# Table of Contents

<table>
<thead>
<tr>
<th>Section A: Introduction to the Protocol</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Section B: Development of the Protocol</td>
<td>4</td>
</tr>
<tr>
<td>Section C: Use of the Protocol</td>
<td>5</td>
</tr>
<tr>
<td>General Procedure</td>
<td>5</td>
</tr>
<tr>
<td>Materials</td>
<td>5</td>
</tr>
<tr>
<td>Sections of the Protocol</td>
<td>5</td>
</tr>
<tr>
<td>I. Preliminary Information</td>
<td>5</td>
</tr>
<tr>
<td>II. Classroom Observation</td>
<td>5</td>
</tr>
<tr>
<td>A. Classroom Workstation &amp; Postural Control</td>
<td>5</td>
</tr>
<tr>
<td>B. Behavioural Observations</td>
<td>6</td>
</tr>
<tr>
<td>C. Workbook Review</td>
<td>6</td>
</tr>
<tr>
<td>III. Testing</td>
<td>7</td>
</tr>
<tr>
<td>A. Assessment Tasks</td>
<td>7</td>
</tr>
<tr>
<td>B. Pencil Grasp</td>
<td>10</td>
</tr>
<tr>
<td>C. Pencil Pressure</td>
<td>11</td>
</tr>
<tr>
<td>D. Paper Positioning</td>
<td>11</td>
</tr>
<tr>
<td>E. Cursive Writing</td>
<td>11</td>
</tr>
<tr>
<td>IV. Analysis</td>
<td>12</td>
</tr>
<tr>
<td>A. Handwriting Speed</td>
<td>12</td>
</tr>
<tr>
<td>B. Handwriting Analysis Checklist</td>
<td>13</td>
</tr>
<tr>
<td>Appearance</td>
<td>13</td>
</tr>
<tr>
<td>Content</td>
<td>13</td>
</tr>
<tr>
<td>Section D: Clinical Decision-Making (including Assessment Samples)</td>
<td>14</td>
</tr>
<tr>
<td>References</td>
<td>34</td>
</tr>
<tr>
<td>Appendix A: Grade-specific Near and Far Point Copying Assessment Tasks</td>
<td>36</td>
</tr>
<tr>
<td>Appendix B: Handwriting Assessment Forms</td>
<td>57</td>
</tr>
</tbody>
</table>
Preface

We have had the pleasure of working with many hundreds of children over our careers who have struggled with handwriting for a variety of reasons. We have also had the opportunity to teach occupational therapy students at McMaster University and during fieldwork placements. We are happy to bring some of our collected wisdom gained through experience together with current research evidence to present a protocol for the comprehensive assessment of handwriting for children in Senior Kindergarten through Grade 6. This protocol is an extension of the first edition, which was only applicable up to Grade 3. This 2nd edition includes updated literature reviews, revised and new stimuli for the assessment process, a new analysis form and many new examples in the clinical-decision-making section.

We have been very fortunate to have worked with seven excellent student occupational therapists on the development and testing of this protocol over the years. Our thanks to Beth Blowes, Katie Semple, Melissa Webster, Lucy Farhat, Jessica Jacobson, Jeanette Bradley and Sarah Brunetti for their diligence, creativity and commitment to this project. Thanks also to the occupational therapists and student occupational therapists who have provided very helpful feedback along the way and to Janice Joo for her design assistance. Last, but of course, not least, we thank all the children and families who participated enthusiastically in providing us with writing samples.

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Section A

Introduction to the Protocol

Handwriting is a necessary functional task for school-aged children and the primary way they express thoughts, ideas and knowledge. Handwriting is a very complex skill that encompasses visual motor coordination, higher-level cognitive processes, perceptual abilities, tactile and kinesthetic sensitivity, motor planning, spatial organization, temporal control and the integration of written language. Research has indicated that children who can write well have improved confidence and self-esteem, increased concentration, improved academic performance and an increased ability to express themselves creatively.

Difficulty with graphomotor skills, handwriting or drawing, is one of the primary reasons for referrals to occupational therapists (OT) in school-based practice. Occupational therapists are regularly asked to assess a child’s handwriting when it seems to interfere with his/her performance in written work. When assessing a child’s handwriting performance there are a number of components that must be addressed to ensure a thorough evaluation; these include the child’s workstation, posture, writing tool use, behaviour, writing speed, legibility and content.

Many handwriting assessment tools are currently being used by occupational therapists and, typically, a combination of standardized and observational assessments are used in practice. However, none of these tools assist with the clinical decision making process following assessment. This protocol was designed to provide some direction in the identification of the specific areas of difficulty, thereby assisting in determining whether and where to intervene.

This handwriting assessment protocol is designed to look at the occupation of handwriting. It is not intended to provide a complete assessment of the performance components needed for effective and successful handwriting. Observations made during the completion of this protocol may indicate the need for further testing of underlying performance components. Please note: The protocol may not be appropriate for assessing students who are unable to read.

The manual includes: detailed descriptions and procedures for the assessment protocol, assessment forms, recent syntheses of evidence regarding handwriting, references, and assessment samples that can be used to assist in decision-making.

A note for those users from other provinces or countries; children enter school in September in Ontario based on their age as of December 31st of that year. The following table will help to clarify the ages of children in each grade:

<table>
<thead>
<tr>
<th>Age as of December 31st</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>Senior Kindergarten (SK)</td>
</tr>
<tr>
<td>6</td>
<td>Grade 1</td>
</tr>
<tr>
<td>7</td>
<td>Grade 2</td>
</tr>
<tr>
<td>8</td>
<td>Grade 3</td>
</tr>
<tr>
<td>9</td>
<td>Grade 4</td>
</tr>
<tr>
<td>10</td>
<td>Grade 5</td>
</tr>
<tr>
<td>11</td>
<td>Grade 6</td>
</tr>
</tbody>
</table>
Section B

Development of the Protocol

In 1994, the Protocol for the Assessment of Primary and Junior School-Aged Children (the blue book) was developed as an inexpensive and easy-to-use tool for occupational therapists to refer to when assessing children with handwriting difficulties. While it continues to be used as a reference tool, many aspects of it are outdated. It was felt that a protocol that reflected current evidence as well as current curriculum standards and expectations was warranted. In addition, as increasing numbers of occupational therapists find themselves working in school settings with limited access to educational resources and more experienced clinicians, building in a component to assist with clinical decision-making was considered valuable.

In 2006, the first draft of the Handwriting Assessment Protocol was developed and pilot tested with children in SK to Grade 3 receiving occupational therapy services in the Hamilton region. Writing samples were collected from these children according to our research ethics protocol for use in the clinical decision-making section of the manual. The protocol was subsequently used with occupational therapy students at McMaster University as part of their curriculum. Feedback was provided by the students and used in the development of the second draft.

In early 2007, through a notice on the CanChild Intranet, occupational therapists were invited to participate in a study of the clinical utility of the protocol. Fourteen occupational therapists working in a variety of settings from across Canada agreed to take part in the pilot, which consisted of using the protocol then completing a questionnaire on its content and ease of administration.

On a series of 5-point Likert-type scales, with 5 being ‘strongly agree’ and 1 being ‘strongly disagree’, therapists responded to statements regarding the content of the tool, specifically its comprehensiveness in terms of domains examined and information provided, its ability to help identify issues and make clinical decisions, and the value of the additional research evidence and assessment samples. Mean scores on these items ranged from 4.0 to 4.57. In response to the statement “Is age appropriate”, therapists were less consistent. As samples for each of the grades in this protocol are drawn from the Ontario curriculum, and consistent with current standards and expectations, it is likely that the responses to this particular statement are a result of either a lack of familiarity with these curriculum standards or differences in standards across the provinces.

