# THE VALIDITY OF CURRICULUM-BASED MEASUREMENT IN WRITTEN EXPRESSION FOR STUDENTS IN SPECIAL EDUCATION

by

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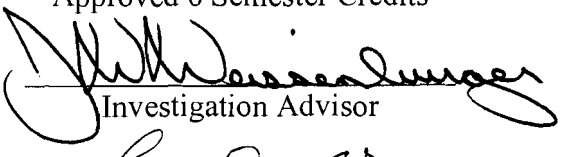

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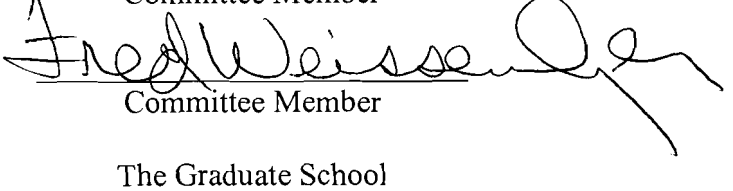

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## ABSTRACT

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The purpose of this study was to examine the technical adequacy of curriculum-based measures in written expression for students in special education. Students in the 4th-, 8th-, and 10th- grades from three Wisconsin public school districts participated in the study. Students generated two writing samples in response to story starters. The current study joins multiple previous studies that validate and warrant the use of production-independent curriculum-based measures (CWS and CWS-ICWS) to assist in identifying students with disabilities at multiple grade levels. Additionally, results suggest these measures, along with Total Words Written (TW), can be used to assess the writing growth of students with disabilities during their elementary and middle school years. However, more research needs to be conducted to examine the use of curriculum-based measures to monitor growth in writing proficiency for students with disabilities at all grade levels.

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# CHAPTER 1

## *Introduction*

Curriculum-based measurement (CBM) is a systematic procedure used to monitor students' progress in the basic skill areas of reading, spelling, mathematics, and written expression (Deno, 1985; Deno & Fuchs, 1987). These simple, short-duration, standard fluency measures facilitate the process of making informed instructional decisions by functioning as "academic thermometers" or "indicators" that monitor student growth within the basic skill areas (Shinn, 1998). With frequent measurement, it is possible to assess a student's educational growth through CBM. If a student shows improvement on one of these indicators, it can be inferred that there is general improvement in a broader academic domain (Espin, Scierka, Skare, & Halverson, 1999). For example, researchers have found that the number of words a child reads correctly in one minute is a good indicator of general reading ability (Deno, Mirkin, & Marston, 1980). Thus, a child who increases the number of words they read correctly in one minute is likely improving his or her broader reading ability, including the ability to comprehend reading passages.

Stanley Deno and colleagues at the University of Minnesota developed curriculum-based measurement (CBM) in the late 1970s. Deno's purpose was to create a way for special education teachers to accurately and efficiently evaluate the effectiveness of their instruction through monitoring the academic gains of their students (Deno, 1992). The original intent of CBM was to implement a system of assessment that allowed special education teachers to gauge the

effectiveness of their instruction through assessing what their students were achieving in the classroom. The methodology allowed educators to determine if the students were progressing satisfactorily in a specific academic area. Finding such a methodology was seen as particularly beneficial as special education law mandates that students in special education be continually monitored and progress reports must be sent to parents on a regular basis. Consequently, one can see how the characteristics of CBM, such as frequent measurement and continual monitoring, make it a popular choice for special education teachers.

CBM was developed to be sensitive to minor gains in a child's academic performance. Unlike standardized norm-referenced tests, CBM's sensitivity allows educators to ascertain short-term academic growth that may have been previously missed. CBM allows educators to map out a student's academic growth as frequently as they choose. If a child is struggling, CBM provides the means to identify when learning has reached a plateau. Educators are then able to identify variables that may be attributing to students' difficulties and implement appropriate changes.

It has been shown that teachers are more likely to construct and adapt their curriculum to benefit the needs of their students when they use CBM. As a result, students demonstrate higher rates of achievement in reading, math, and spelling (Fuchs & Fuchs, 1986). Thus, teachers can use the information they gain from implementing CBM measures to develop instructional strategies that promote success.

Since its inception, CBM has taken on a broader role within the general education curriculum. Increasingly, principals and other general educators are seeking out what CBM has to offer as a means for identifying and documenting student progress within the basic skill areas for entire school districts (Shinn, 1998).

Curriculum-based measures of writing, like other measures of student growth in academics, need to be valid according to some standard or criterion. Deno et al. (1980) asserted that written expression CBMs need to "be valid with respect to widely used measures of achievement in written expression" (p. 9), and they must be able to "discriminate between students receiving LD services and those not receiving such services" (p. 21). A test's ability to perform these two functions often is referred to as criterion-related validity (Messick, 1995).

