



Adapted Pencils to Computers

Strategies for Improving Writing



Using Technology to Improve Learning for All Children

The Technology for Educators Series

The past decade has seen many changes in Maryland public education. Educators, parents, and concerned citizens across the state are working to improve schools and learning for all children, including children with special needs. As we all work together to create schools where students can learn what they must know to be responsible and productive citizens in a global society, we have come to realize that we have an extraordinarily powerful tool that can help us reach our common goal. That tool is technology.

As technology becomes a staple in the school and classroom, we continually add to our knowledge of the many ways in which it can be used to improve learning for every child. To share this important information with educators and parents throughout our state, we are launching a new series of publications, the *Technology for Educators Series*. These booklets will present information for classroom teachers, principals, special education directors, parents, and others eager to use technology to improve learning. Each booklet will address a specific topic. In addition to the subject of this booklet, *Adapted Pencils to Computers: Strategies for Improving Writing*, future publications will focus on such subjects as a collaborative problem-solving approach to assistive technology evaluation, what administrators need to know about the assistive technology intervention process, technology accommodations for completing MSPAP testing, and technology for school reform.

The series is being written and produced by the Center for Technology in Education, an organization we sponsor in partnership with Johns Hopkins University. Under the direction of Dr. Jacqueline Nunn, CTE works with schools, districts, parents, and community partners across our state to further the use of technology in all aspects of school reform. These partnership activities have provided much of the information for this series.

Successful school reform and improved student learning require teamwork. The development of *Adapted Pencils to Computers: Strategies for Improving Writing* is an excellent example of the kind of cooperation that makes Maryland school improvement initiatives so successful. CTE staff, led by Judy Rein, and a subcommittee of the Maryland Assistive Technology Network (MATN), representing every region of the state, worked together for many months to collect and sift information, gather comments and suggestions from other MATN members, and write the booklet. The result is a publication that we hope you will find informative and pertinent, and that you will use regularly in your schools and classrooms to improve learning for all of our children.



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State Superintendent of Schools

Adapted Pencils to Computers

Strategies for Improving Writing

This publication is designed to assist classroom teachers directly but may also be useful to parents, administrators, and others who need to understand the factors — physical, sensory, and cognitive — that impact writing performance. Technology in this case includes a range of modifications from simple adjustments and changes in instructional strategies, the learning environment, or tasks to technological supports — from adapted pencils to computer solutions.

You've seen the signs:

- Poor endurance for writing
- Difficulty doing near- or far-point copying
- Difficulty organizing personal space and activities to accomplish a writing task
- Ability to express ideas verbally but inability to convert those thoughts into written form
- Inability to retain common word spellings

The results are apparent as well:

- Low writing productivity relative to peers
- Poor legibility
- Inability to sustain a thought over several sentences orally or in writing
- Problems with assignments because of an inability to convey ideas clearly or to spell words accurately

But what can you do to help?

- What are some relatively simple adjustments you can make to help a student improve performance?
- What should you know about the process of evaluating students for problems with writing performance?
- When is it appropriate to refer a student for further evaluation by specialists?
- When is a sophisticated, technology-based solution appropriate for a student?

Adapted Pencils to Computers: Strategies for Improving Writing answers these and other questions about assessing and overcoming problems with writing.

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This booklet helps classroom teachers, administrators, parents, and others understand the complex process of identifying and solving problems that limit the use of writing as a means of communicating knowledge. The process and techniques described are general and can be used with all students — from preschool through high school.

Furthermore, doing an assessment of such problems at the classroom level provides teachers with a ground-floor opportunity to understand and participate in designing solutions to help a frustrated student succeed.

It is important to recognize that written language development is a process that involves motor performance (for handwriting and/or typing), visual integration, cognitive organization, expressive language development, and writing mechanics skills (e.g., punctuation, spelling). Motivation is another factor that can be critical for success.

This guidebook considers these and other factors and offers instructional, adaptive, and technological solutions to assist students in improving their written language skills.

What factors underlie writing performance?

Several specific variables impact a student's writing performance:

- Fine motor skills
- Visual skills
- Organization and attention skills
- Written expression and mechanics skills
- Spelling skills

The process of assessment looks at each of these factors as well as the student's background relative to written language problems. Simple suggestions — instructional, adaptive, and technological in nature — are offered to deal with some of the most common problems. There also is guidance about when to consult with or refer a student to a specialist, such as the Admission Review and Dismissal (ARD) chair. In some schools, other persons may serve as the first-level contact for referrals: the principal, assistant principal, or school service coordinator, or at the district level, the program coordinator. Educators who use this booklet should identify the person who serves as their school's initial contact for consultation and referrals. Because of these myriad possibilities, *Strategies for Improving Writing* refers to this individual as the "school-based contact person."

What is assistive technology and how does it relate to writing performance?

An individualized approach to assessment and instruction is consistent with the current best practice model of intervention — in writing performance as well as in other academic areas. The overall school-based assessment and change process involves looking first at the student's

performance in various writing contexts, then individualizing strategies and accommodations to ensure access to, and participation in, the gamut of education activities.

Assistive technology relates to these accommodations. Specifically, assistive technology is any item, piece of equipment, or product — purchased "off the shelf," modified, or customized that increases, maintains, or improves the functional capabilities of individuals with disabilities. Solutions applied to writing performance range from simple pencil grippers that improve fine motor control to sophisticated word prediction software that helps students improve productivity or spelling accuracy.

In choosing an accommodation, the focus is on implementing the *least restrictive solution* from which meaningful benefit can be derived. The adaptations listed in the Change Strategies section of this booklet suggest commonly available resources as well as more complex solutions that relate specifically to observed writing problems.

What are the steps in the assessment process?

This booklet helps you organize the assessment process by offering a systematic approach to identifying problems and recording your findings about them. Keeping a record as you proceed through the process enables you to complete the assessment in several sessions, if necessary. This can be an important scheduling consideration for busy teachers. For the best continuity of information, *it is advisable to complete the assessment process within two to three weeks.*

1. Start with the student's records.

Begin by reviewing the student's school records. For instance, if you suspect a fine motor or visual skills problem, seek out information about the student's medical history and any test results that relate to physical development or impairments. Psychological or neuropsychological tests may provide clues to organizational issues, such as the student's ability to work at grade level. Grades and other evaluations can provide important information relative to past reading, language, and spelling success.

For a student who receives special education services, consult the Individual Education Plan (IEP). This form summarizes all of the data and history relative to any cognitive or physical disability. The IEP details

Table 1. Possible Writing Samples for Evaluation

Worksheets or answers to questions in a textbook
Short classroom assignments (three to four paragraphs at most)
Reports or essays (more than one page)
Examples of note taking
Homework assignments

accommodations (technological and otherwise) that should be made. If you do not understand any part of the IEP, consult the school-based contact person for assistance.

2. Conduct an informal "survey."

It may be helpful to survey other teachers — current or prior — who have had experience with the student's writing. Parents or guard-

ians are another excellent source of background information and perspective about writing problems arising in different situations or settings. Their insights may be particularly helpful in shedding light on motivational and behavioral factors that affect performance.

3. Collect samples of the student's written work.

The Problem Checklists included in the next section offer tips on how to trace a certain writing result (e.g., illegibility) to its underlying problem (e.g., fine motor control and coordination).

Having a file of samples gathered in different writing settings and showing different writing skills (Table 1) enables you to do some problem analysis without the student present. These samples also provide documentation of the process and a benchmark for comparisons after changes have been implemented.

4. Observe the student carefully relative to how other students perform, using the checklists provided as a guide.

The checklists section of this booklet guides you through the process of determining which factors contribute to a student's difficulties. This process calls for you to observe the student carefully while he or she is engaged in writing activities — not unlike the kinds of observations teachers make every day about their students.