Using similar 5-point Likert-type scales, therapists responded to statements regarding the ease of use of the tool, specifically ease of understanding, ease of completion, clarity, and overall organization. Mean scores on these items ranged from 4.18 to 4.5. Finally, the majority of the respondents felt that it took approximately the same amount of time to administer the protocol as it took to administer other handwriting assessments they were currently using. The participants made many helpful suggestions for clarity and formatting. Using the objective and subjective feedback from the questionnaires, this final version of the Handwriting Assessment Protocol was completed.

In 2009, the Handwriting Assessment Protocol was extended to include grades four to six. To extend the protocol, a process similar to that used in 2006 was applied, which included reviewing the Ontario curriculum expectations, and developing and pilot testing the new material with typically developing children and children receiving occupational therapy services in the Peel, Halton and Hamilton regions of Ontario, Canada. As was done in 2006, writing samples were collected from children who participated in the pilot testing of the protocol and used in the clinical decision-making section of the protocol.
Section C

Use of the Protocol

GENERAL PROCEDURE
The assessment consists of several parts and should be conducted, where possible, in the child’s primary learning environment. The assessment should ideally proceed as follows:

1. Review the child’s student record
2. Liaise with the child’s primary teacher and parents regarding concerns
3. Conduct classroom observation including notebook/workbook review
4. Complete grade-specific writing tasks with the child
5. Write up synthesis/analysis and goals/recommendations

The assessment can be conducted in the child’s home. In this case, Section II, Classroom Workstation, should be completed using the testing environment in the home as the workstation.

MATERIALS

| ✓ Protocol  | ✓ Tape measure |
| ✓ Samples   | ✓ Writing utensils |
| ✓ Stopwatch| ✓ Paper typically used in class
| ✓ Masking tape |

SECTIONS OF THE PROTOCOL

I. Preliminary Information

Considerations for Assessment:

Note reason for referral, teacher concerns, parental concerns, and pertinent history such as recent vision assessments, previous assessment reports

II. Classroom Observations

A. Classroom Workstation & Postural Control

**Evidence:**
Positioning and seated body posture is often the initial issue addressed by occupational therapists in a handwriting intervention. A child’s posture is thought to influence both the efficiency of the writing process and the final handwritten product. Numerous authors have described the proper seating posture and positioning that should be implemented in order to provide a child with the ultimate support while writing. They describe the 90-90-90 seating posture as the most ideal position for seated work. This position ensures that the child’s ankles, knees, and hips are all aligned at 90 degrees. To provide further support, the child’s feet should be planted firmly on the floor, the trunk should be aligned against the back of the chair, the head should be aligned with the trunk, and the shoulders and wrists should be stabilized. It is also suggested that the child’s elbows should be slightly off the edge of the desk and that the table surface should be two inches above the flexed elbows when the child is seated.
Considerations for Assessment:

- **Ideal classroom workstation:**
  - Desk height two inches above flexed elbow when seated in the chair
  - Feet flat on the floor, with the ankles, knees and hips all at 90 degree angles
  - Workstation in an area of the classroom in which they are not over/under stimulated by the surrounding environment
  - Appropriate lighting in work area
  - Workstation in good proximity to the point of instruction

- **Ideal posture (at his/her usual workstation):**
  - Trunk aligned against the back of the chair to provide proximal stability
  - Head aligned with the trunk, which is optimal for visual scanning
  - Seated on chair so that feet are firmly planted flat on the floor
  - Forearms stabilized on the desk
  - Wrist in a neutral position on the desk

B. Behavioural Observations

Endurance, attention and motivation are important considerations that can significantly affect a child’s handwriting performance and should therefore be assessed. The impact of attention to task and motivation on handwriting performance has received considerable attention and is beyond the scope of this assessment tool. One area that is sometimes overlooked, however, is the effect of endurance on performance.

**Evidence:**

Fatigue is thought to have a significant effect on handwriting speed, letter formation, spatial organization, and ergonomics. In one study, when children were asked to write long texts, fatigue had a significant effect on handwriting performance in children with both poor and good handwriting. Another study with children aged 8 to 9 years old showed that the quality of handwriting decreased as more was written. Writing long texts caused letter formation to deteriorate and the speed of handwriting to increase. In addition, writing long texts caused the children’s posture to worsen. Due to poor posture, children with poor handwriting also had worsened spatial organization and increased pencil pressure. Thus, the effects of fatigue on handwriting performance are complex and may have more serious implications for children who have already been identified as poor handwriters.

Considerations for Assessment:

- Is the child appropriately attending to handwriting tasks? For example, are they able to sit still without squirming or fidgeting?
- Does the child seem fatigued?
- Does handwriting performance vary with task length?
- Is the child motivated to write and willing to complete handwriting tasks without excessive encouragement from the teacher?

C. Workbook Review

In order to get a better sense of the child’s typical written work, take time to review his/her notebooks, journals, and worksheets. Look for the legibility, organization, use of margins and spacing etc. The quantity of written work completed as well as whether the student prints or uses cursive writing should also be noted. If possible, review the workbooks of other students in the class for comparison.
Evidence:

It is important for occupational therapists to be aware of prior handwriting instruction when addressing difficulties. Also, the foundation of handwriting problems for some children may be related to handwriting instruction that is not individualized. This results in a discrepancy between the time set aside to teach specific letters to specific children and the time that these children need to learn. Therefore, knowledge of the child’s prior handwriting instruction is important.

III. Testing

A. Assessment Tasks

Please refer to Table 1 below for grade-appropriate writing assessment tasks. While the child is completing the writing tasks (writing from memory, far and near point copying, dictation, and composition) the assessor should consider the use of the writing tool (including grasp, pressure, tension) and paper positioning.

General Instructions:

1) Writing from Memory – Ask the student to write the appropriate stimuli. If the student is not able to write a particular letter or number, ask him/her to proceed to the next appropriate number.

2) Near Point Copying - The stimulus should be placed approximately 3 inches away from the student’s paper. Ask the student to copy the appropriate word/passage on their typical writing paper. NOTE: The time to complete the task should be recorded on the assessment protocol for calculation of writing speed.

3) Far Point Copying – The stimulus should be located 6 to 8 feet from the child and 4 feet from the floor. Prior to beginning this task, ensure that the student is able to read the passage. Ask the student to copy the appropriate word/passage on their typical writing paper.

4) Dictation – Ask the student to write the dictated sentence. NOTE: The time to complete the task should be recorded on the assessment protocol for calculation of writing speed.

5) Composition* – Suggested topics are included in the table below, but the student may wish to choose their own topic. Age appropriate expectations for composition:

- SK: n/a
- Grade 1: compose simple but complete sentence on topic of choice
- Grade 2: compose short paragraph on topic of choice (2-3 sentences)
- Grade 3: compose paragraph on topic of choice
- Grade 4: compose a paragraph on topic of choice
- Grade 5: compose a paragraph on topic of choice
- Grade 6: compose three paragraphs on topic of choice

*You may choose to ask students to complete this writing task first, as it tends to be the most demanding
NOTE: Actual stimuli of appropriate font for tasks are included in Appendix A of this manual.