Much research has been completed over the past decades on CBM in written expression. Initially, this research worked to establish the criterion-related validity of curriculum-based measures of written expression. Researchers posited that if the criterion-related validity of curriculum-based measures in writing could be established, educators could have confidence using such measures to monitor the academic progress of their students.

Through the process of establishing the criterion-related validity of CBM in written expression, researchers have found that what constitutes a valid measure of assessment for CBM in writing varies with educational level, and perhaps, even gender (Jewell & Malecki, 2005). For example, at the elementary level, having a student write for three minutes in response to a story starter and

then assessing how many words were written and the number of words written correctly has been found to be a good measure of writing ability (Deno et al., 1980). Yet, when looking at students in middle school and high school, the technical adequacy of these simple measures has not been established (Tindal & Parker, 1989; Watkinson & Lee, 1992; Espin et al., 2000). As students become older and develop better writing skills, there appears to be a need to increase the sophistication of our scoring procedures (Watkinson & Lee, 1992; Parker & Tindal, 1989; Parker et al., 1991; Espin et al., 2000). In addition, girls score significantly better when looking only at fluency measures (i.e., words written correctly); however, this difference may be reduced when educators adopt other measures (Jewell & Malecki 2005).

CBM was originally developed to formatively assess special education students. As time goes on, however, much of the recent research has focused on the reliability and validity of CBMs for entire school populations. These studies have identified newer, and more complex, CBM measures of writing proficiency. The more complex measures are also referred to as production-independent measures: a) correct word sequences (CWS) and b) correct minus incorrect word sequences (CWS-ICWS). To date, limited research has been conducted to directly examine the technical adequacy of these measures for students with disabilities. Further, researchers have not examined whether these production-independent measures are valid for differentiating the writing performance of general education and special education students at diverse grade levels.

### *Purpose of Study*

The purpose of this paper was twofold. First, it was to examine the existing literature on curriculum-based measures of written expression, specifically the criterion-related validity of curriculum-based measures in writing at various educational levels. This information provided a good groundwork for what is currently known about CBM in written expression. The second purpose of this paper was to expand the database and knowledge of the validity of more complex measures of CBM in written expression for students in special education. The following three research questions were addressed in the data analyses:

*1. Do CBM measures of writing (TW, CWS and CWS-ICWS) differentiate special education students from general education students?*

*2. Do CBM measures of writing (CWS and CWS-ICWS) detect growth from one grade level to another for students with disabilities?*

*3. Are CBM measures of writing (TW, CWS and CWS-ICWS) related to standardized measures of writing competence as assessed by a statewide assessment battery for students with disabilities?*

### *Definition of Terms*

CBM- Curriculum-based measurement (CBM) is a set of measures that can serve as critical indicators of academic performance in the basic skill areas of reading, writing, spelling, and mathematical computation (Deno, 1986).

Correct Word Sequence (CWS) - Two adjacent, correctly spelled words that are acceptable to a native speaker of the English language (i.e., the word

sequence is syntactically and semantically correct). Correct word sequences involve correctly spelled words, as well as the appropriate use of grammar, capitalization, punctuation, and conjunctions (Videen, Deno, & Marston, 1982).

Holistic rating- An examiner reads an essay and makes a brief, subjective judgment from their general impression of the passage (Tindal & Parker, 1989).

Incorrect Word Sequence (IWS)- Two adjacent words that are not acceptable to a native speaker of the English language (Videen et al., 1982).

Probe- A short, quick measure used to assess academic performance in one of the four basic skill areas (Shinn, 1998).

Production-dependent measures- Measures that assesses an individual's ability to write fluently (Tindal & Parker, 1989).

Production-independent measures- Measures that assess the accuracy of a writing sample (Tindal & Parker, 1989).

Story Starter- A short prompt used to initiate a student's writing sample. The following is an example of a story starter: "Pretend you are playing on the playground and a spaceship lands. A little green person comes out, calls your name, and..." (Shinn, 1998).

T-unit length- A T-unit length measures syntactic complexity. It includes a subject and a verb; consequently, it is able to stand alone as a sentence. Hunt (1966) defined T-unit length as a minimal terminable unit in a writing sample.

# CHAPTER 2

## *Review of Literature*

The following literature review will first describe curriculum-based measurement in writing. It will then examine what is currently known regarding the criterion-related validity of curriculum-based measures of written expression at various educational levels. Finally, recent articles published on CBM in written expression will be analyzed to help understand the research and future direction of CBM in writing.