You may want to block out several short periods for observation, considering one performance factor, such as fine motor skills, at a time. *Complete the assessment of all performance areas before implementing any of the change strategies suggested.*

Begin implementing changes in the area found to be the source of the most numerous problems — or those that are most detrimental. By taking a systematic approach to implementing changes, you will be able to determine which strategies are actually working for the student. Also refer to *Using the Problem Checklists* (below) for additional information.

Some problems — because they are wide-ranging and have persisted over a long period — will be beyond the scope of assessment and change using this simplified instrument. In such cases, the checklist for the performance factor considered most likely to underlie the problems suggests to whom referrals can be made. This contact person can marshal diverse resources should the student need an in-depth assessment and/or special services.

5. Implement change strategies related to the specific problems observed.

For each performance component assessed, several strategies are offered to help enhance the student's written language skills. These strategies include simple changes that can be made in the student's environment, physical modifications to writing implements, instructional modifications, and specialized materials and technologies.

Many of the suggestions offered, while designed to remedy a specific deficiency in an individual student, may be beneficial for use with a larger group. The ever-increasing diversity of today's classrooms may make it reasonable to consider using some of these change strategies across the broad spectrum of students.

It will be helpful to record when a strategy was implemented and to follow up later to determine its effectiveness. Some modifications, such as providing a better light source for a student with a vision-related problem, may result in immediate improvements. Others, such as those made for students having difficulty expressing their ideas verbally, often take longer to show results.

Some problems cannot be linked clearly to their source or they persist stubbornly. These may require additional interventions and assessment by specialists to resolve; nevertheless, the records you have compiled will speed the process of helping the student succeed by documenting what has and has not

worked in improving performance in a regular classroom setting. Also refer to *Using the Change Strategies Checklists* (below) for additional information.

6. Involve the school-based contact person or a relevant specialist for a more in-depth evaluation of an individual student and a student specific plan for change.

If information gathered through the records review, surveys, examples, observations, and assessments do not provide the information needed to determine appropriate changes, or if your interventions are not successful, you may wish to consider more in-depth assessments in the area(s) of concern.

The school-based contact person can assemble the specialists for this evaluation. Such assessments often involve an interdisciplinary team composed of any or all of the following: the student, parent(s)/guardian(s), general education teacher, special education teacher, speech and language pathologist, occupational therapist, psychologist, physical therapist, vision specialist, and/or assistive technology specialist. Their roles in the process are:

Parent/guardian: Provides information to the team regarding the student's disability as related to writing output and issues that relate to homework; actively participates in the development of the plan; acts as student's primary advocate.

General education teacher: Provides classroom-based information that is relevant to the student's writing performance on writing tasks compared to oral communication skills; provides information regarding curriculum expectations; primary person implementing instruction.

Special education teacher: Observes and assesses the student's writing performance; suggests and implements strategies and accommodations; participates in the implementation and development of the plan; provides case management and follow up.

Speech and language pathologist (SLP): Observes and assesses the student relative to verbal and writing performance, written mechanics and expression, and organization and attention.

Occupational therapist (OT): Observes and assesses the student's physical capabilities,

What is the role of motivation and behavior in successful writing?

A person's motivation and behavior often influence the success of a writing assignment significantly. Students who view writing as a chore, or those who have had repeated frustration with writing, may have difficulty approaching writing tasks. Attention difficulties also may have a negative effect on writing performance. Keeping a journal is one suggestion that can help relax and lose some anxiety about writing. Other suggestions include the following:

- Brainstorm ideas for essay topics and journal entries in a fun, non-pressured situation.
- Write (authorized) notes to friends in class.
- Record ideas on tape and then "transcribe" them.
- Use a graphic or outlining technique to organize information relating to a topic (i.e., mind mapping, clustering, and Venn diagramming).
- Collaborate with a peer group over a writing assignment.
- Use color coding to clarify the parts of speech as a means of understanding grammar and sentence structure.
- Use software that supports creative writing.
- Structure activities so that the student cannot fail.
- Break down the writing task into small steps (e.g., discuss the topic, write down key words).

visual perception skills, and eye-hand coordination relative to the written language output; recommends or customizes modifications regarding writing output and organizational skills.

Psychologist: Provides psychological assessments and observations related to written output.

Physical therapist (PT): Provides information appropriate to the student's seating and positioning to promote adequate eye-hand coordination for writing.

Vision specialist: Observes and assess how visual acuity affects written output; suggests and implements strategies, accommodations, and alternatives regarding written output; customizes modifications for the student to assist the student with the visual skills required for writing.

Assistive technology specialist: Assists school team members in determining the need for assistive technology solutions; trains staff, students, and parents in the implementation of assistive technologies; recommends, procures, and maintains assistive technology equipment.

How do I use the checklists to assess problems and implement appropriate changes?

Using the Problem Checklists

The Problem Checklists identify common observable behaviors and descriptions of possible underlying problems. These help you determine which variables of writing performance are being affected adversely.

It should be noted that there can be explanations other than those listed

for the behaviors noted: for instance, spelling problems also can be caused by auditory processing, visual perception, and/or ocular-motor difficulties. Some behaviors may result from inadequate instruction in a specific area (such as letter formation instruction and practice) or from a student's poor work habits.

The assessment techniques described will not necessarily enable you to determine the actual cause of the behaviors. Rather, they may help you determine whether the behavior is isolated and manageable or ongoing and part of a larger problem. The latter often requires a more in-depth assessment by a qualified professional specializing in the area concerned.

Step 6, *above*, goes into greater depth about the referral process and defines the roles of specialists on assessment teams. For example, suspected fine motor problems that affect writing performance are often referred to an occupational therapist.

Note: The student's cumulative folder is another resource for information about whether previous assessments have been made in specific areas.

Using the Change Strategies Checklists

The change strategies provided for each variable are suggestive but not comprehensive. They provide both general and specific ways to improve written output of students suspected or determined to have difficulties in particular areas.

It is important to note that teachers should first implement strategies and modifications listed in a student's formal education plan, e.g., the IEP,

504 Plan, or other plan developed specifically for a student.

The Change Strategies Checklists are designed primarily for use with students having no such individualized program or for teachers who are revising an IEP. It is recommended that teachers make the *environmental* and *instructional* modifications before using the *task* and *assistive technology* modifications.

Before adding change strategies or technology modifications to the student's education plan, try them for a period of from one to six weeks to determine their effectiveness. Document your results for future reference.

A final note: Realize that a modification may not be necessary for *all* written tasks; rather it may be needed only for those tasks impacted by the specific unwanted behavior, e.g., use of alternatives to handwriting for lengthy assignments but not for short answers.

Fine Motor Skills

Problem Checklist

Motor coordination is at the root of many poor handwriting and keyboarding problems as evidenced by:

- Handwriting that is illegible (Appendix A)
- Handwriting that is slow, such that it interferes with the student's ability to produce thoughts in written form (when spelling and written language mechanics are not factors)
- Handwriting that is significantly slower than keyboarding
- Keyboarding that is very slow
- Keyboarding that has a high error rate
- Keyboarding that is slower than handwriting, such that it interferes with the student's ability to produce thoughts in typed form (when spelling and written language skills are not factors)

Use the following checklist to analyze fine motor skills difficulties that relate to handwriting and keyboarding.