Table 1. Assessment Tasks categorized by grade level

<table>
<thead>
<tr>
<th>Grade Level</th>
<th>Writing from Memory</th>
<th>Near Point Copying</th>
<th>Far Point Copying</th>
<th>Dictation</th>
<th>Composition</th>
</tr>
</thead>
<tbody>
<tr>
<td>SK</td>
<td>Instruct child to write:</td>
<td>Instruct child to copy</td>
<td>Instruct child to copy:</td>
<td>Instruct child to write the following after it is has been read aloud:</td>
<td>Instruct child to write about one of the following:</td>
</tr>
<tr>
<td></td>
<td>- first name</td>
<td>- number of letters to that point for speed calculations:</td>
<td>- number of letters to that point for speed calculations:</td>
<td>- number of letters to that point for speed calculations:</td>
<td>- number of letters to that point for speed calculations:</td>
</tr>
<tr>
<td>SK</td>
<td>- numbers 1-10</td>
<td>quack, zebra, how</td>
<td>stop, milk, candy</td>
<td>jar, pig, fox</td>
<td>N/A</td>
</tr>
<tr>
<td>Grade 1</td>
<td>- full name</td>
<td>Here comes dad with four ice creams. (29)</td>
<td>Now your friend is here at last.</td>
<td>The quick brown fox jumps over the lazy dog. (35)</td>
<td>One sentence; e.g.,</td>
</tr>
<tr>
<td></td>
<td>- name of school</td>
<td></td>
<td></td>
<td></td>
<td>- family pet</td>
</tr>
<tr>
<td></td>
<td>- alphabet</td>
<td></td>
<td></td>
<td></td>
<td>- summer vacation</td>
</tr>
<tr>
<td></td>
<td>- numbers 1-10</td>
<td></td>
<td></td>
<td></td>
<td>- favourite movie</td>
</tr>
<tr>
<td>Grade 2</td>
<td>- full name</td>
<td>There are many ways we can get exercise. (32)</td>
<td>Freddie the Frog sat on his log. He was croaking because he wanted the squirrel to hear him.</td>
<td>The quick brown fox jumps over the lazy dog. (35)</td>
<td>2–3 sentences; e.g.,</td>
</tr>
<tr>
<td></td>
<td>- name of school</td>
<td>When we can, we should walk or ride our bikes. (67)</td>
<td></td>
<td></td>
<td>- family pet</td>
</tr>
<tr>
<td></td>
<td>- alphabet</td>
<td></td>
<td></td>
<td></td>
<td>- summer vacation</td>
</tr>
<tr>
<td></td>
<td>- numbers 1-10</td>
<td></td>
<td></td>
<td></td>
<td>- favourite movie</td>
</tr>
<tr>
<td>Grade 3</td>
<td>- full name</td>
<td>Pretty soon Nick will be crawling and getting into everything. (52)</td>
<td>“First, let me show you what we are looking for. Many things have labels on them,” Aunt Cathy explained. “Each label has a symbol that shows how it can hurt you,” said Aunt Cathy. “Let’s go through the house and look for anything that has one of these labels.”</td>
<td>The quick brown fox jumps over the lazy dog. (35)</td>
<td>A paragraph; e.g.,</td>
</tr>
<tr>
<td></td>
<td>- name of school</td>
<td>Many things in the house are not safe. (82) Can you help me find these things so I can put them where Nick can’t get them? (142)</td>
<td></td>
<td></td>
<td>- favourite activity</td>
</tr>
<tr>
<td></td>
<td>- alphabet</td>
<td></td>
<td></td>
<td></td>
<td>- summer vacation</td>
</tr>
<tr>
<td></td>
<td>- numbers 1-10</td>
<td></td>
<td></td>
<td></td>
<td>- favourite movie</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>- letter to a famous person</td>
</tr>
</tbody>
</table>
| Grade 4 | - full name  
- name of school  
- alphabet  
- numbers 1-10  
- phone number  
- teacher’s name | On that cold November day, something caught my eye. (41) It was a lively little ball of fluff, hopping from twig to twig in a leafless hedge. (107) I forgot about the cold as I watched the agile little bird with the black cap and white cheeks. (183) I don’t know why, but from that moment I was hooked. (222) “My circus skills have really improved. I can juggle three balls. I can ride a unicycle for eight metres without falling. In tumbling, I can do six front rolls in a row. I used to get dizzy from doing just one!” | The quick brown fox jumps over the lazy dog. (35) | A paragraph; e.g.,  
- admired person  
- favourite sport/activity  
- preferred music  
- future career  
- where to go on a trip  
- making a movie |
|---|---|---|---|---|
| Grade 5 | - full name  
- name of school  
- alphabet  
- numbers 1-10  
- phone number  
- teacher’s name | Alyssa likes to be creative by editing her films. (40) This is when she puts the scenes together to tell her story. (88) She uses a computer software program to edit her films. (133) By using this program, Alyssa has the ability to shorten scenes. (185) She can also fix mistakes and change the order of the scenes. (234) As they docked, Captain Adams came out to meet them. “An impressive bit of navigating, young man,” he said, and turned to Matthew’s father. “Mr. Cutler, your lad would be a first-rate apprentice in my shipyard. He can start tomorrow, if you agree.” Matthew’s father smiled down at Matthew. | The quick brown fox jumps over the lazy dog. (35) | A paragraph; e.g.,  
- admired person  
- favourite sport/activity  
- preferred music  
- future career  
- where to go on a trip  
- making a movie |
| Grade 6 | - full name  
- name of school  
- alphabet  
- numbers 1-10  
- phone number  
- teacher’s name | Drag is the force that works against the direction of flight of anything that is flying through the air. (85) The amount of drag can be affected by shape. (120) Fat, lumpy shapes with sharp edges create a lot of drag. (164) They disturb the air and make it swirl about as they move along. (215) Sleek, streamlined shapes have low drag and hardly disturb the air as they cut smoothly through it, so they fly fastest of all. (317) I finally got up enough nerve on day to “pitch” an idea for an article to a local newspaper. To my delight, the newspaper was interested! I quickly wrote the story and sent it in, excited that this could be the first step to a career in writing. I didn’t tell my family about the article. I was looking forward to surprising them with the published piece. | The quick brown fox jumps over the lazy dog. (35) | 3 paragraphs; e.g.,  
- admired person  
- favourite sport/activity  
- preferred music  
- future career  
- where to go on a trip  
- making a movie |
B. Pencil Grasp

The development of pencil grasp in children typically follows a predictable progression. Grasp patterns generally develop from least mature (i.e. radial palmar grasp) to most mature (i.e. lateral or dynamic tripod grasp) and changes in grasp can continue until the child is approximately 10.5 years of age.12 Based upon their research, Schneck and Henderson created a developmental scale that describes typical pencil grasps utilized by children as they progress from immature (a) to mature grasp patterns (i, j).

(a) radial cross palmar grasp; (b) palmar supinate grasp; (c) digital pronate grasp, only finger extended; (d) brush grasp; (e) grasp with extended fingers; (f) cross thumb grasp; (g) static tripod grasp; (h) four fingers grasp; (i) lateral tripod grasp; (j) dynamic tripod grasp. Retrieved from Schneck & Henderson (1990), used with permission.

Evidence:

A number of studies have indicated that grasp patterns do not actually have a significant influence on handwriting performance.14-17 However, results indicate that children with poor handwriting use significantly less mature pencil grasp patterns than children with good handwriting.13 Traditionally, the dynamic tripod grasp has been considered to be optimal for handwriting performance due to the high level of control that can be achieved when utilizing this grasp.5,16 However, research has demonstrated that children utilizing a lateral tripod grasp achieve the same levels of control, legibility, speed and accuracy as compared to children using a dynamic tripod grasp. Thus, the lateral tripod should be considered as a mature grasp along with the dynamic tripod grasp.5 Since research has consistently shown that normal handwriting performance can be achieved with a variety of grasps, therapists should focus on the functional implications of the student’s grasp.