### *What is Curriculum-based Measurement in Written Expression?*

Curriculum-based measurement in written expression allows educators to gauge a student's writing competency. Researchers have found that measuring how many words a child writes correctly in a 3-minute time sample is a good indicator of their general writing ability at the elementary level (Deno et al., 1980). Thus, an elementary child who increases the number of words written correctly in a 3-minute time period is likely improving his or her broader writing ability, including the ability to use proper grammar, correct punctuation, sentence structure, and story structure (Espin, et al., 1999).

In written expression CBMs, students are given a story starter and asked to write a story for three minutes in response to a prompt (e.g., It was a dark and stormy night). Counting the number of words written correctly, the number of words spelled correctly, and the number of correct word sequences in a writing sample is among the measures developed to assess a student's general writing proficiency via CBM (Deno et al., 1980).

*Criterion-Related Validity of Written Expression CBMs at the Elementary Level*

To establish the criterion-related validity of written expression in CBM, Deno et al. (1980) compared its accuracy to other systems of measurement (i.e., tests) previously identified as valid ways to measure writing proficiency. Criterion-measures included the Test of Written Language (Hammill & Larsen, 1978), the Word Usage subtest of the Stanford Achievement Tests (Madden, Gardner, Rudman, Karlsen, & Merwin, 1978), and the Developmental Sentence Scoring System (Lee & Canter, 1971). Deno and his colleagues collected writing samples from general education and learning disabled students in grades three through six. These samples were scored using the following measures: T-unit length, the number of mature words written, the total number of words written, the number of large words written, and the number of words spelled correctly. Three-minute samples of imaginary stories were written in response to picture prompts, story starters, or topic sentences. Excluding T-unit length, substantial correlations (ranging from .63 to .84 with the criterion measures) indicated strong relations between the existing four measures of written expression in CBM and the other forms of writing assessment at the elementary level.

To further establish the criterion-validity of CBM in written expression at the elementary level, Deno et al. (1980) compared the written performance of students receiving general education programming with those receiving services in learning disabilities resource programs. On all measures (mature words, total words written, large words, and words spelled correctly), excluding T-unit length, the mean group differences were statistically significant. CBM scores ranged

from 1.5 to 2.0 times greater for general education students compared to students identified as learning disabled. Thus, these measures demonstrated accuracy in differentiating the performance of resource room students from the performance of general education students. Further, a one-way ANOVA was conducted to determine whether the measures were sensitive enough to differentiate student performance across grade levels. Deno et al.'s findings were statistically significant for all measures, indicating CBM's validity in differentiating the written performance of students between grade levels and program placement.

In a replication study, Deno, Marston, and Mirkin (1982) found similar results to their original investigation. They chose six measures to assess a student's writing ability (T-unit length, mature words, total words written, word length, words spelled correctly, and letter sequences correct). These measures were analyzed to find the strength of their relations with other variables. These variables included already established criterion measures, such as the age of the students. They also examined whether the measures differentiated students identified as learning disabled from those receiving general education programming. Again, using the same criterion measures used in the Deno et al. (1980) study, this replication study found moderate to high correlations with all measures for stories written by elementary-aged children, excluding mean T-unit length. The total number of words written produced correlations ranging from .58 to .84, the number of words spelled correctly produced correlations ranging from .57 to .80, the number of correct letter sequences ranged from .57 to .86, and the number of mature words produced correlations ranging from .61 to .83. A two-

way ANOVA was conducted to determine the differences between age and program placement on a student's writing performance. Significant differences ($p < .001$) were found, indicating power in the ability of these written expression CBMs to differentiate students by age and program at the elementary level.

In a longitudinal study examining the relation between the performance of elementary students across grade levels and at different times within the school year (within-grade measurement), Marston, Lowry, Deno, and Mirkin (1981) found significant differences in the levels of student performance using all curriculum-based measures of writing. The researchers used the number of words written and the number of words spelled correctly to serve as measures of academic growth. They found that students outperformed the students in the grade below them at each increasing grade level. Further, significant growth was demonstrated when measuring the within-grade performance of students from fall to winter to spring. These findings further established the criterion-related validity of CBM in written expression as the measures were sensitive enough to accurately differentiate the performance of the students over time.