Fine Motor Skills

Problem Checklist

Name of Student _____ Date _____

	Observed Behavior	Underlying Problem	Assessment Technique
Notes <input type="checkbox"/> Slouching <input type="checkbox"/> Lying on desk while writing and shifting body position frequently while writing (Appendix B)	Poor postural control, i.e., poor control of the muscles that maintain an upright posture	<input type="checkbox"/> Observe sitting posture throughout the day. <input type="checkbox"/> Check desk and chair height for proper fit (see Appendix B for an example). <input type="checkbox"/> Check with the school-based contact person for assistance.	
<input type="checkbox"/> Poor pencil grasp (Appendix B) <input type="checkbox"/> Poor endurance for writing Difficulties with: <input type="checkbox"/> Controlling writing implements <input type="checkbox"/> Forming letters <input type="checkbox"/> Writing on the line <input type="checkbox"/> Performing a task such as circling or underlining specified words <input type="checkbox"/> Using a mouse to operate a computer	Weakness in or lack of coordination of arm or hand muscles Poor fine motor coordination and/or Poor eye-hand coordination No hand dominance established	<input type="checkbox"/> Check to determine whether the student has difficulty with other activities requiring the management of small materials, e.g., opening containers, using snaps, cutting. <input type="checkbox"/> Be certain that the student has been instructed carefully in letter formation, rather than reliance on “copying” from a wall chart. <input type="checkbox"/> Check to determine that the student has mastered letter formation skills in contrast to reliance on “copying.” <input type="checkbox"/> Observe the student using mouse-driven software after providing instruction and practice in proper mouse manipulation. <input type="checkbox"/> For students who use a keyboard, ascertain whether the student has received formal training in keyboarding/typing. <input type="checkbox"/> Maintain a portfolio of the student’s handwritten work, including samples from different writing tasks.	
<input type="checkbox"/> Poor keyboarding ability	For a student who relies on keyboarding for written communication, the inability, physically, to access all of the keyboard and function keys with accuracy and speed	<input type="checkbox"/> Observe the student’s typing speed and accuracy as he/she types a work sample then compare this result informally with that of typical peers.	
<input type="checkbox"/> Low productivity	Writing speed that is too slow to keep pace with language formation	<input type="checkbox"/> Instruct the student to write and type a familiar phrase and compare the speed and accuracy achieved in each situation.	

Fine Motor Skills

Change Strategies Checklist

Use the following to select, implement, and follow up change strategies that address the underlying problem(s) identified. The superscript numbers refer to information contained in the Resources list (p. 28).

Name of Student _____ Date _____

Underlying Problem	Change Strategies	Follow Up			
		Increased Quantity	Improved Quality	Curriculum Fit	Student Acceptance
Poor postural control	<p>Environmental Modifications</p> <ul style="list-style-type: none"> <input type="checkbox"/> Experiment with desk and chair size (see Appendix B). <input type="checkbox"/> Use specialized furniture to hold position. (<i>Consult the school-based contact person for assistance or a referral to a physical or occupational therapist</i>) <input type="checkbox"/> Provide a slanted writing surface: easel, 4-inch binder, slant board.¹ 				
No hand dominance established	<p>Instructional Modifications</p> <ul style="list-style-type: none"> <input type="checkbox"/> Provide increased opportunities for activities that require one-handed manipulation (e.g., painting, erasing board, spraying plants with water) to help promote hand dominance. 				
Weakness in, or lack of coordination of, arm or hand muscles Poor fine motor coordination <i>and/or</i> Poor eye-hand coordination	<p>Instructional Modifications</p> <ul style="list-style-type: none"> <input type="checkbox"/> Increase the number of opportunities to practice letter formation with a variety of media. <p>Task Modifications</p> <ul style="list-style-type: none"> <input type="checkbox"/> Adapt tests to reduce the amount of writing: use fill-in blanks, multiple choice, true/false. <input type="checkbox"/> Allow the student to highlight words or phrases in text rather than to copy. <input type="checkbox"/> Allow students to highlight or mark answers rather than underline or circle them. <input type="checkbox"/> Modify worksheets, e.g., use an enlarged copy of a paper or one with triple-space lines, and/or wider margins. <input type="checkbox"/> Consider using handwriting guides or templates that provide tactile feedback to facilitate staying within a defined writing space. <input type="checkbox"/> Color code where to start and stop on paper or use color-coded paper. <input type="checkbox"/> Use writing implements that are easier to grasp. <input type="checkbox"/> Substitute <i>Specialized Materials</i> (see list, below) — grippers, papers, writing tools, or alternate methods such as stamping. <input type="checkbox"/> Use graph paper for writing math problems, allowing one block for each number. <input type="checkbox"/> Provide chalkboard practice in writing. <input type="checkbox"/> Provide additional instruction in letter formation. <input type="checkbox"/> Consider another handwriting curriculum (e.g., books such as <i>Handwriting Without Tears</i>¹² or <i>Loops and Other Groups</i>³) to teach mechanics. 				

Underlying Problem	Change Strategies	Follow Up			
		Increased Quantity	Improved Quality	Curriculum Fit	Student Acceptance
Weakness in, or lack of coordination of, arm or hand muscles Poor fine motor coordination <i>and/or</i> Poor eyehand coordination	<input type="checkbox"/> Use multimodality instruction for teaching letter formation: also tracing, “talk through,” “walk through,” writing in air, dot to dot techniques. <input type="checkbox"/> Teach finger-spacing techniques to aid in letter and word formation.				
Writing speed that is too slow to keep pace with language formation	Task Modifications <input type="checkbox"/> Modify assignments by providing additional time, or by shortening the length of the assignment. <input type="checkbox"/> Allow the student to use either manuscript or cursive, depending on which is most productive. <input type="checkbox"/> Allow dictation and/or oral reporting to demonstrate mastery of content. <input type="checkbox"/> Provide copies of the teacher’s notes and/or a note taking partner.				

Specialized Materials

The determination of which types of specialized materials are appropriate is dependent on the degree of muscle control and the compensatory skills developed by the student. For example, if a student uses a static pencil grip with little wrist movement, a specialized pencil gripper may be helpful and a narrow width paper may be best. If the student has difficulty holding the paper down with one hand while writing with the other, the paper may need to be taped to the desk to provide stability. It is recommended that the classroom teacher consult an occupational therapist to assist with the determination of which specialized materials would be most beneficial for a student.

Writing implements that may be easier to handle or grip:

- Pencils or crayons of different diameters⁴
- Markers, pens, or grease pencils⁴
- Pencils with softer lead⁴

Grippers that enlarge or change the shape of standard writing tools or implements:

- Stetro, triangular, or pear-shaped gripper^{4,6}
- Rubber tubing used as a wrap for the writing implement^{5,6}
- Foam tubing used as a wrap for the writing implements^{5,6}

Papers that provide prompts or visual cues to guide handwriting:

- Different colors of paper⁴
- Colored lined paper or dark lined paper⁴
- Raised lined papers⁸
- Acetate sheets used with transparent markers (instead of paper)⁴

Paper stabilizers that prevent the writing surface from moving and that position the paper at the appropriate writing angle:

- Tape⁴
- Clipboard⁴
- Non-slip rug matting (available from hardware stores)
- Post-It glue stick⁴
- Dycem^{TM5}

Alternatives to erasing by hand:

- Correction tape⁴
- Correction fluid in pen form⁴
- Electric eraser⁴

Stamping as an alternative to handwriting:

- Rubber stamp with student’s name⁴
- Number and/or letter stamps⁴
- Handwriting guides or templates to promote staying within the designated writing space^{4,7}

Assistive technology/high-technology solutions:

- A word processor⁹

Consult the school-based contact person for assistance with the following items:

- A chair with arm rests to support the forearms and increase the student’s control for writing
- Use of Control Panel features in the system software to adjust keyboard and mouse functions
- A word processor with an adapted keyboard or with an alternate method of control¹⁰
- Specialized software, such as word prediction program¹¹
- Use of short-cut techniques to reduce the amount of typing required, such as macro commands to abbreviate frequently used words and file templates for each writing task.

