

# ***Measuring Handwriting Fluency***

***Timed-Writing Activities For Assessment  
Of Handwriting Skill Development***



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## ***Tracking Fluency - The Handwriting Connection to Language Arts Skills***

Gains in handwriting skill can be hard to judge when product (replication accuracy) is your focus. The fact is that a rather wide range of shapes can be read easily. Measuring handwriting progress becomes a huge challenge. For that reason many teachers are never confident that efforts to teach are making a difference for their students. There is a better assessment and it does not demand a huge investment of time from your schedule.

You will have students who can duplicate very accurately, the models provided for handwriting instruction. But, often that is only true when the student carefully attends to the handwriting task and takes far too long to finish a writing assignment. The production rate is far from fluent and automatic. Conversely, many students who work fluently on composition tasks, forget legibility goals entirely and you wind up struggling to read the writing. Fluent legibility should be the real goal of handwriting instruction and it is fluency that has been connected to development of all language arts skills. It makes sense to track fluency as your primary measure and include legibility as part of the equation. Your assessment of handwriting skills becomes totally different, and much easier.

The strategy to track fluency is quite simple. Use the chart included here to collect fluency data periodically. You could actually do this frequently because it does not demand a lot of time. Spelling or vocabulary words offer an excellent opportunity for a quick timed exercise during practice that usually occurs anyway. If each student keeps a copy of the chart he or she can add data after each exercise that provides an objective indicator of fluency over time. Consider tracking student fluency scores in your grade book. If you do this, you will soon see trends emerge. Where fluency scores are much lower than the average, you will also see poor spelling grades, and poor progress in vocabulary, composition as well as lagging reading skill development.

### ***Data Collection***

There are two effective processes for measuring handwriting fluency. One approach is “Task Defined” and the other is “Time Limited.” The quick and easy *Time Limited* activity simply measures the rate of production or letters-per-minute score. Different tasks can produce fluctuations in the score, but the variations are generally not dramatic if internalization has been successful. That is what we want to determine.

To use the “*Time Limited*” process, you ask the pupils to write while you control the time. Allow one minute for writing and count the number of legible letters written during the time allowed. The result is a fluency score, the number of legible letters per minute (LPM). You could allow even less time for simple writing tasks for primary children. Ask the pupils to write as many of the lowercase letters as they can remember, and allow 30 seconds. Count the legible letters and multiply by 2 to convert to LPM. Allow 20 seconds, count legible letters and multiply by 3 to convert. We are only looking for signs of internalization that allow fluent production.

The goal for kindergartners, for example, would be 40 LPM. It has been shown in a study repeated several times by K and grade-one teachers, that children who could produce the alphabet at that rate or better, were reading at or above expectations. Conversely, children who were struggling to write the alphabet fluently were the same pupils who were lagging in reading skill development. A *Time Limited* procedure is so quick and easy, you can “fit” an assessment into the busiest class schedule. And, participation in the activity will motivate because the child will realize the production challenge.

When you conduct the time limited activity, you will find yourself wondering if the student can actually write the whole alphabet from memory. There is good reason to find an answer to that question, particularly when a child is producing very slowly. That is the place for the *Task Defined* process.

By recording the amount of time required for the student to finish the task, you can find the answer to your task question, and establish a handwriting fluency score using the simple formula below. The fluency data becomes an objective measure for the exercise. The answer to your question will be much more complete. You can also use the formula to establish a “Words-Per-Minute” fluency score, which may be more sensible when using spelling or vocabulary words, particularly when cursive handwriting is the goal.

Using the “Task Defined” procedure is more demanding of your time because of the need for individual interaction. But, when the *Time Limited* procedure has identified students that need help, it makes good sense to find out how the poor fluency is affecting the child’s progress with learning written language. A Task Defined assessment may be the only way to discover specific needs and correct them.

### **The Task Defined Procedure**

Suppose you wanted to find out if a struggling student actually does know how to write all of the lowercase letters of the alphabet. He or she may only produce 19 or 20 forms during the one-minute timed writing exercise, so you don’t know if the child can actually write all of the forms. It makes sense to find out if the student is able to write all of the forms, and to time the activity to establish a fluency score at the same time.

Set up and explain the task for the student. Do you want to see all lowercase letters? Do you want to see numerals? Do you want to see capitals with lowercase letters and also the ten numerals?

Start the exercise and record the total amount of time needed for the pupil to complete the assignment. Here is an example. Let’s say the task was to write all 26 lowercase letters and the ten numerals (36 symbols). We measure the time needed for completion of the task as 1 minute and 50 seconds.

### **The Formula**

$$\frac{\# \text{ of letters/words} \times 60}{\text{Total \# of Seconds}}$$

Our example asks the child to write 36 symbols. We measured the time required for completion at 1 minute and 50 seconds. We convert the time to seconds and plug the numbers into the formula as shown below.

$$\frac{36 \text{ letters} \times 60 = 2160}{\text{Total \# of Seconds} = 110}$$

For this task, the formula reveals:

$$2160 \div 110 = \text{a very slow, 19.6 LPM}$$

If you prepare a sheet showing the target forms in advance, you could mark the specific forms that were causing the trouble as the child worked. The processing difficulty caused by a few forms that have not been internalized would be obvious. Now you can lead practice of those problem forms to develop the motor patterns that would allow the fluency score to improve. The trick is to lead practice of the right kind of movement. There is a distinct difference between movements guided by the visual feedback system and those guided by the patterns stored in the motor system.

Visually guided processing won’t allow the child to move through the sequence with smooth rhythm. You may see the child looking for a picture of the letter to help with recall of the shape. The visual system uses short-term memory processes that are not lasting and do not include stored movement dynamics.

When a pattern is stored in the long-term, muscle memory of the motor system, the child is able to “bring the form out of the brain” using smooth, rhythmic, goal-oriented movements. There is no need to look at a model and focus attention on production of the shape. The rate of production quickly increases once the student learns how to tap into the system. A first-grade student who has internalized effective patterns will be able to execute the simple alphabet exercise at the rate of 60 to 80 *legible* letters per minute, sometimes faster.

It should be obvious to educators that this ability enhances the learning of language skills, and the lack of fluency is retarding progress greatly. But, the majority of commercial programs used by teachers do not include fluency as a goal or show them how to measure it.

### ***About Fluency Tasks***

Writing one word multiple times is not as challenging as multiple words in a sequence or actual composition. A fluency score for composition would be the most telling because the task demands both *text generation* and *transcription*. More of your time is necessary for task defined assessments, but three or four during the year would be a good idea. Time Limited assessments could be done with several relatively simple tasks.

Ask students to write a spelling or vocabulary word repeatedly during a short exercise. Expand the task by choosing three words from the list and asking students to write the sequence repeatedly as time allows. Ask students to write their signature. Expand that task to name, address and telephone number. Ask students to define a vocabulary or spelling word in a task defined exercise that included a text generation challenge.

The chart provided has a field for activity identification. Activity codes below are listed on the form. Use A to identify the alphabet task. Hopefully, that exercise will become too easy very quickly.

SW = Single Word, SP = Signature Practice, MWS = Multiple Words, AW = Applied Work.