There is supportive evidence that CBM in written expression effectively discriminates between learning disabled students and general education students at the elementary level (Shinn & Marston, 1985). Shinn and Marston demonstrated that CBMs in written expression are able to differentiate between mildly handicapped students, low-achieving students, and general education students in the upper-elementary grades. In the Shinn and Marston study, 209 students (ranging from grades four through six) were presented with a story starter

and given three minutes to respond. The samples were scored by counting the number of words written correctly. As expected, students with mild disabilities produced significantly fewer correctly written words than the low-achieving students. Further, the low-achieving students had fewer correct words than the general education students. These findings suggest that counting the number of words written correctly in a passage is a valid, efficient way to differentiate among various levels of functioning at the upper elementary level.

*Criterion-Related Validity of Written Expression CBMs at the Middle School Level*

Other research has investigated the technical adequacy of CBMs of writing at the middle school level. For example, Tindal and Parker (1989), examined whether or not measures identified as valid indices of written expression for elementary students also would be technically adequate at the middle school level. Using a sample of 172 students, (i.e., 30 students from special education and 142 from remedial programs) the researchers administered a story starter and asked the students in grades six through eight to write for a total of six minutes. From this study, the researchers sought to answer if counting the total number of words written, the number of words spelled correctly, and the number of correct word sequences were valid in assessing the writing proficiency of older students. Not only did these simple measures fail to correlate favorably with the holistic ratings of student writing samples ($r$ = .10 to .45), they did not significantly differentiate between students in compensatory and special education placements. Tindal and Parker's findings suggest other measures may be more appropriate.

Through factor analysis, Tindal and Parker (1989) found that production-independent measures were better indicators of written expression at the middle school level. Production-independent CBMs were more highly correlated with the holistic ratings of essays than the production-dependent measures. Production-independent measures were defined as those that assess the grammar and syntax of writing or writing accuracy (i.e., percent of legible words, percent of words spelled correctly, percent of correct word sequences, and the mean length of correct word sequences). Production-dependent measures were defined as those that measure an individual's ability to write fluently (number of words written, number of words written legibly, number of words spelled correctly, and the number of correct word sequences).

Although Tindal and Parker (1989) found the percentage of words spelled correctly and the percentage of correct word sequences were the most valid indicators of written expression at the middle-school level, they are not feasible to assess growth over time, a principle use of CBM. Thus, these production-independent CBM measures were not found to be valid in monitoring writing performance over time. Still, these two percentage measures were able to discriminate between the educational placements of students in compensatory versus special education programs, and they had moderate to strong correlations with holistic ratings ($r$ =.73 and .75).

In an attempt to expand the research base on CBMs in written expression with middle school students, Watkinson and Lee (1992) examined the differences in writing samples produced by learning-disabled and non-disabled students.

Students in grades six through eight were administered a story starter. Their writing samples were scored using eight different CBM measures. Their results were similar to Parker and Tindal's (1989) findings. Students with learning disabilities scored significantly lower on the production-dependent factor of correct word sequences; however, there were no significant differences between the groups of students in the number of words written, the number of words written legibly, or the number of words spelled correctly. Thus, at the middle school level, there were not large differences in the ability to write fluently for the two student groups. Watkinson and Lee found that students with learning disabilities had significantly more difficulty than students in general education in writing accurately, especially on measures of correct grammar and proper syntax. Further, these researchers concurred with Parker and Tindal (1989) that production-independent measures (i.e., accuracy measures) instead of production-dependent measures (i.e., fluency measures) in written expression CBMs may be better at differentiating students with learning disabilities from students in general education at the middle school level.

Armed with the knowledge that percentage measures were inappropriate for indexing academic growth and the number of words written and words spelled correctly did not adequately discriminate among individuals above the elementary level, Espin et al. (2000) sought to identify the best indicators of writing proficiency for middle school students. In the Espin and colleagues study, three to five minute story writing and descriptive samples were collected and scored from a group of 112 students in grades seven and eight. Measures were the number of

words written, the number of words, the number of words spelled correctly, the number of words spelled incorrectly, the number of characters written, the number of sentences written, the number of characters per word, the number of words per sentence, the number of correct word sequences, the number of correct minus incorrect word sequences, and the mean length of correct word sequences. Criterion measures included a classroom teacher's rating of the students' writing proficiency and scores on a district writing test. The number of correct word sequences minus the number of incorrect word sequences (CWS-ICWS), also referred to as an accurate production score, was found to be a valid measure in identifying writing proficiency for middle-school students. Moderately high correlations were found between the CWS-ICWS scores and teacher ratings of the essay quality (.65 - .70). Further, the CWS-ICWS scores were significantly correlated with the district writing test (.69 - .75). In conclusion, the researchers found the accurate production measure of CWS-ICWS had the most support as an indicator of written expression at the middle school level. Further, no differences were found regarding the validity and reliability of writing samples using story starters versus descriptive writing (Espin et al., 2000).