Visual Skills

Problem Checklist

Visual acuity and perception are at the root of many poor handwriting and keyboarding problems as evidenced by:

- Handwriting that is illegible (Appendix A)
- Difficulty with copy work or with retaining letter locations (on a keyboard)
- Errors in letter formation and spacing (Appendix A)
- Slow production of written work, whether produced by hand or typed

Use the following checklist to analyze vision problems that relate to writing performance:

Name of Student _____ Date _____

Observed Behavior	Underlying Problem	Assessment Technique	Notes
Difficulties with self-monitoring of: <input type="checkbox"/> Spelling <input type="checkbox"/> Word and line spacing <input type="checkbox"/> Punctuation <input type="checkbox"/> Capitalization <input type="checkbox"/> Near- or far-point copying <input type="checkbox"/> Efficiently locating keys on a keyboard	Visual acuity <i>and/or</i> Visual perception	<input type="checkbox"/> Check to be certain that the student has had an eye examination for visual acuity. <input type="checkbox"/> Check for documentation of visual or perceptual difficulties. <input type="checkbox"/> Consult the school-based contact person for assistance in discriminating between problems with visual acuity and visual perception. <input type="checkbox"/> Note the length of time it takes the student to understand, respond to, or cognitively process visual materials. <input type="checkbox"/> Note whether the student scans materials in a sequential or random pattern. <input type="checkbox"/> Observe how the student copies information. <input type="checkbox"/> Maintain a portfolio of the student's handwritten work, including samples of near- and far-point copying. <input type="checkbox"/> Check that the student can locate keys on the keyboard. <input type="checkbox"/> Check the speed of typing to determine whether slowness relates to searching for the location of keys.	
Difficulties with: <input type="checkbox"/> Orientation to place on a computer screen <input type="checkbox"/> Effective use of a mouse or arrow keys for cursor <input type="checkbox"/> Consistency in the size and form of letters			

Visual Skills

Change Strategies Checklist

Use the following to select, implement, and follow up change strategies that address the underlying problem(s) identified. The superscript numbers refer to information contained in the Resources list (p. 28).

Name of Student _____ Date _____

Underlying Problem	Change Strategies	Follow Up			
		Increased Quantity	Improved Quality	Curriculum Fit	Student Acceptance
Visual acuity	<p>Environmental Modifications</p> <ul style="list-style-type: none"> <input type="checkbox"/> Use direct lighting (seat student away from windows to avoid glare; seat with back to window to allow for natural lighting; reduce amount of fluorescent lighting and increase natural lighting). <p>Task Modifications</p> <ul style="list-style-type: none"> <input type="checkbox"/> Reduce glare by using black print on cream-colored paper, rather than black on white; also provide visual cues that have high contrast without glare by using the black on cream combination. <p>Instructional Modifications</p> <ul style="list-style-type: none"> <input type="checkbox"/> Place a piece of window screen¹² under the paper to provide tactile feedback while writing, thus enabling the student to “feel” the letters produced. <input type="checkbox"/> Provide handwriting and/or signature guides to promote staying within a defined writing space. 				
Visual perception	<p>Environmental Modifications</p> <ul style="list-style-type: none"> <input type="checkbox"/> Minimize visual distractions (such as bright pictures or objects) around material to be copied or directions that are posted. 				
Both visual acuity and visual perception	<p>Environmental Modifications</p> <ul style="list-style-type: none"> <input type="checkbox"/> Seat the student close to the blackboard or teacher. <input type="checkbox"/> Keep the chalkboard clean to provide higher contrast. <input type="checkbox"/> To increase readability of the chalkboard, use different colors of chalk, put boxes around information to call attention to it, and draw lines and arrows to emphasize specific information. <p>Task Modifications</p> <ul style="list-style-type: none"> <input type="checkbox"/> Enlarge worksheets to reduce problems with near- or far-point copying; use larger, bolder type and exaggerated spacing between letters, words, and graphics. <input type="checkbox"/> Permit dictation and/or oral reporting to demonstrate mastery of content. <input type="checkbox"/> Eliminate copy work as much as possible. <input type="checkbox"/> Provide a clear copy of the teacher’s notes or have a note-taking partner. 				

Underlying Problem	Change Strategies	Follow Up			
		Increased Quantity	Improved Quality	Curriculum Fit	Student Acceptance
Both visual acuity and visual perception (continued)	<ul style="list-style-type: none"> <input type="checkbox"/> Reduce the amount of written work, stressing quality rather than quantity. <input type="checkbox"/> Use every other line or provide a writing space of a different color or shade¹³ to help the student stay within the lines. <input type="checkbox"/> Provide high-contrast tools such as markers, felt-tipped pens, soft lead pencils, or fine felt-tipped pens¹³ for ease in reading own writing. <input type="checkbox"/> Use Groovy Letters,⁸ raised line paper,¹⁴ sandpaper letters, or stencils as guides for letter formation. <p>Instructional Modifications</p> <ul style="list-style-type: none"> <input type="checkbox"/> Provide specific verbal instructions about how to form letters for handwriting in an easy-to-remember format such as rhythmic or musical jingles. 				

Assistive technology/high-technology solutions:

Consult the school-based contact person for assistance with the following items.

- Use of a tape recorder or video cassette recorder for oral reporting, as appropriate.
- Use of Control Panel features in the system software or font commands in word processors to increase the size and readability of the type.
- Use of a keyboard with enlarged key labels, different textures for different rows or function keys, or an angled keyboard.
- Use of a word processor¹⁵ providing auditory feedback, i.e., that can speak what is written as the student types it.
- Use of specialized software and hardware for screen enlargement, reading the screen, and converting the screen to a Braille display for students with visual impairments.

Organization and Attention Skills

Problem Checklist

Organization and attention issues are at the root of many poor writing and thinking problems as evidenced by:

- Inability to keep papers and assignments organized and neat, including difficulty locating materials.
- Difficulty staying on task and completing tasks within the timelines that peers can manage.
- Difficulty making transitions from one task or activity to another.

Use the following checklist to analyze organization and attention problems that relate to written task performance:

Name of Student _____ Date _____

Observed Behavior	Underlying Problem	Assessment Technique	Notes
Difficulties organizing: <input type="checkbox"/> Personal space <input type="checkbox"/> Personal activities <input type="checkbox"/> Books and papers <input type="checkbox"/> Ideas for writing <input type="checkbox"/> Work on paper and/or <input type="checkbox"/> Hands in incomplete work	Poor organization skills	<input type="checkbox"/> Check the top and inside of the student's desk and the student's ability to locate papers and materials; to keep materials together (rather than dropping them on the floor); and to do tasks in the proper sequence. <input type="checkbox"/> Check the ability to use classroom organization strategies. <input type="checkbox"/> Check the ability to work on paper in a work top-to-bottom sequence and a left-to-right sequence; to leave appropriate margins; to align math problems properly and space them so they can be understood; and to use unlined paper. <input type="checkbox"/> Monitor whether homework goes back and forth between home and school. <input type="checkbox"/> Check for completeness and neatness of the student's work. <input type="checkbox"/> Maintain a portfolio of the student's handwritten work, including samples that reflect a variety of organizational strategies.	
<input type="checkbox"/> Difficulty staying with a task to completion <input type="checkbox"/> Completes assignments quickly but does them incorrectly <input type="checkbox"/> Easily distracted	Short attention span	<input type="checkbox"/> Check the student's ability to stay in one place for a specified period. <input type="checkbox"/> Check for distraction by sounds and sights. <input type="checkbox"/> Check the accuracy of the student's work.	

Organization and Attention Skills

Change Strategies Checklist

Use the following to select, implement, and follow up change strategies that address the underlying problem(s) identified. The superscript numbers refer to information contained in the Resources list (p. 28).