Considerations for Assessment:

- Is the student using a mature grasp (i.e. lateral tripod or dynamic tripod grasp)?
- Is the position of the grasp appropriate, relative to the pencil tip?
- If not, does the grasp seem to be affecting the child’s speed, legibility, control, or endurance?
- Does the student’s grasp change throughout the assessment?
C. Pencil Pressure

**Evidence:**

Children with identified handwriting difficulties are often found to exert inappropriate amounts of pressure on the writing tool during handwriting tasks.\(^6\)\(^,\)\(^18\) According to the research on this topic, there are three primary measures of pressure that should be observed during handwriting assessment: pressure applied through the fingers onto the writing instrument, pressure of the writing instrument onto the writing surface (point pressure) and the pressure of the hand resting on the writing surface. The only recent study conducted on this topic found that handwriting legibility was significantly correlated with the consistency of pressure applied to the writing instrument.\(^19\) Thus, poor pressure consistency may be one of the underlying causes of poor handwriting legibility.

**Considerations for Assessment:**

- Is the student placing the appropriate amount of force on the writing tool with the thumb and fingers?
- Is there a stable hold on the tool allowing for fluid movement?
- Is there a comfortable grip?
- Is there a tremor?
- Is the writing too light or too dark?
- Is there consistency in the amount of pressure exerted?
- Is there any complaint of pain or fatigue?

D. Paper Positioning

**Evidence:**

One of the few studies that examines the effect of paper positioning on handwriting performance concluded that children with poor handwriting performance also had inferior paper positioning (repeated changes in paper angling and failure to stabilize paper with non-dominant hand) during copying tasks.\(^6\) It has also been noted that a vertical writing surface facilitates a more mature grasp and proper wrist and hand positioning for children in preschool.\(^20\) This finding has not yet been examined in older children with handwriting delays or immature grasps. Despite the gap in the literature on the effect of paper positioning, research describes what is typically observed in children’s writing behaviours and the relation between position and grasp.\(^6\)\(^,\)\(^19\)

**Considerations for Assessment:**

- Use paper that the child typically uses in the classroom
- Is the paper appropriately angled 30 to 35° with respect to the child’s hand, counter-clockwise for right-handed children, clockwise for left-handed children?
- Does the angle remain relatively stable throughout the assessment?
- Is the tool angled appropriately to the paper, with the tip away from the body?

E. Cursive Writing

Cursive writing is included in the Ontario school curriculum and is typically taught in grades three and four. Speed scores for cursive writing in grade four range from 13 to 75 letters per minute,\(^18\) which is a wider range than those for grade four printing.

**Considerations for Assessment:**

- Has the student learned cursive writing?
- Does the student prefer to use cursive or manuscript writing?
• If the student is comfortable/familiar with cursive writing, ask them to complete one of the tasks in cursive writing

IV. Analysis
A student’s handwriting speed and legibility are the two cornerstones of functional handwriting. Therefore, when analyzing the child’s written output, the occupational therapist should focus on these two components. It is important to examine both the process and product of the assessment since the product may suggest specific difficulties (e.g. visuospatial organization, language or spelling problems).

A. Handwriting Speed
Adequate writing speed is required to take notes, complete school assignments, and write timed tests. A student’s inability to keep pace with their peers can lead to frustration and decreased motivation to complete academic tasks. It can also have a detrimental effect on their grades.

Evidence:
Mean handwriting speeds for children have been reported according to grade level in a number of studies. Speed is an important consideration when assessing handwriting as speed and legibility are significant for performance. Published norms provide handwriting speeds measured in letters per minute. Across the various published sources, there is a great deal of variation, and Table 3 gives range speeds for each grade level. Unfortunately, no studies have measured typical handwriting speed for children in Senior Kindergarten. Therefore, this age group has not been included in the table. Handwriting speed generally increases with grade level; however, there are some differences between boys and girls after grade 4. Girl’s handwriting speed tends to level off between grades 4 and 5 and increase again at grade 6. Boy’s handwriting speed increases between grades 4 and 6, however this is at a slower pace than in the earlier grades. These differences may be due to different developmental gains and plateaus.

Table 3. Summary of handwriting speeds for children grades 1 to 6

<table>
<thead>
<tr>
<th>Grade</th>
<th>Handwriting Speeds (letters/min)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grade 1</td>
<td>(15 - 32)</td>
</tr>
<tr>
<td>Grade 2</td>
<td>(20 - 35)</td>
</tr>
<tr>
<td>Grade 3</td>
<td>(25 - 47)</td>
</tr>
<tr>
<td>Grade 4</td>
<td>(34 - 70)</td>
</tr>
<tr>
<td>Grade 5</td>
<td>(38 – 83)</td>
</tr>
<tr>
<td>Grade 6</td>
<td>(46 – 91)</td>
</tr>
</tbody>
</table>

Formula for calculating handwriting speed:

\[ \text{number of letters} = \frac{x}{\text{number of seconds}} \times 60 \]

Note: The number of letters for each timed task can be found in Table 1 on pages 8-9.

Example: Amanda, a Grade 1 student, copied the near point passage (“Here comes dad with four ice creams”) in 100 seconds.

\[ \frac{29}{100} = \frac{x}{60} \rightarrow \left(\frac{29 \times 60}{100}\right) = x \rightarrow x = 17.4 \]

Therefore, Amanda’s handwriting speed is 17.4 letters/minute.

Considerations for Assessment:
- Children’s handwriting speed typically increases from one grade level to the next, however there are some differences between boys and girls. Use of the above mentioned handwriting speeds (Table 3) as comparative normative data may assist therapists in determining whether a child is exhibiting functional handwriting abilities.
- Time of the (school) year in relation to speed; children tested in the latter part of the school year can be expected to write faster than those tested in September.
- Classroom expectations; handwriting speeds should not be considered in isolation. Handwriting speed may only become a problem when it prevents the child from completing classroom tasks.\(^5\)
- How often does the student need to look at the writing task while copying?

**B. Handwriting Analysis Checklist**

**Appearance**
Legibility comprises several components that can be assessed in a writing sample, including: slant, letter formation, spacing, alignment and size. Since handwriting is the primary means of communicating what has been learned, adequate handwriting legibility is vital to the academic success of the student. Students who struggle to master handwriting skills may also experience anxiety and frustration, both of which may negatively impact school performance and further compromise academic success.\(^25\)

<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>Assessment of handwriting legibility should focus on the evaluation of global legibility rather than individual letter formation.(^2) Evaluation of global legibility is a simple and quick way to assess the functional components of handwriting legibility.(^19) Focusing on global legibility avoids the use of time-consuming rating scales, while providing a clearer picture of the overall readability of the student’s work.(^26) Legibility is more likely to be better on short tasks than on tasks of longer duration. Further, letter legibility is more likely to be greatest at the beginning of longer tasks than in the middle or end of the task.(^8) When assessing legibility, the type of task completed should also be considered as handwriting tends to be more legible during copying tasks than when creating a narrative.(^22) Also, girls’ handwriting is typically more legible than boys’.(^27)</td>
</tr>
</tbody>
</table>

**Considerations for Assessment:**
- The assessor should consider the distinction between untidy and illegible handwriting as well as the effect of task duration on the legibility of the sample.
- Refer to the protocol for specific legibility concerns to note when analyzing the child’s written sample.

**Content**
The content of a student’s writing sample (especially composition) can also be analyzed to examine: planning, ideation, elaboration, cohesiveness, spelling, fluency, grammar, syntax, capitalization, punctuation, consistency, and proofreading. Evidence related to language difficulties, such as dyslexia, has been omitted from this assessment manual. Occupational therapists should evaluate the content of writing samples in order to facilitate referrals to appropriate professionals/agencies (e.g. speech language pathologists, school resource teachers), rather than address these issues themselves.