*Criterion-Related Validity of Written Expression CBMs at the High School Level*

Others have focused their research on the technical adequacy of writing CBMs at the high school level. For example, Espin et al. (1999) collected data from 147 students in the 10$^{th}$ grade. The students in this study were randomly chosen from four groups of English classes: Learning Disabled, Basic, Regular, and Enriched English. The Language Arts subtest of the California Achievement

Test (CAT), the group placement of the students, the students' semester grades in English class, and holistic ratings of writing were all used as criterion measures in this study. After computing correlations on the CBM measures from the students' writing passages and criterion measures, researchers found the number of correct word sequences, the mean length of correct word sequences, the number of characters per word, and the number of sentences written, were the strongest predictors of writing proficiency. However, all of these correlations were low to moderate, ranging from $r = .34$ to .45. These results indicated that using one measure alone may be insufficient in assessing writing proficiency at the $10^{th}$ grade level. Using regression analyses, it was found that a combination of measures (the number of characters per word, the number of sentences written, plus the mean length of correct word sequences) predicted the criterion scores better than any single measure. This combination of measures yielded a moderately high correlation ($r = .62$) with the CAT Language Arts subtest. These results indicate that a combination of measures may be better than any single measure at predicting writing proficiency at the high school level. Further, it was found that combining the number of correct word sequences, the mean length of correct word sequences, the characters per word, and the number of sentences written, were effective in differentiating student groups (i.e., students in Basic versus Enriched English classes).

*Criterion-Related Validity of Written Expression CBMs Across Grade Levels*

Parker, Tindal, and Hasbrouck (1991) examined the criterion-related validity of written expression CBMs at the elementary, middle, and high school

levels (grades 2, 5, 6, 8, and 11). They sought to examine five indices of writing for making screening and eligibility decisions. These five indices included: the number of words written, the number of words spelled correctly, the number of correct word sequences, the percentage of correctly spelled words, and the percentage of correct word sequences. Using holistic ratings of writing proficiency, the researchers found the number of correct word sequences was found to be a good predictor of writing proficiency at all grade levels, with correlation coefficients as follows: Grade 2 (.60), Grade 5 (.55), Grade 6 (.52), Grade 8 (.56), Grade 11 (.48). Although the number of correct word sequences produced the strongest correlations with the holistic ratings, the researchers concluded that correct word sequences are not sufficient to make eligibility and screening decisions. The number of correct word sequences was found to be the most accurate predictor for differentiating between the grade levels for students who performed above the $10^{th}$ percentile. When looking solely at students performing below the $10^{th}$ percentile, the percentage of correct word sequences emerged as a better measure for differentiating student performance between grade levels.

*Recent Research Findings Regarding CBMs in Written Expression*

An accumulating body of evidence originally identified by Tindal and Parker (1989) and expanded upon by Watkinson and Lee (1992) and Espin et al (2000) suggests that the scoring procedures we use to assess CBM writing samples need to change with educational level. It appears that as students become

older and develop better writing skills, the sophistication of our scoring procedures may need to mimic these changes.

In a 2005 study by Jewell and Malecki, it was confirmed that production independent and accurate production measures had more validity for late elementary students (sixth grade) than fluency measures. Percentage of words spelled correctly, percentage of correct writing sequences, and correct minus incorrect writing sequences correlated most closely with their criterion measures (i.e., standardized achievement scores, analytic ratings, and classroom grade). In addition to this affirmation, new data was presented regarding gender differences. In their study, they found that girls performed significantly better across all grade levels (second, fourth, and sixth grade) on production dependent (fluency) measures; however, when production independent and accurate production scores were examined, no significant differences arose among the genders.

Historically, CBMs in writing are used to assist educators in assessing narrative and descriptive writing; however, at the secondary level and beyond, expository writing is most often used. Consequently, Espin et al. (2005) went beyond these initial validations of CBM to assess how well they predicted seventh and eighth grade students' expository writing skills. Findings from this study reaffirmed the appropriateness of using CWS and ICWS for assessing general writing proficiency, including expository writing ability. In addition, they found that short writing samples (i.e., 50 words) were able to gauge writing growth over time (a fundamental principle of CBM) for students on the lower end of the writing continuum (i.e., students identified with learning disabilities); however, a

longer sample of writing was needed to reveal growth over time for students at the higher end of the writing continuum.