Name of Student _____ Date _____

Underlying Problem	Change Strategies	Follow Up			
		Increased Quantity	Improved Quality	Curriculum Fit	Student Acceptance
Poor organization skills	<p>Environmental Modifications</p> <ul style="list-style-type: none"> <input type="checkbox"/> Provide or allow a limited number of materials to be with the student at a time (such as texts are kept in classrooms so that the student does not have to store or carry additional texts, student has one pencil and one notebook at a time). <input type="checkbox"/> Give student extra space for materials (such as an extra desk, storage bin, or shelf). <p>Task Modifications</p> <p><u>Modifications for Organizing Information</u></p> <ul style="list-style-type: none"> <input type="checkbox"/> Use graphic organizers or outlining techniques to help the student organize thoughts and information. <input type="checkbox"/> Provide both written and oral directions for the same activity. <input type="checkbox"/> Provide a written or pictorial representation of directions and/or assignments. <input type="checkbox"/> Provide a tape recording of directions and/or assignments. <input type="checkbox"/> Provide an assignment calendar book that is organized by subject. <input type="checkbox"/> Develop a personal assignment contract or checklist. <input type="checkbox"/> Provide a homework hotline that students can call for a review of the day's assignment. <input type="checkbox"/> Use a reward system to reinforce the use of organizational strategies. <p><u>Modifications for Organizing Work Space</u></p> <ul style="list-style-type: none"> <input type="checkbox"/> Allow the student to write on every other line. <input type="checkbox"/> Use visual cues such as highlighting the left margin, drawing light lines on the left and right side of the paper as guides to prevent running off the page, and for marking the top, bottom, and middle lines of the page. <input type="checkbox"/> Provide lines for answers on worksheets and allow plenty of space for answers. <input type="checkbox"/> Provide labels to designate specific areas for various items.¹³ <input type="checkbox"/> Color code and label specific folders and notebooks for various subjects and activities. <input type="checkbox"/> Have the student repeat directions orally. <input type="checkbox"/> Dedicate time throughout the day for organizing the student's desk and materials, and for checking book bag/folders for homework and assignments. 				

Underlying Problem	Change Strategies	Follow Up			
		Increased Quantity	Improved Quality	Curriculum Fit	Student Acceptance
Poor organization skills (continued)	<p>Instructional Modifications</p> <ul style="list-style-type: none"> <input type="checkbox"/> Hold desk inspections frequently and reward students with organized desks. <input type="checkbox"/> Have students examine all of the items in notebooks and folders frequently to remove unneeded items. <input type="checkbox"/> Teach the student to question any directions that are unclear. <input type="checkbox"/> Give each student a list of materials needed for each activity and have them check items in the list before starting a new activity. <input type="checkbox"/> Teach the student organizational strategies and provide periodic reminders: have the student make a daily “to do” list and teach how to prioritize assignments. <input type="checkbox"/> Encourage parents to follow through with organization strategies at home. <input type="checkbox"/> Develop short, clear objectives. <input type="checkbox"/> Record progress and provide tangible feedback or reinforcement. <input type="checkbox"/> Make sure that tasks assigned are geared to the student’s level of readiness. <input type="checkbox"/> Allow the student to draw a line through errors instead of erasing them. <input type="checkbox"/> Assign a peer to check that the student has the proper materials for the activity. <p>Assistive Technology Modifications</p> <ul style="list-style-type: none"> <input type="checkbox"/> Create and use computer-based templates for files as a structure for different writing tasks. 				
Short attention span	<p>Environmental Modifications</p> <ul style="list-style-type: none"> <input type="checkbox"/> Redesign instructional areas to minimize distraction (e.g., use study carrels or furniture dividers). <p>Task Modifications</p> <ul style="list-style-type: none"> <input type="checkbox"/> Minimize number of assignments provided at one time. <input type="checkbox"/> Provide long assignments broken into chunks. <input type="checkbox"/> Provide frequent breaks. <input type="checkbox"/> Seat the student close to the teacher to minimize distractions. <input type="checkbox"/> To decrease distraction, use headphones for listening independently to assignments recorded on tape. <input type="checkbox"/> Use heavyweight paper that does not tear easily when erased.¹³ <p>Instructional Modifications</p> <ul style="list-style-type: none"> <input type="checkbox"/> Establish routines and post them. <input type="checkbox"/> Provide small-group instruction. <input type="checkbox"/> Provide specific time limitations for assignments. <input type="checkbox"/> Provide information and instruction that fit the student’s strengths in using visual, auditory, or tactile skills. 				

Follow Up

Underlying Problem	Change Strategies	Increased Quantity	Improved Quality	Curriculum Fit	Student Acceptance
Short attention span (continued)	<ul style="list-style-type: none"> <input type="checkbox"/> Modify tests to decrease the amount of information printed on one page. <input type="checkbox"/> Provide continual praise and encouragement for effort as well as for success. <input type="checkbox"/> Provide real-life experiences and hands-on projects that hold the student's attention and are highly motivating. <input type="checkbox"/> Provide short, dynamic periods of work. <input type="checkbox"/> Alternate short periods of listening with short periods of activity. <input type="checkbox"/> Maintain eye contact with the student. <p>Assistive Technology Modifications</p> <ul style="list-style-type: none"> <input type="checkbox"/> Create and use computer-based templates for files as a structure for different writing tasks. 				

Written Expression and/or Mechanics Skills

Problem Checklist

Poor development of written expression and mechanics skills is at the root of many poor writing and thinking problems as evidenced by:

- Good ideas presented orally that cannot be converted into written language.
- Difficulties caused by a limited vocabulary, redundant word use, and/or use of overly simplistic sentence structure.
- Difficulties with syntax and/or poor paragraph construction.
- Demonstration of inconsistent use of capitalization and punctuation.

Use the following checklist to analyze organization and attention problems that relate to writing performance:

Name of Student _____ Date _____

Observed Behavior	Underlying Problem	Assessment Technique	Notes
Difficulty with missing and/or inappropriate use of: <input type="checkbox"/> Punctuation <input type="checkbox"/> Capitalization <input type="checkbox"/> Grammar <i>and/or</i> <input type="checkbox"/> Syntax	Poor written expression skills <i>and/or</i> Poor mechanics skills	<input type="checkbox"/> Obtain unedited writing samples and analyze mechanical errors.	
<input type="checkbox"/> Difficulty with expressing ideas in writing		<input type="checkbox"/> Ask the student to relate ideas verbally and compare them to the student's written responses. <input type="checkbox"/> Consult the school-based contact person for assistance.	

Written Expression and/or Mechanics Skills

Change Strategies Checklist

Use the following to select, implement, and follow up change strategies that address the underlying problem(s) identified. The superscript numbers refer to information contained in the Resources list (p. 28).

Name of Student _____ Date _____

Underlying Problem	Change Strategies	Follow Up			
		Increased Quantity	Improved Quality	Curriculum Fit	Student Acceptance
Poor written expression skills	<p>Task Modifications</p> <ul style="list-style-type: none"> <input type="checkbox"/> Provide extra time for writing, copying, and completing tasks. <input type="checkbox"/> Allow the student to begin assignments early. <input type="checkbox"/> Allow the student to complete homework during school tutorial period or “down” times. <input type="checkbox"/> Provide a thesaurus to facilitate choosing words. <p>Instructional Modifications</p> <ul style="list-style-type: none"> <input type="checkbox"/> Use content outlining, graphic organizers or representations, or semantic webbing strategies to help the student organize ideas. <input type="checkbox"/> Brainstorm descriptive words or details about a subject before beginning a writing assignment. <input type="checkbox"/> Provide daily opportunities for writing to increase the time spent practicing. <input type="checkbox"/> Use a specific routine or sequence of tasks to structure the writing process. <p>Assistive Technology Modifications</p> <p>Consult the school-based contact for assistance with the following:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Word processor with grammar-checking feature. <input type="checkbox"/> Outline/graphic organizer software to help the student organize thoughts for a writing assignment. <input type="checkbox"/> Software that provides voice feedback to enable the student to hear what has been written on the computer. <input type="checkbox"/> Word prediction software to help the student develop an expressive language vocabulary. 				
Poor mechanics skills	<p>Task Modifications</p> <ul style="list-style-type: none"> <input type="checkbox"/> Allow the style of handwriting that is most effective for the student (either manuscript or cursive) to facilitate writing. <input type="checkbox"/> Allow the student to use a word processor with grammar-checking capability (<i>Consult the school based contact for assistance.</i>) <p>Instructional Modifications</p> <ul style="list-style-type: none"> <input type="checkbox"/> Review and post the rules of punctuation and capitalization and reinforce them through practice. <input type="checkbox"/> Provide a checklist to guide the editing process. 				