**Considerations for Assessment:**
- Check the sample carefully against the stimulus for omitted letters that are easy to miss.
- It is expected that the student has acquired all the skills prior to those he/she is mastering at the current writing level.
Section D

Clinical Decision-Making

Handwriting problems may stem from a variety of causes, most commonly: language, visual spatial or motor difficulties, or a combination of these. It is important that occupational therapists be able to distinguish between them in order to manage handwriting difficulties appropriately. Given the complexity of these difficulties, the variety of tasks being assessed allows the therapist to gain insight into a number of domains and skills. The next section of the manual includes assessment samples meant to illustrate the different types of handwriting problems that occur. These samples were obtained in 2006 and 2009 using the original and extended versions of the protocol. Some of the assessment stimuli from the 2006 data collection were different from the current protocol.

Assessment Sample #1: SK, girl (Roshani)

Assessment Findings: Roshani’s workstation was appropriate for learning except for the height of the chair, which was too high in relation to the desk, preventing the child’s feet from touching the floor. She consistently used a lateral tripod grasp (right-hand dominant) and pointed to the spot for the next letter to keep her place on the page. No behavioural concerns noted. Handwriting speed was average – 26.25 letters/min near point copying; 24.0 letters/min dictation. When examining the writing sample above, no major concerns are noted. Roshani used phonetic spelling once (‘appul’); however, letter size, spacing, pressure, and quality of lines were age-appropriate. Based on these findings, Roshani seems to be performing at her age-appropriate level and requires no intervention for handwriting.
Assessment Sample #2: Grade 1, boy (Nathan)

1234567890

This picture remis from me

I got a posy each year.

Assessment Findings: Nathan’s workstation environment facilitated proper seating posture during the assessment. He is right-hand dominant and consistently used the four fingers grasp (h). He displayed appropriate pressure and control of the writing instrument throughout the assessment. No behavioural concerns noted. When examining his writing sample shown above, the following can be seen: (1) mixing upper and lower case letters, (2) poor letter formation, (3) inconsistent spacing between letters and words, (4) inconsistent size of letters, and (5) letter and number reversals. It is clear from Nathan’s work, that he has spatial organization difficulties that are affecting the quality of his handwriting. Based on these findings, the occupational therapist would implement visual structures and strategies to assist spatial organization while writing.
Assessment Sample #3 and #4: Grade 1 twins, boys (Daniel and Kyle)

Daniel

ABCDEFghijklmnopqrstuvwxyz
The quick brown fox jumped over the lazy dogs.
A fast orange monkey ran up the tired tiger.

Kyle

A fast black dog hopped under the tired zebra.

Assessment Findings: The twins were motivated to complete the tasks. Daniel’s handwriting speed was slightly faster than his brother Kyle. By examining the writing samples of both children, similar characteristics can be seen, but to varying degrees. Both samples lack a fluidity to the letters. However, Kyle’s sample seems much more disorganized, with inconsistent spacing between letters and words. Both children display motor difficulties that are affecting the quality of their handwriting; Daniel demonstrates milder motor difficulties than Kyle, whose written product is much poorer by comparison. The occupational therapist would recommend beginning training on keyboarding, as well as postural strategies to accommodate for his low postural tone observed during the testing. The children may benefit from a writing program with direction instruction.
Assessment Findings: During the assessment, Remi was seated at a desk slightly too small in a chair that was slightly too short for his size; however, he was able to maintain correct seating posture throughout the assessment. He is right-hand dominant and used a four fingers grasp (h) with his index finger placed much higher on the shaft of the pencil. The pencil was gripped and controlled mostly with the thumb and middle finger. Pressure was slightly too strong and resulted in dark markings on the response paper. Remi’s movements were not fluid while writing – he repeatedly raised the pencil from the paper when forming letters and did so in an awkward position. No behavioural issues noted. Handwriting speed was in the normal range: 31 letters/min. Remi’s mother reports that he often gets fatigued when writing for longer periods, though this was not observed during the assessment. By examining Remi’s writing sample, the following was observed: (1) poor letter formation, (2) poor quality of lines (not smooth), (3) excessive pressure (markings too dark), (4) inconsistent size of letters, (5) poor orientation to baseline, and (6) letter (number) reversals. The legibility of Remi’s writing does not change across task, which indicates a physical production problem. The word ‘garden’ was spelled three different ways, which may indicate mild language difficulties (other spelling errors were age-appropriate). Inconsistent letter sizes and poor orientation to the baseline are likely a result of spatial organization difficulties. Thus, Remi represents handwriting difficulties that stem from a number of areas. Since this is the case, environmental and task modifications will be recommended along with visual structures and strategies to maximize his writing performance. The therapist should also check in with his teacher to ensure that his language development is being carefully monitored.

In spring we garden. May is gardening season. I like gardening.
Assessment Sample #6: Grade 2, girl (Sonia)

Assessment Findings: Sonia sat at a desk that was an appropriate size, however her chair was too high, which prevented her feet from touching the floor. No behavioural concerns were noted. She was left-hand dominant and consistently used a static tripod grasp throughout the assessment. Sonia’s sample demonstrates some minor copying errors (e.g. omitting the “u” in “because” and using a lower-case “f” instead of a capital for “Frog”). Her sample shows appropriate use of margins and orientation to the baseline. Based on these findings, Sonia appears to have grade-appropriate writing and no follow-up occupational therapy services are recommended.

Assessment Sample #7: Grade 2, girl (Alisa)

Assessment Findings: Alisa’s learning environment was structured appropriately and allowed correct seating posture for writing. She did not display any behavioural concerns during the assessment. Although Alisa blended some manuscript and cursive formations, the grasp used and pressure on the writing tool and paper were consistent. Her writing speed was near average range (19 letters/min). The following was noted in the writing sample shown above: (1) spelling errors in simple words (e.g. “ovr”), and (2) capitalization errors (e.g. “the cwek Barn fox”). Alisa demonstrates written language difficulties that are affecting the quality of her handwriting. Based on these findings, the occupational therapist would make a referral to a speech-language pathologist and/or resource teacher to address the language issues.
Assessment Sample #8: Grade 3, girl (Amrit)

Assessment Findings: Amrit’s workstation was appropriately organized to facilitate correct seating posture. No behavioural concerns noted. She used a lateral tripod grasp (right-hand dominant) consistently; however, the pencil grasp was quite tight, resulting in heavy pressure on the page. Handwriting speed was above the average range at 45 letters/min. In examining her writing sample, no significant concerns were noted. Amrit displayed age-appropriate writing and thus no follow-up is necessary.

Assessment Sample #9: Grade 4, girl (Nicole)

Assessment Findings: Nicole sat in a chair that was too high, although all other aspects of her work environment were appropriate. No behavioural concerns were noted. She used a lateral tripod grasp (left-hand dominant) throughout the assessment. Her handwriting speed while copying the passage was 48.3 letters/minute, which is within the average range for her grade level. Nicole’s sample demonstrates precise letter formation, consistent letter size, and appropriate spacing between words. Her sample also
demonstrates good baseline orientation. No concerns were noted with Nicole’s printing, and therefore, no occupational therapy follow-up is required.

**Assessment Sample #10: Grade 4, boy (Logan)**

Assessment Findings: Logan sat at a workstation that was appropriate for completing printing tasks. He consistently used a cross-thumb grasp (right-hand dominant), and often wrote with heavy pressure. His sample shows immature strokes and copying errors including missing the space between “a row” and omitting a second “l” in “really”. His sample demonstrates precise letter formation and appropriate use of margins. Based on these findings, Logan does not require any occupational therapy intervention.