Gansle et al. (2004) were the first investigators to measure the direct effects, if any, of a brief intervention on CBM writing samples. Taking what they knew about reading interventions, investigators had third and fourth grade students complete a pre-test. The students were then included in a peer group where they brainstormed together, wrote complete sentences on paper, and then received writing quality feedback from their teacher. Following this intervention, a post-test was given. They found that the total words written increased by three words post intervention; however, the writing accuracy scores, such as correct punctuation marks, did not significantly improve. Another purpose of the Gansle et al. study was to identify how closely the CBM scoring procedures of total words written, total punctuation marks, simple sentences written, and words in complete sentences predicted Woodcock Johnson-Revised (WJ-R) Writing Samples subtest scores. Researchers found that the total number of words written did not correlate well with that criterion measure; however, the production independent measures (i.e., total punctuation marks) did predict students' performance on the WJ-R.

*Summary of Literature Review*

In sum, initial CBM research in written language focused on assessing the writing performance of elementary-aged children. At the elementary level, there are numerous measures that an educator can use to confidently assess student performance in writing. Counting the total number of words written in a sample,

the number of large words written, the number of mature words written, the number of words spelled correctly, and/or the number of correct word sequences in a 3- to 5-minute writing sample have all received support as technically adequate ways to score an elementary student's written essay (Deno et al., 1980; Deno et al., 1982; Marston et al., 1981; Parker et al., 1991). Additionally, these same measures have been shown to differentiate the performances of students in special education compared to those in general education, as well as differentiate the written performance of elementary-aged students across grade levels (Shinn & Marston, 1985; Deno et al., 1980; Deno et al., 1982; Marston et al., 1981; Parker et al., 1991).

As students progress into the middle school years, their writing becomes more sophisticated. Researchers have found that the increasing sophistication of these writing samples needs to be juxtaposed with increasingly sophisticated scoring techniques (Watkinson & Lee, 1992; Parker & Tindal, 1989; Parker et al., 1991; Espin et al., 2000). Production-independent measures (i.e., accuracy measures) instead of production-dependent measures (i.e., fluency measures dependent on length of writing sample) in CBMs of written expression are the most valid indicators of written expression at the middle-school level, as they correlated most strongly with criterion measures (Tindal & Parker, 1989; Watkinson & Lee, 1992). Espin et al. (2000) found that counting the number of correct word sequences minus the number of incorrect word sequences was a valid measure in assessing middle school students' writing ability.

Unlike the elementary and middle school levels, there has been limited research at the high school level. Additionally, the research that has been done at this level has not yet established the validity of CBM measures in assessing writing performance. Espin et al. (1999) did find that a combination of measures (i.e., adding the number of characters per word, the number of sentences written, and the mean length of correct words sequences) may be better at predicting criterion measures at the high school level.

# CHAPTER 3

## *Methodology*

The purpose of this study was to expand the research on the technical adequacy of curriculum-based measurement in written assessment for students in special education across multiple grade levels. Data were collected from three, west central Wisconsin public school districts during January and February of the 2001-2002 school year.

### *Participants and Settings*

Three Wisconsin school districts participated in this study. One was in a suburban community, one in a small rural area, and the other was a rural public school in an incorporated farming community. All three schools reported attendance and graduation percentage rates in the middle to upper 90s. Average student ACT scores for these schools ranged from 20.7 to 22.3 (national mean = 21, $SD = 4.7$).

A total of 639 students from the $4^{th}$, $8^{th}$, and $10^{th}$ grades from the three school districts participated in the study (refer to Table 1 for the demographic breakdown of these students). The vast majority of students were identified as White (non-Hispanic).

Out of the total number of student participants, 484 (75.74%) produced usable data sets (i.e., complete and readable). Incomplete data sets were produced by 122 students (19.09%) due to absences on the data collection or statewide testing dates. Unreadable data sets, largely due to copy machine errors, were responsible for an additional 27 students (4.23%).Unreadable data sets, due to

illegible writing, accounted for less than 1% (.94%) of the total student participants. In addition, 49 students failed to mark their place after the 3- and 5-minute time periods, resulting in a total of 435 readable and complete data sets for the data analyses at the 3- and 5- minute time periods.

Out of the 484 usable data sets, 55 students were identified as receiving special education services. Out of the 55, 44 were categorized as learning disabled, two were identified as having emotional-behavior disorder, six received speech and language services, and six were categorized as receiving other types of special education services.