Underlying Problem	Change Strategies	Follow Up			
		Increased Quantity	Improved Quality	Curriculum Fit	Student Acceptance
Poor mechanics skills (continued)	<ul style="list-style-type: none"> <input type="checkbox"/> Teach the student a specific strategy for proofing and editing papers (such as the COPS Error Monitoring or Visual Spelling Mnemonic Clue [Appendix D]). <input type="checkbox"/> Use personalized notebooks as a model for written language rules, e.g., “Period Rules,” “Comma Rules.” <input type="checkbox"/> Provide leisure (nonstressful) opportunities for writing, e.g., creating a shopping list (see also Role of Motivation and Behavior, p. 8). 				
Poor written expression and Poor mechanics skills	<p>Instructional Modifications</p> <ul style="list-style-type: none"> <input type="checkbox"/> Use many verbal, pictorial, and written cues to help enrich the student’s knowledge of word use and word order. <input type="checkbox"/> Use a specific routine or sequence of tasks to structure the writing process. <input type="checkbox"/> Use a visual model of expected projects or models for written language rules. <input type="checkbox"/> Use color-coding strategies (colored highlighters, colored pencils, or colored papers) to indicate, for instance, parts of speech, syntax, beginning and ending of phrases and/or sentences. <input type="checkbox"/> Use peer or cross-age tutors and/or editors. <input type="checkbox"/> Hold a one-on-one writing conference with the student to focus (a) on specific aspects of the student’s written expression/mechanics skills and/or (b) on preparing the student for revising his/her own work. 				

Spelling Skills

Problem Checklist

Poor spelling skills are at the root of many writing problems as evidenced by:

- Poor execution of assignments and/or tests because of an inability to spell words correctly.
- Written responses that are unrecognizable by the teacher because of poor spelling.
- Inability to compose written responses properly because of a limited spelling vocabulary.

Use the following checklist to analyze spelling problems that relate to written task performance:

Name of Student _____ Date _____

Observed Behavior	Underlying Problem	Assessment Technique	Notes
Difficulty with: <input type="checkbox"/> Using correct spellings consistently <input type="checkbox"/> Capitalization	Slow writing speed because of an overreliance on spelling words phonetically	<input type="checkbox"/> Use word lists appropriate for the grade level to determine the extent of spelling difficulties. <input type="checkbox"/> Administer a developmental spelling test to students at the emergent literacy level (see Appendix E).	
<input type="checkbox"/> Inability to retain common word spellings	Poor memory for automatic spelling	<input type="checkbox"/> Test recall of abstract information (e.g., phone numbers).	
<input type="checkbox"/> Illegible handwriting that masks poor spelling skills	Poor knowledge of common spelling rules	<input type="checkbox"/> Check word recognition and reading comprehension abilities. <input type="checkbox"/> Collect unedited writing samples and analyze the types of spelling errors that occur.	

Spelling Skills

Change Strategies Checklist

Use the following to select, implement, and follow up change strategies that address the underlying problem(s) identified. The superscript numbers refer to information contained in the Resources list (p. 28).

Name of Student _____ Date _____

Underlying Problem	Change Strategies	Follow Up			
		Increased Quantity	Improved Quality	Curriculum Fit	Student Acceptance
Slow writing speed because of an overreliance on spelling words phonetically	<p>Task Modifications</p> <ul style="list-style-type: none"> <input type="checkbox"/> Do not penalize knowledge of content areas because of poor spelling. <input type="checkbox"/> Use word banks and word walls to reinforce correct spellings. <input type="checkbox"/> Create a deck of cards for mastered spelling words and/or a list of spelling words used in written assignments. <input type="checkbox"/> Reduce number of words needed for spelling assignments. <input type="checkbox"/> Provide copies of the teacher’s notes or provide a note-taking partner. <input type="checkbox"/> Use peer editors to help the student check spellings. <input type="checkbox"/> “Double grade” assignments: grade the original and then grade an edited version. <input type="checkbox"/> Use a word processor with spell checker. <input type="checkbox"/> Use electronic spell checkers with or without voice feedback. 				
Poor memory for automatic spelling	<p>Instructional Modifications</p> <ul style="list-style-type: none"> <input type="checkbox"/> Encourage daily reading to help reinforce the spelling of high frequency words. <input type="checkbox"/> Teach the use of a dictionary (standard or personalized) to check word spellings. <input type="checkbox"/> Analyze the student’s writing samples and look for patterns of spelling errors: then structure teaching to these error patterns. <input type="checkbox"/> Teach a self-correction system for written assignments and quizzes. 				
Poor knowledge of common spelling rules	<p>Instructional Modifications</p> <ul style="list-style-type: none"> <input type="checkbox"/> Provide daily proof-checking practice. <input type="checkbox"/> Practice visualizing the spelling of words. <input type="checkbox"/> Use mnemonic techniques to help students retain word spellings. <input type="checkbox"/> Use a multisensory approach: use materials that provide tactile feedback such as Groovy Letters⁸ or writing words in sand. 				

Underlying Problem	Change Strategies	Follow Up			
		Increased Quantity	Improved Quality	Curriculum Fit	Student Acceptance
Poor knowledge of common spelling rules (continued)	<p>Assistive Technology Modifications</p> <ul style="list-style-type: none"> <input type="checkbox"/> Hand-held electronic speller (sold at education and office supply stores). <input type="checkbox"/> Spell-checking feature in word processors. <input type="checkbox"/> Software that cues students when a word is misspelled. <p>Consult the school-based contact person for assistance with the following:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Talking, hand-held electronic spellers such as the Franklin Speller (from Franklin Learning Resources).¹⁴ <input type="checkbox"/> Talking word processor that provides spoken letters, words, sentences, and paragraph capabilities.¹⁵ <input type="checkbox"/> Word prediction software that provides a word bank of correctly spelling vocabulary (with or without voice output).¹¹ 				

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Assistive Technology

Resources

Cite No. ¹	Product(s)	Source	Address	Phone/Fax
1	Slantboards	K&L Resources	P.O. Box 2612 Springfield, VA 22152	703-455-1503
2	<i>Handwriting Without Tears</i>	Jan Z. Olsen	8802 Quiet Stream Court Potomac, MD 20854	301-983-8409
3	<i>Loops and Other Groups</i>	Therapy Skill Builders	555 Academic Court San Antonio, TX 78204-9498	800-228-0752 Fax 800-232-1223
4	Post-It Glue Stick Electric eraser Rubber letter stamp Rubber name stamp Different types/styles of pencils, pens, markers See also Specialized Materials, p. 13	Education supply stores Office supply stores	Local	
5	Dycem Stetro gripper Adapted pencils	Sammons Preston	P.O. Box 5071 Boilingbrook, IL 60440-5071	800-323-5547 Fax 800-547-4333
6	Dycem Stetro gripper	OT Ideas, Inc.	P.O. Box 124 Morris Turnpike Randolf, NJ 07869	201-895-3622 Fax 201-895-4204
7	Bold lined paper	The Lighthouse, Inc.		800-829-0500
8	Right line paper Groovy Letters	Pro-Ed	8700 Shoal Creek Blvd. Austin, TX 78757-6897	512-451-3246 Fax 800-397-7633
9	Alphasmart Pro	Intelligent Peripheral Devices, Inc.	20380 Town Center Ln, Suite 270 Cupertino, CA 95014	408-252-9400 Fax 408-252-9409
10	IntelliKeys	IntelliTools	55 Leveroni Court, Suite 9 Novato, CA	800-899-6687 Fax 415-382-5950
11	Co-Writer Software Equipment, Inc.	Don Johnston Development	P.O. Box 639 1000 North Rand Rd. Wauconda, IL 60084-0639	800-999-4660
12	Window screen	Hardware stores	Local	
13	Pencil grips (triangular, pear-shaped, and Stetro) Different types and styles of pencils, pens, and markers	Education supply stores	Local	
14	Franklin (Electronic) Speller	Franklin Learning Resources	122 Burrs Rd. Mt. Holly, NY 08060	
15	Write Outloud Software Equipment, Inc.	Don Johnston Development	P.O. Box 639 1000 North Rand Rd. Wauconda, IL 60084-0639	800-999-4660

¹ Cite No. corresponds to the superscript number appearing with the product in the text.