**Assessment Sample #11: Grade 4, girl (Danika)**

Assessment Findings: Danika sat at a workstation that was appropriate for completing the writing tasks. She wrote with her right-hand and, depending on the task, alternated between a tripod grasp and a lateral grasp. Danika’s handwriting speed for the dictation was 11.5 letters/minute, which is significantly below the grade 4 average. She reversed “b/d/l/j/q/z/Z”, and mixed capital and lowercase letters during her dictation sentence. Danika had many spelling errors that were not phonetically correct. Spatially, her sample demonstrates difficulties with baseline orientation, incorrect letter placement, and inconsistent spacing between words. Danika’s sample also demonstrates imprecise letter formation and poor line quality. Based on these findings, it is recommended that Danika be referred to a speech-language pathologist and/or resource teacher to address her language difficulties. It is also recommended that the occupational therapist use visual structure and strategies, as well as task modification to address her spatial and motor skill difficulties. Given her grade level and the complexity of her problems, Danika is a candidate for assistive technology.
Assessment Sample #12: Grade 4, boy (Wei)

Assessment Findings: Wei sat at a workstation that was appropriate for completing writing tasks. There were no behavioural concerns noted during the assessment. He printed with a primary pencil and used a dynamic tripod grasp (right-hand dominant). Wei printed with heavy pressure and his letter formation was imprecise, indicating difficulties with motor skills. This sample demonstrates inconsistent size of letters, inconsistent spacing between words, poor baseline orientation, and improper use of margins, which suggest spatial difficulties. Wei did not use any punctuation and had difficulty expressing himself through written language, as evidenced by the incomplete composition. He misspelled grade appropriate words (e.g. “yoll” for “you’ll”, and “cakh” for “catch”), and he used simplistic vocabulary. Overall, Wei demonstrated difficulties with motor, spatial, and language skills. Based on these findings, it is recommended that Wei be referred to a speech-language pathologist and/or resource teacher for his language difficulties. He would also benefit from the implementation of visual cues and strategies to assist in his spatial difficulties, and modified tasks to address his motor skill difficulties. Given his grade level and the complexity of his difficulties, he is a candidate for assistive technology.
Assessment Sample #13: Grade 4, boy (Mark)

Assessment Findings: Mark sat at a workstation that was appropriate for writing, and was attentive and cooperative during the assessment. He was left-hand dominant and used a lateral tripod grasp consistently throughout the assessment. He copied the passage at a speed of 30.2 letters/minute, which is below average for his grade level. While he maintained appropriate tension on the pencil, he pressed hard on the paper creating heavy marks. Mark had significant spatial difficulties while copying the passage and lost his place several times. Following this, he was unable to self-correct, as demonstrated by the arrow he drew and the repetition of “I don’t know why”. His sample demonstrates poor organization on the page, as evidenced by the variation in his line spacing and his difficulty orienting to baseline. He also had inconsistent spacing between copied words. Based on the assessment findings, Mark would benefit from visual cues and strategies to accommodate and remediate his spatial difficulties.

Assessment Sample #14: Grade 5, girl (Annika)

The aik bran far cups
“When I grow up I want to be a daycare worker so I will take care of big kids and small kids and babies.”

Assessment Findings: Annika sat at a workstation that was too small for her height. No behavioural issues were noted. Annika wrote with her left hand and consistently used a cross-thumb grasp (f). Annika frequently used heavy pressure while printing. Her handwriting speed for the dictation (30.5 letters/minute) was below the average for grade 5, which was partially due to the fact she had difficulty with the word “quick”. There were significant language difficulties in Annika’s dictation and composition. Although her sample demonstrates minimal motor and spatial difficulties, her printing is difficult to understand due to spelling, grammar, and punctuation errors. Annika was able to formulate her thoughts in her composition, however, these thoughts were not clearly translated onto paper due to her difficulties with written language. It is recommended that Annika receive a referral for speech-language pathologist and/or resource teacher to address her language difficulties.

Assessment Sample #15: Grade 5, girl (Megan)
Assessment Findings: Megan was situated at a workstation that was appropriate for writing and no behavioural issues were noted. She was right-hand dominant and used a cross-thumb grasp consistently throughout the assessment. While copying the above task, Megan’s handwriting speed was 76.4 letters/minute, which is within the average range for her grade level. Within her sample, there is one transposition (“flims”), and she printed an “x” instead of an “s” in the word “mistakes”. Her sample demonstrates appropriate use of punctuation and margins, good orientation to the baseline, correct spacing between words, and precisely formed letters. Based on the assessment findings, Megan’s printing is grade appropriate and no follow-up occupational therapy services are required.

Assessment Sample #16: Grade 5, boy (Josh)

I like science because there are lots of experiments you can do. In science you can be very hands on. In science there is always something new you can learn.

Assessment Findings: Josh sat at a workstation that was appropriate for writing. No behavioural issues were noted. He was right-hand dominant and used a four-finger grasp consistently. He demonstrated significant language difficulties, which included spelling errors that were not phonetically correct or grade appropriate (e.g. “since” for “science”). Josh also used simplistic vocabulary and sentence structure for his grade level. Significant spatial difficulties were noted in his poor use of margins, inconsistent spacing between letters and words, and difficulty orienting his letters to the baseline. The size of his letters was also inconsistent (e.g., the “s” and “n” are much larger than the “e” in the first “since”). Josh also presented with motor difficulties, as demonstrated by his imprecise letter formation, including a tendency towards vertical strokes. Based on these findings, it is recommended that Josh be referred to a speech-language pathologist and/or resource teacher to address his language difficulties. To address his spatial difficulties, visual cues and strategies should be implemented, while keyboarding may also be trialed to help to compensate for both motor and spatial issues.
Assessment Findings: Sandeep sat at an appropriate workstation and was motivated to complete the printing tasks. He consistently used a cross-thumb grasp (right-hand dominant) and wrote with heavy pressure. Within his sample, Sandeep used the margins appropriately. He demonstrated other spatial difficulties, including inconsistent spacing between letters and words, inconsistent letter size, and incorrect letter placement (e.g. the p’s in “apprentice” were above baseline). Sandeep’s sample demonstrates poor line quality and imprecise letter formation. Overall, while completing the tasks, he had poor control of his pencil, which resulted in large, messy printing. Based on the assessment findings, it is recommended that Sandeep trial a keyboarding program to compensate for his motor and spatial difficulties.
Assessment Sample #18: Grade 6, girl (Nabila)

Assessment Findings: Nabila’s workstation was appropriate and there were minimal distractions in her work environment. She was cooperative and motivated to participate. Nabila consistently used a cross-thumb grasp (right-hand dominant). She wrote a composition that contained three paragraphs on ‘what she wants to be when she grows up’. Nabila’s composition was detailed and her paragraphs were all connected. Additionally, she demonstrated good use of punctuation and vivid description. Within her composition there were a few spelling mistakes (“agencie” and “comercials”), however, these errors were phonetically correct and grade appropriate. No significant concerns were noted and thus no occupational therapy follow-up is necessary.
Assessment Sample #19: Grade 6, girl (Marta)

Near Point Copying:

Drag is the force that works against the direction of flight of anything that is flying through the air. The amount of drag can be affected by shape. Fat, lumpy shapes with sharp edges create a lot of drag. They disturb the air and make it swirl about as they move along. Sleek, streamlined shapes have low drag and hardly disturb the air as they cut smoothly through it, so they fly fastest of all.

Composition:

When I grow up, I want to be an author. An author is a person who writes stories, which I love to do. I want to write fiction stories for kids. I love to write, whether it’s a story for a school assignment, with a topic I have write about or about anything I want. I love about little creatures living underground or about people living everyday life. I love to make-up my characters and their personalities. Writing is lots of fun.