Table 1

*Sample Characteristics and Participant Population*

| Demographic | Special Education | General Education |
|---|---|---|
| Gender | | |
| Male | 34 | 221 |
| Female | 21 | 208 |
| Grade | | |
| 4th | 24 | 160 |
| 8th | 15 | 122 |
| 10th | 16 | 147 |

| Demographic | Special Education | General Education |
|---|---|---|
| School | | |
| District #1 | 24 | 212 |
| District #2 | 8 | 34 |
| District #3 | 23 | 183 |
| Ethnicity | | |
| Asian American | 1 | 1 |
| Black/African American | 1 | 1 |
| Hispanic/Latino | 0 | 0 |
| Native American | 0 | 3 |
| Pacific Islander | 2 | 8 |
| White/Caucasian | 51 | 416 |
| Economic Status | | |
| Free/Reduced Lunch | 13 | 49 |
| No Free/Reduced Lunch | 42 | 144 |
| Not Reported | 0 | 236 |
| English Language Status | | |
| English Language | 53 | 426 |
| English-as-a-Second Language | 2 | 3 |

*Procedure*

Following permission from school districts, two data collection times were established. The writing samples were collected in a two-week time frame. Special precaution was taken to ensure that the special education students would be in their general education classrooms during the data collection times.

During each data collection session, students were asked to compose writing samples in response to two separate story starters (i.e., Form A: "I stepped into a time machine," and Form B: "It was a dark and stormy night"). To control for order effects, the administration of each story starter was counterbalanced within each grade level. Following the story starter, students were given 30 seconds to think and 10 minutes to write. At the end of the 3- and 5-minute intervals, the students were informed to mark the last word written (for the purpose of this paper only the 10 minute sample was used).

The writing samples were collected by classroom teachers and given to the school districts' secretaries. The secretaries made copies and returned the originals to the teachers so they could use them for instructional purposes. The secretaries removed the student names from copies and assigned a number code to each student to protect anonymity. The secretaries provided the following demographic information for each student (i.e., gender, grade level, age, ethnicity, language status, eligibility for free/reduced lunch, and special education status). In addition, secretaries provided, in coded form, the WKCE results for each student, including their holistic writing scores and their Normal Curve Equivalent (NCE)

scores for each subject area (i.e., Reading, Language Arts, Science, Social Studies, and Math).

*Instrumentation*

*Curriculum-based measures*

Curriculum-based measures were derived by mean scores from the two writing samples. These stories were scored in 3-, 5-, and 10-minute segments to allow for separate data analyses for each time period. The writing samples were scored using the following three measures: total number of words written, number of correct word sequences, and number of correct minus incorrect word sequences.

*Definition of each procedure*

The total number of words written (TW) was derived by simply counting the number of words written in 3-, 5-, and 10-minutes. A word was defined as any letter or sequence of letters separated by a space.

Correct word sequence (CWS) was composed of two adjacent writing units (i.e., word-word, word-punctuation). To be scored as a correct word sequence, words needed to have accurate conventions (spelling, capitalization, punctuation) and be syntactically and grammatically correct.

Correct minus incorrect word sequences (CWS-ICWS) was derived by simply subtracting the number of incorrect from the number of correct word sequences. Incorrect word sequences consisted of adjacent writing sequences that were syntactically or grammatically incorrect, incorrectly spelled, capitalized or punctuated.

*Criterion measures*

The Normal Curve Equivalent (NCE) scores from the Language Arts subtest of the Wisconsin Knowledge and Concepts Exam (WKCE) were used as one criterion measure for all grade levels. Holistic writing scores from the WKCE (i.e., CTB Writing Assessment System) were also used as criterion measures for the fourth and eighth grade samples.

Since a direct writing assessment from the WKCE was not administered to the states tenth-graders during the 2001-2002 academic year, an experienced high school English teacher was hired to use the WKCE holistic scoring guidelines to holistically rate each $10^{th}$-grade CBM sample. This procedure resulted in using a different holistic criterion measure for the $10^{th}$-grade samples.

*Curriculum-Based Measurement Scoring*

The author's thesis advisor and six graduate students at the University of Wisconsin-Stout scored the CBM writing samples. Students were trained in two one-hour sessions. Students needed to achieve 90% or above on agreement ratios with the advisor to participate as scorers for the study.

*Data Analyses*

The first research question addressed the discriminate validity of the CBM scores. To examine the ability of the CBM measures to differentiate the performance of general education students from those of students with disabilities, a One-Way Analysis of Variance (ANOVA) analyses were conducted at each grade level for both curriculum-based measures. Due to the exploratory

nature of the study, a more liberal *p* value of .05 was adopted to determine statistical significance.

The second research question addressed the developmental validity of the CBM measures. To examine whether the CBM scores increased according to grade level for students with disabilities, a mixed between-within-subjects Analysis of Variance (ANOVA) was conducted for each measure. As before, a *p* value of .05 was adopted to determine statistical significance.