Appendix A

Common Problems of Legibility

	Common Problems of Legibility
height	NOW twilight lets her
size	NOW TWILIGHT lets her
alignment	Now twilight lets her curtain
direction	Manny of you
slant	Manny of you, have seen.
spacing	Manny of you. or Man yof you
closures	Manny of you
tremors	Manny of you

Height: The height of the letters is irregular relative to the guidelines.

Size: The size of the letters spills over or does not meet boundary lines.

Alignment: Letters do not sit evenly on the bottom line.

Direction: Formation of the letters shows changes in direction that are not standard.

Slant: The slant changes direction.

Spacing: The use of spaces between words or within words is inconsistent.

Closures: Letters that are formed by closures typically are left open.

Tremors: Letters show wavy squiggles in line formation.

Appendix B

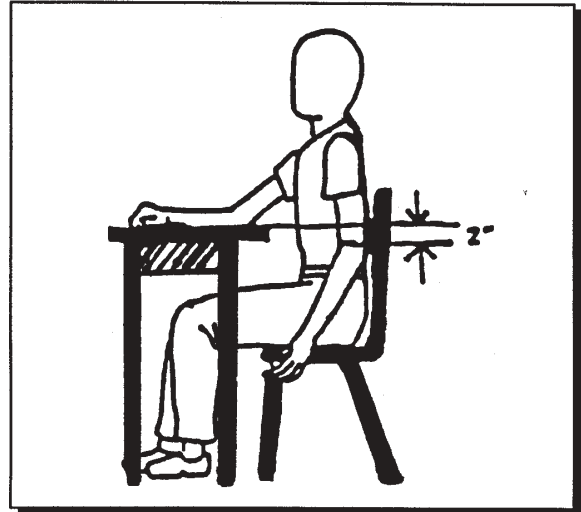
Factors Affecting Fine Motor Control for Handwriting¹

Correct Posture for Handwriting

The student should face the chalkboard and the following other conditions should be met (see diagram):

- Knees and hips bent at a 90-degree angle.
- Hips resting against the back of the chair.
- The chair positioned 1" to 2" from the edge of the desktop.
- The desktop positioned 1" to 2" higher than the student's elbow.
- Surface slanted to encourage upright posture.

Using the nondominant hand, the student holds the paper down on the desk and sits still.

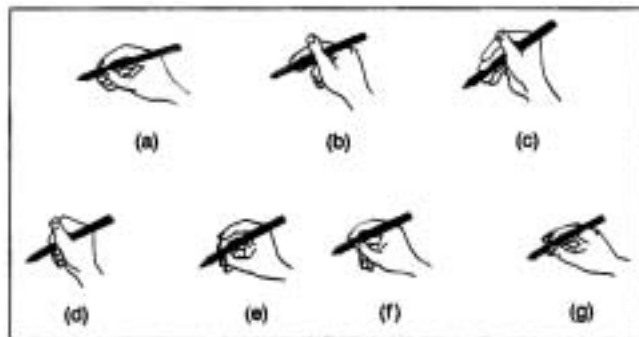


From Loops and Other Groups³

Functional Pencil Grips

The following are considered functional methods of holding a pencil, listed in order of observed frequency:

- (a) Dynamic tripod
- (b) Lateral tripod
- (c) Transpalmar interdigital
- (d) Cross-thumb
- (e) Dynamic bipod (index finger omitted)
- (f) Dynamic bipod (third digit omitted)
- (g) Static tripod



By Kerstin P. Bergman, "Incidence of Atypical Pencil Grasps Among Dysfunctional Adults, AJOT August 1990.

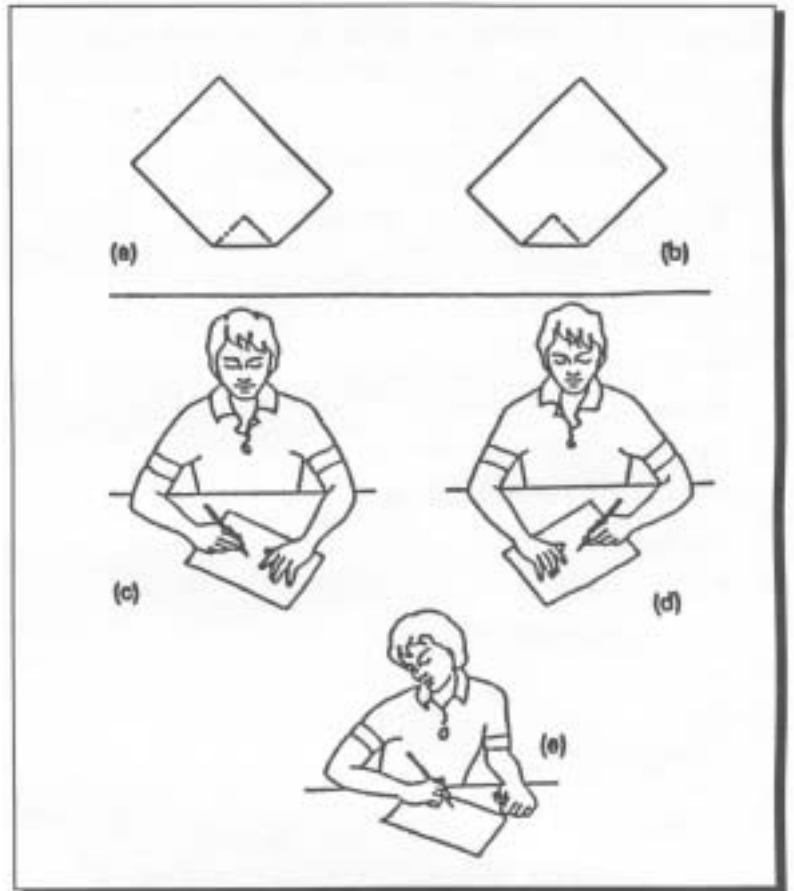
¹ Compiled by Nancy Farley, OTR, and Joan Ogaitis, OTR

Appendix B (continued)

Factors Affecting Fine Motor Control for Handwriting

Proper Positioning of the Paper for Handwriting

- (a) Proper positioning of the paper for a right-handed student
- (b) Proper positioning of the paper for a left-handed student
- (c) Correct positioning for a right-handed student
- (d) Correct positioning for a left-handed student
- (e) Incorrect positioning



From *Writing Skills for the Adolescent* by Diana Henbury King.

Appendix C

Model Notebook of Written Language Rules

1. Organize a notebook with a sheet for each rule category such as “Comma Rules,” “Period Rules,” “Common Homonyms,” and “Capitalization Rules.”
2. Record basic rules such as
 - Periods:
 - At the end of declarative sentences
 - After abbreviations
 - After initials
 - Commas:
 - Between city and state
 - Between day of the month and year
 - To separate a series of words
 - Capitalization:
 - Proper names
 - Days of the week
 - Months
 - Formal places
 - Holidays
3. Encourage students to provide their own examples to illustrate rules.
4. Continue adding rules to the notebook as they are taught.
5. Apply the notebook as a system that provides a model for accurate written language use.