I learned to write in school, with my teachers helping me. I started with the ABC’s, then small words, small sentences, big sentences and paragraphs. Later with school assignments and schoolwork, I improved. To help my writing, I practice of course, but I also read a lot. Seeing someone else’s work helps because I can learn from my mistakes and develop new ways to write.

My goal is to someday be a writer with many published books. I want to write stories for the newspaper too and maybe magazines. I hope I can become a great writer and people all over the world will read my stories.
Assessment Findings: Marta was seated at a workstation that was too small for her height. No behavioural issues were noted. Marta consistently used a static tripod grasp (right-hand dominant) and frequently wrote with heavy pressure. While completing the near point copying task, Marta wrote at a speed of 77.3 letters/minute, which is within the average range for her grade level. Her sample demonstrates good use of margins, baseline orientation, and spacing between words, as well as precise letter formation. Marta was asked to write three paragraphs about ‘what she wants to be when she grows up’. Within this composition, Marta included enough detail to support the topic, and had correct spelling, grammar, and punctuation. Overall, her composition contained a good variety of descriptive and expressive language. Marta was given the option to use cursive or printing and chose to use cursive for 3/5 tasks. No concerns were noted for Marta’s printing and cursive skills and therefore no occupational therapy follow-up is required.
Assessment Sample #20, #21, and #22: Grade 4, boys (Liam and Paul); and Grade 6, boy (Isiah)

Liam

I wake up. I eat some toast!! I get dressed.

Paul

On that cold November day, something caught my eye. It was a lively ball of fluff hopping from twig to twig in a leafless hedge. I forgot about the cold as I watched the agile little bird with the bluish green and white cheeks. I don’t know why, but from that moment I was hooked.

Isiah

Drag is the force that works against the direction of flight of anything that is flying through the air. The amount of drag can be affected by shape. Fat, lumpy shapes with sharp edges create a lot of drag. They disturb the air and make it swirl about as they move along. Sleek, streamlined shapes have low drag and hardly disturb the air as they cut smoothly through it, so they fly fastest.

Assessment Findings: These three samples demonstrate printing that appears legible and clear. However, due to slow handwriting speeds, the students are not performing at a level that is functional within a classroom setting. Each sample demonstrates a different cause for slow handwriting speed. Liam’s speed was obtained for near-point copying and dictation. His handwriting speed was 12.9 letters/minute and 21.2 letters/minute, respectively. Liam’s speed was impacted by word-finding difficulties, which limited his abilities to organize his thoughts. For his composition, Liam was asked to write about how he gets ready for school in the morning. Liam was slow to initiate this task and was only able to write three short sentences. Paul completed his near-point copying task at a handwriting speed of 26.7 letters/minute, which is below grade average. His sample demonstrates good use of margins, good baseline orientation, and precise letter formation. However, while completing the task, Paul was easily distracted, went off-task, and drew pictures, which significantly limited the speed of his writing. Isiah completed his near-point copying task at a speed of 21.2 letters/minute, which is also below grade average. He demonstrated precise letter formation, perseverating on forming each letter perfectly, which affected his handwriting speed. This is also demonstrated by Isiah’s use of heavy pressure, which resulted from his focus on the perfect formation of each letter.

Based on the findings from all three samples, it is recommended that Liam be referred to a speech-language pathologist to address his language difficulties. Paul would benefit from a modified environment to complete his work and the use of verbal and written cues to help keep him on-task. Isiah should be trialed on a keyboard to eliminate the need to form letters perfectly, and he would also benefit from task modification.
Assessment Sample #23, #24, and #25: Grade 5, boy (Trevor); Grade 6, boy (Kaleb); and Grade 4, girl (Ophelia)

**Trevor**

Baseball rocks!

I like baseball because I like running from markers without being touched and because well I know hitting a ball is funny. Being on a team is good for baseball because getting points is easy peasy, so you can get lots of points.

**Kaleb**

Friday the 13th

Friday the 13th is about the Voorhees family. Jason Voorhees is the main character. Pamela Voorhees is the killer in Friday the 13th. Jason is in Friday the 13th Part 1-12. Jason drowned in Part 1 and came back alive in Part 13 and.

My favorite one is Part 11.

Freddy vs Jason winner takes all. The funniest thing is they both survived. The worst one is Jason in space. He is in Space in the year 2077, we only saw the beginning. So now you learned about the slasher Jason.
Assessment Findings: These three compositions are examples of students who have grade appropriate language skills, but are limited by their motor abilities. The samples contain limited spelling mistakes, appropriate titles, vivid language, connected thoughts and ideas, varied sentence structure, and appropriate punctuation. However, in all three samples the students used heavy pressure and frequently erased errors. In addition, they all had imprecise letter formation, and inconsistent spacing between letters and words. Based on the findings from these writing samples, it is recommended that the students begin a keyboard training program. Additionally, task modification may be implemented to address these motor difficulties.
Assessment Sample #26, #27, and #28: Grade 4, boys (Jacob and Todd); and Grade 6, boy (Aidan)

Jacob

On that November day something caught my eye. It was a lively little ball of fluff hopping from twig to twig in a leafless hedge. I forgot about the cornice of oldage watching the agile little bird with the black cap and white chest. I didn’t know why, but from that moment I was hooked.

Todd

On that cold November day something caught my eye. It was a lively little ball of fluff hopping from twig to twig in a leafless hedge. I forgot about the cornice of oldage watching the agile little bird with the black cap and white chest. I don’t know why, but from that moment I was hooked.

Aidan

Drag is the force that works against the direction of flight of anything that is flying through the air. The amount of drag can be affected by shape. Fat, lumpy shapes with sharp edges create a lot of drag. They disturb the air and make it swirl. Shapes have low drag and hardly disturb the air as they cut smoothly through it. They fly fastest of all.
Assessment Findings: The above samples are examples of students with imprecise letter formation due to motor difficulties. All three samples demonstrate letter formations that are unclear and difficult to read. There is significant vertical motions and limited horizontal strokes while writing. It is recommended that the students be introduced to cursive writing, as the fluid motions used during cursive writing may enable and enhance the students’ ability to produce more precise and legible letter formations.
References


Appendix A

Grade-specific Near and Far Point Copying Assessment Tasks

- Senior Kindergarten Tasks (Pg. 37, 38)
- Grade One Tasks (Pg. 39, 40)
- Grade Two Tasks (Pg. 41, 42)
- Grade Three Tasks (Pg. 43, 44, 45; Note: tape the last two pages together)
- Grade Four Tasks (Pg. 46, 47, 48; Note: tape the last two pages together)
- Grade Five Tasks (Pg. 49, 50, 51, 52; Note: tape the last three pages together)
- Grade Six Tasks (Pg. 53, 54, 55, 56; Note: tape the last three pages together)
quack
zebra
how
stop
milk
candy
Here comes dad with four ice creams.
Now your friend is here at last.
There are many ways we can get exercise. When we can, we should walk or ride our bikes.
Freddie the Frog sat on his log. He was croaking because he wanted the squirrel to hear him.
Pretty soon Nick will be crawling and getting into everything. Many things in the house are not safe. Can you help me find these things so I can put them where Nick can’t get them?
“First, let me show you what we are looking for. Many things have labels on them,” Aunt Cathy explained.

