markers that fit in the palm of the hand, available at Target, Kmart at seasonal times, also available in Oriental Trading catalog.

Rolling Writers – (many brands, i.e., Pentel) a pen with a rotating ball tip. These require less pressure and will write at any angle, but provide little stability.

Squiggle-Writer – (and other vibrating pens/crayons). These are pens and crayons in a weighted, vibrating base. They are available from teacher's stores, toy stores and card/gift shops throughout the area.

Weighted Pen – There are several weighted pens commercially available. Available in Sammons-Preston catalog also.

Colored Pencils – several brands, such as “Ferby” offer triangle shaped shaft, Available from toy stores, or Therapro catalog.

PENCIL GRIPS

The purpose of a pencil grip when used correctly is two-fold; it assists a student to use a more functional grasp to improve writing, and the grip provides a visible/tangible reminder to change grasp habits. Students who use grips should always be instructed on how a grip will help them achieve better writing, and to ensure its usage across home and school environments. Below is a list of commercially available grips. For specific catalog information, please see section entitled Resources.

Stetro Grip – A contoured grip with provides a specific placement for each finger, which promotes a tripod grasp. Available from teacher supply stores, drug stores and select stationery/card stores. This is a “one way” grip. It must be positioned correctly to achieve a successful grasp. Left-handed students need position the arrow upwards; right-handed students have the arrow facing downward.

Triangular Grips – Slide on the shaft of the pencil. Available at drug, office supply and teacher supply stores throughout the area.

The Pencil Grip – the grip provides a three-sided grip for students who need an increased surface, and a comfortable beginning grip. Available from teacher supply stores and catalogs.

Start Right – a barrier prevents the thumb from overlapping in students who use a closed web thumb wrap grasp. Available from Therapro catalog.

Foam Grips – A soft, cylindrical foam grip widely available at stores such as Wal-Mart, CVS, teacher stores, etc. Used best as a visual reminder for where to pinch- doesn't assist with web opening.

Hold-It – A white putty-like substance often used for mounting pictures, etc. This can be custom molded around the shaft of a pencil to cushion and stabilize grasp. Available in hardware and office supply stores.

Assorted other grips are available from stores and catalogs, such as Add-a-grip, Solo Grip, TriGo grip, etc, that can be used as a visual reminder for correct finger placement.

CATALOG AND STORE LISTING

Achievement Products for Children

www.specialkidszone.com

P.O. Box 9033
Canon, OH 44711
1-800-766-4303

Pocket Full of Therapy

www.pfot.com

P.O. Box 174
Morgansville, NJ 07751
1-800-PFOT124

Sammons-Preston

www.Sammonspreston.com

4 Sammons Court
Bolingbrook, IL 60440-5071
1-800-323-5547

Integrations (a subsidy of Abilitations)

<http://www.integrationscatalog.com/index.jsp>

One Sportime Way
Atlanta, GA 30340
1-800-622-0638

Abilitations (Sportime)

www.abilitations.com

P.O. Box 620860
Atlanta, GA 30362
1-800-850-8602

Pro-Ed

www.proedinc.com

8700 Shoal Creek Blvd
Austin, TX 78758
1-800-897-3202

Therapro

www.theraproducts.com

225 Arlington Street
Framingham, MA 01702-8723
1-800-257-5376

Handwriting Without Tears

www.hwtears.com

8001 MacArthur Blvd.
Cabin John, MD 20818
(301) 263-2700

LOCAL RESOURCES

Hammett's Teacher Supply Store

West Broad St. (WestPark shopping center)
747-7808

Toys That Teach

Gayton Crossing: 741-5611
Stony Point: 272-2391

REFERENCES

- Amundson, S., (1998) TRICS for Written Communication: Techniques for Rebuilding and Improving Children's School Skills. Homer, Alaska: O.T. Kids
- Benbow, M. (2003) Hand Function and Handwriting, conference handouts
- Clark-Wentz (1997) Improving student's handwriting. OT Practice, 2 (9), 29-33
- Cornhill, H. and Case-Smith, J., (1996) Factors that related to good and poor handwriting. American Journal of Occupational Therapy, 50, 732-739
- Gerszberg, C. (2003) Handwriting: A Lost Art. Child, 135-139
- Olsen, J. (1998) Handwriting Without Tears: A Teacher's Guide
- Handwriting Without Tears website: www.hwtears.com
- Zaner-Bloser website: www.zaner-bloser.com
- Ziviani, J. (1987) Pencil Grip and Manipulation. Handwriting: Theory, Research and Practice. New York: Nichols Publishing Co.