Appendix D

Strategies for Proofreading and Editing Papers

C-O-P-S Error Monitoring Strategy ²

After the completion of the rough draft, students begin the editing phase by asking COPS questions. COPS stands for capitalization, overall appearance, punctualization, and spelling. Remind students to ask the COPS questions:

C: Have I capitalized the first word of each sentence and proper names?

O: How is the overall appearance? Review writing for errors related to neatness, legibility, and indentation of paragraphs, margins, and complete sentences.

P: Have I included commas and end punctuation?

S: Are words spelled correctly?

An extension of this activity is the SH! COPS! Error Monitoring Strategy that stands for sentence structure, handwriting, capitalization, overall appearance, punctualization, and spelling.

² Based on the work of: Schumaker, J.B., Deshler, D.D., Nolan, S., Clark, F.L., Alley, G.R., & Warner, M.M. (1981). *Error monitoring: A learning strategy for improving academic performance of LD adolescents* (Research Report No. 32). Lawrence, KS: University of Kansas Institute for Research in Learning Disabilities.

Appendix E

Developmental Spelling Test³

Instructions: Administer this list of words orally as you do any other spelling test, saying the word, giving an appropriate contextual cue by using it in a sentence, then repeating the word a third time. For example, “Back. After this message, we’ll be right back. Back.” Encourage students to spell the words to the best of their ability. Also give students adequate time to record their answers.

Correct Spelling	Preliterate Spelling	Initial Consonant Spelling	Consonant Frame Spelling	Phonetic Spelling	Transitional Spelling
BACK	RE	BET	BC	BAK	BAQ
SINK	E	C	SE	SEK	SINCK
MAIL	A	MM	MOL	MAL	MAEL
DRESS	S	DN	JS	GAS	DRES
LAKE	AH	L	LAE	LAK	LACE
PEEKED	TTT	PF	PT	PECT	PEKED
LIGHT	IEIX	LSIE	LAT	LIT	LIET
DRAGON	ATJA	JK	GAN	DAGN	DRAGIN
STICK	F	S	STC	SEK	STIK
SIDE	TC	ST	CI	SID	CIDE
FEET	V	F	FT	FET	FEAT
TEST	ABT	TS	TST	TAST	TEEST

Analysis: Because children do not typically score consistently at one level, look for overall patterns. Then examine writing samples to confirm the patterns you observed. Refer to article in Appendix F for a more detailed analysis.

³ Based on the work of: Ferroli, L. & Shanahan, T. (1987). Kindergarten spelling: explaining its relationship to first-grade reading. In J. E. Readence and R. S. Baldwin (Eds.), *Research in literacy: Merging perspectives (36th Yearbook of the National Reading Conference)*. Rochester, NY: NRC; and Morris, D. Perney, J. (1984). Developmental spelling as a predictor of first grade reading achievement, *Elementary School Journal*, 84, 441-457.

Appendix F

Strategies for Improving Spelling Skills Through Literacy Development

Assessing Developmental Spelling

David A. Koppenhaver

NACA should be proud of its proactive stance in devoting an entire issue of *Aug-Communique* to the topic of writing aids, assessments, and software. Despite the fact that most AAC users communicate by composing, writing remains the single most neglected aspect of literacy instruction, research, and experience in the lives of most AAC users, especially those who also have physical impairments.

While much of this newsletter is devoted to innovative ways of facilitating the physical act of writing, it is equally important to consider ways of helping AAC users improve the quality of their writing. Few aspects of writing are more important to the AAC users than spelling, because of its power to expand communication potential.

What follows is a description of an easy-to-administer developmental spelling test, representative spellings at five different stages, and suggestions for facilitating further growth toward conventional spelling for children at each stage. Spelling is a developmental cognitive process that reflects a child's basic knowledge of word elements (Henderson, 1985). In this sense, young children's nonconventional, or emergent, spellings should not be seen as errors, but rather as a written record of the child's current understanding of the English spelling system.

The AAC user to be tested requires access to the letters of the alphabet and a reliable response mode. The list is administered in traditional Friday morning test format. That is, the teacher says, "Back. After these messages, we'll be right back. Back." Children should be encouraged to spell the word to the best of their ability, to spell any sounds they can hear, even if they can't spell the word in its entirety. The test has been used with nondisabled kindergartners (Ferrolli & Shanahan, 1987) and first graders (Morris & Perney, 1984) and has been found to be a good predictor of end-of-first-grade reading achievement.

You should not expect children to score consistently at any one level. Look for overall patterns and examine their writing samples for confirmation. Following are some brief guidelines for facilitating growth in spelling at each stage.

Preliterate. Children at this stage have learned that letters represent language but have yet to learn much about the spelling system. Spellings are fairly random letter strings, often include numbers, and may actually relate quantitatively to the item spelled. For example, children may spell *feet* with two letters, because they have two feet.

Correct Spelling	Preliterate Spelling	Initial Consonant Spelling	Consonant Frame Spelling	Phonetic Spelling	Transitional Spelling
BACK	RE	BET	BC	BAK	BAQ
SINK	E	C	SE	SEK	SINCK
MAIL	A	MM	MOL	MAL	MAEL
DRESS	S	DN	JS	GAS	DRES
LAKE	AH	L	LAE	LAK	LACE
PEEKED	TTT	PF	PT	PECT	PEKED
LIGHT	IEIX	LSIE	LAT	LIT	LIET
DRAGON	ATJA	JK	GAN	DAGN	DRAGIN
STICK	F	S	STC	SEK	STIK
SIDE	TC	ST	CI	SID	CIDE
FEET	V	F	FT	FET	FEAT
TEST	ABT	TS	TST	TAST	TEEST

Appendix F (continued)

Strategies for Improving Spelling Skills Through Literacy Development

Children at this level need to discover the systematic relationship between written and oral English. Read aloud to them in positions where they can see the print. Take dictation from children and let them observe you writing their words. You may also need to teach some or all of the letter names to these children.

Initial Consonant and Consonant Frame. Each of these two levels represent early stages of phonetic spelling. Once children have discovered phonetic principles of spelling, they begin to spell words according to their sounds. Self-reports (Koppenhaver, Evans, & Yoder, in press) and descriptive evidence (Foley, 1989) suggest that even congenital nonspeakers are able to do this, although they typically present continuing spelling difficulties into adulthood.

Encouraging children at this stage to spell unknown words according to their sounds will help the children further develop their sense of letter-sound correspondences. Provide spellings only when pressed by the child. Do not emphasize conventional spellings at this stage and praise children's efforts. Continue reading aloud and allowing children to follow along in the text. Run your hand under the text as you read.

Phonetic. Children reach a stage in their phonetic spelling when they represent every sound by a letter. These children often rely on letter names to represent sounds (e.g., spelling *peeked* as *pect* or *money* as *mane*).

The more independent reading you can facilitate for children at this stage, the better. You might do this with preprimers in the basal series. Alphabet books, predictable books, or books-on-tape. Draw children's attention to the conventions of print, but be cautious not to overwhelm them with too much new information at a time. Praise the use of spelling conventions whenever they occur.

Transitional. At the transitional stage, children begin incorporating standard English spelling conventions (e.g., *-ed* for the past tense, or silent *-e*). Often they overgeneralize, however, and their spelling still is distinctive from conventional spelling.

Encourage these children to self-edit their writing. Begin developing an extensive sight vocabulary of frequently used words, frequently misspelled words, and words of high interest (e.g., children's names, holiday-specific vocabulary). Dictate short, interesting passages (e.g., jokes, blurbs from the *Enquirer*) that require attention to a particular convention the child is learning. For additional ideas on child-centered spelling instruction, read Henderson (1985), Rhodes & Dudley-Marling (1988), or McCracken and McCracken (1986).

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