“Each label has a
symbol that shows how it can hurt you,” said Aunt Cathy. “Let’s go through the house and look for anything that has one of these labels.
On that cold November day, something caught my eye. It was a lively little ball of fluff, hopping from twig to twig in a leafless hedge. I forgot about the cold as I watched the agile little bird with the black cap and white cheeks. I don’t know why, but from that moment I was hooked.
“My circus skills have really improved. I can juggle three balls. I can ride a unicycle for eight metres without falling. In tumbling, I
can do six front rolls in a row. I used to get dizzy from doing just one!"
Alyssa likes to be creative by editing her films. This is when she puts the scenes together to tell her story. She uses a computer software program to edit her films. By using this program, Alyssa has the ability to shorten scenes. She can also fix mistakes and change the order of the scenes.
As they docked, Captain Adams came out to meet them. “An impressive bit of navigating, young man,” he said, and
turned to Matthew’s father. “Mr. Cutler, your lad would be a first-rate apprentice in my shipyard. He can start tomorrow, if you
agree.” Matthew’s father smiled down at Matthew.
Drag is the force that works against the direction of flight of anything that is flying through the air. The amount of drag can be affected by shape. Fat, lumpy shapes with sharp edges create a lot of drag. They disturb the air and make it swirl about as they move along. Sleek, streamlined shapes have low drag and hardly disturb the air as they cut smoothly through it, so they fly fastest of all.
I finally got up enough nerve one day to “pitch” an idea for an article to a local newspaper. To my delight, the newspaper
was interested! I quickly wrote the story and sent it in, excited that this could be the first step to a career in writing. I didn’t tell my
family about the article. I was looking forward to surprising them with the published piece.
The McMaster
Handwriting Assessment Protocol 2nd edition

Please refer to the manual for further instruction and detail.

Name: ___________________________ Grade: ___________________________
DOB: ___________________________ Age: ___________________________
Assessor: ________________________ Date: ___________________________

I. Preliminary Information

Complete the following section prior to the seeing the student.

Reason for Referral:

Teacher’s Concerns:

Parent’s Concerns:

Student’s Concerns: (if appropriate)

Pertinent History from the Student Record: (e.g. recent vision testing, assessment reports)

II. Classroom Observation

Complete the following section by observing the student in his/her natural learning environment. Refer to manual for complete descriptions.

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</tr>
<tr>
<td>Activity level</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>Motivation</td>
<td>□</td>
<td>□</td>
</tr>
</tbody>
</table>

Comments:
Workbook review comments:

III. Testing

Complete the following during administration of the handwriting tasks. Please refer to the manual for grade-appropriate writing tasks (Table 1) and further instruction.

Use of Tools and Materials:
Describe the writing utensil, paper and any adaptive devices used during the assessment:

<table>
<thead>
<tr>
<th>Hand dominance?</th>
<th>Right</th>
<th>Left</th>
<th>Not established</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comments:</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Which grasp most closely resembles the student’s grasp when using his/her typical writing utensil?

- Radial cross palmar grasp
- Digital pronate grasp, only finger extended
- Grasp with extended fingers
- Static tripod grasp
- Lateral tripod grasp
- Other (describe):

<table>
<thead>
<tr>
<th>Effective stabilization of the paper with the non-dominant hand?</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tension on the writing tool appropriate?</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Pressure of the writing tool on the paper appropriate?</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Student uses the tool in a controlled fashion?</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Writing tool angled appropriately to the paper?</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Paper angled appropriately?</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>No comments or complaints of pain or fatigue?</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Student is able to read grade appropriate stimuli?</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>After reading composition, student is able to self-correct errors?</td>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>

Time to complete writing task:
To calculate handwriting speed, please see Section IV – ANALYSIS

<table>
<thead>
<tr>
<th>Writing Speed</th>
<th>Speed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Near point copying</td>
<td>seconds</td>
</tr>
<tr>
<td>Dictations</td>
<td>seconds</td>
</tr>
</tbody>
</table>

Observations and Comments: (Include behavioural, postural differences from classroom, etc.)
IV. Analysis

Complete this section following completion of the assessment.

Handwriting Speed:
Refer to example calculation on page 11 of manual.

<table>
<thead>
<tr>
<th>Writing Speed</th>
<th>Speed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Near point copying</td>
<td>letters/minute</td>
</tr>
<tr>
<td>Dictations</td>
<td>letters/minute</td>
</tr>
</tbody>
</table>

Handwriting Analysis Checklist:
Upon review of the student’s work, check the boxes that describe difficulties as they apply. Start at the S-K level and move up to the student’s grade level. Complete all sections up to and including the student’s grade level for appearance and content of the sample.

<table>
<thead>
<tr>
<th>Appearance</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Senior Kindergarten</td>
<td>1. Incorrect letter formation</td>
</tr>
<tr>
<td></td>
<td>2. Frequent erasures or smudging</td>
</tr>
<tr>
<td></td>
<td>3. Poor quality of lines i.e. lack of smoothness</td>
</tr>
<tr>
<td></td>
<td>4. Inappropriate or inconsistent pressure i.e. markings too light/dark or fluctuating</td>
</tr>
<tr>
<td>Grade 1</td>
<td>1. Inconsistent spacing between letters and words</td>
</tr>
<tr>
<td></td>
<td>2. Inconsistent size of letters i.e. e.g.</td>
</tr>
<tr>
<td>Grades 2/3</td>
<td>1. Incorrect letter placement e.g. hanging letters, such as “g” do not hang below baseline</td>
</tr>
<tr>
<td></td>
<td>2. Poor orientation to baseline</td>
</tr>
<tr>
<td></td>
<td>3. Poor use of margins</td>
</tr>
<tr>
<td></td>
<td>4. Poor organization on page</td>
</tr>
<tr>
<td>Grades 4/5/6</td>
<td>Text not clear or difficult to read due to:</td>
</tr>
<tr>
<td></td>
<td>1. Imprecise letter formation e.g. closure errors, lack of finish of strokes</td>
</tr>
<tr>
<td></td>
<td>2. Irregular spacing between letters and words</td>
</tr>
<tr>
<td></td>
<td>3. Crowding</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Content</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Grade 1</td>
<td>1. Spelling errors in simple, frequently encountered words, e.g. “the”</td>
</tr>
<tr>
<td>Grades 2/3</td>
<td>1. Overreliance on phonetic spelling</td>
</tr>
<tr>
<td></td>
<td>2. Letter omissions or transpositions e.g. “saw” for “was”</td>
</tr>
<tr>
<td></td>
<td>3. Letter reversals e.g. “b” for “d” or inversions e.g. “b” for “p”</td>
</tr>
<tr>
<td></td>
<td>4. Mixing of upper and lower case letters</td>
</tr>
<tr>
<td></td>
<td>5. Punctuation errors or omissions</td>
</tr>
<tr>
<td></td>
<td>6. Capitalization errors or omissions</td>
</tr>
<tr>
<td></td>
<td>7. Word omissions or repetitions</td>
</tr>
<tr>
<td></td>
<td>8. Simplistic vocabulary</td>
</tr>
<tr>
<td></td>
<td>9. Ideas poorly sequenced or linked</td>
</tr>
<tr>
<td></td>
<td>10. Limited productivity for grade (see manual for expectations)</td>
</tr>
<tr>
<td>Grades 4/5/6</td>
<td>1. Frequent spelling errors for grade level</td>
</tr>
<tr>
<td></td>
<td>2. Frequent sentence structure and/or grammatical errors</td>
</tr>
<tr>
<td></td>
<td>3. Frequent punctuation errors or omissions</td>
</tr>
<tr>
<td></td>
<td>4. Simplistic vocabulary</td>
</tr>
<tr>
<td></td>
<td>5. Uses only simplistic sentences</td>
</tr>
<tr>
<td></td>
<td>6. Ideas poorly sequenced or linked</td>
</tr>
<tr>
<td></td>
<td>7. Limited productivity for grade (see manual for expectations)</td>
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</tbody>
</table>