To answer research question number three addressing the criterion-related validity of the measures for students with disabilities, bivariate Pearson product-moment correlation coefficients were computed between the mean CBM scores from the writing samples and the criterion measures: the WKCE Language Arts NCE scores for all grade levels, the WKCE holistic writing scores for the $4^{th}$- and $8^{th}$-grade samples, and the holistic scores applied to the $10^{th}$-grade samples by a high school English teacher. A *p* value of .05 was applied to determine the statistical significance of the correlation coefficients.

# CHAPTER 4

## *Results*

Three research questions were initially proposed in this study. The results of analyses of these questions will be presented in the following paragraphs. First, preliminary analyses will be provided addressing the descriptive statistics of the data. See Table 1 for the means and standard deviations of the curriculum-based measurement scores.

The first research question proposed in this study looked at the ability of CBM writing measures to differentiate between students in special education and students in general education. Table 1 provides the means and standard deviations for each group and grade level. The statistical analysis used to address this question was a simple one-way Analysis of Variance (ANOVA). Results reported in Table 2 show that both Correct Word Sequences (CWS) and Correct minus Incorrect Word Sequences (CWS-ICWS) are able to differentiate students in general education from those in special education at the $p < .01$ significance level for all grade levels.

Table 1

*Descriptive Statistics for Group and Grade Level*

| | CWS-ICWS[a] | | CWS[b] | | TW[c] | |
|---|---|---|---|---|---|---|
| Grade/Measure | SpEd | GenEd | SpEd | GenEd | SpEd | GenEd |
| Grade 4 | | | | | | |
| Mean | 18.33 | 61.95 | 60.96 | 91.44 | 93.08 | 111.11 |
| SD | 36.25 | 41.75 | 32.96 | 41.31 | 40.73 | 44.09 |
| N | 23 | 160 | 23 | 160 | 23 | 160 |
| Grade 8 | | | | | | |
| Mean | 82.47 | 153.48 | 138.20 | 175.17 | 181.37 | 181.06 |
| SD | 48.96 | 49.56 | 39.06 | 46.30 | 40.29 | 44.12 |
| N | 15 | 122 | 15 | 122 | 15 | 122 |
| Grade 10 | | | | | | |
| Mean | 105.56 | 171.61 | 153.91 | 189.25 | 189.13 | 193.47 |
| SD | 68.12 | 50.40 | 52.33 | 47.47 | 48.40 | 44.14 |
| N | 16 | 147 | 16 | 147 | 16 | 147 |

*Note.* [a]CWS represents Correct Word Sequences written in 10-minutes. [b]CWS-ICWS represents Correct Minus Incorrect Word Sequences written in 10-minutes. [c]TW represents Total Words Written in 10-minutes.

Table 2

*Analysis of Variance for Student Performance*

| | *Df* | *F* | Sig. |
|---|---|---|---|
| Grade 4 | | | |
| CWS-ICWS | 1 | 22.632 | .000 |
| CWS | 1 | 11.456 | .001 |
| Grade 8 | | | |
| CWS-ICWS | 1 | 27.492 | .000 |
| CWS | 1 | 8.777 | .004 |
| Grade 10 | | | |
| CWS-ICWS | 1 | 23.012 | .000 |
| CWS | 1 | 7.843 | .006 |

Research question two addressed the ability of CBM writing measures to detect growth from one grade level to another for students in special education. To examine whether or not growth occurred from one grade level to another, a repeated measures Analysis of Variance (ANOVA) was conducted for each curriculum-based measure: Total Words Written (TW), Correct Word Sequences (CWS), and Correct Minus Incorrect Word Sequences (CWS-ICWS).

For TW, significant effects were found for growth over time ($F(2,41) = 26.587, p < .000$). Bonferroni post hoc analyses revealed that TW is good for

measuring growth between grade four and grades eight ($p < .000$) and ten ($p < .000$); however, no significance was found between grades eight and ten.

For CWS, significant effects were again found for growth over time ($F(2, 40) = 19.113, p < .000$). Bonferroni post hoc analyses revealed that for CWS, the only significant differences were between grade four and grades eight ($p < .000$) and ten ($p < .000$).

For CWS-ICWS, similar results were found. Significant results demonstrated growth over time ($F(2, 40) = 9.103, p < .001$). Again, Bonferroni post hoc analyses showed that CWS-ICWS demonstrated good results for measuring growth between grades four and grades eight ($p < .01$) and ten ($p < .001$), but not between grades eight and ten.

Table 3

*Analysis of Variance for Growth Between Grade Levels*

| CBM Measure | *Df* | *F* | Sig. |
|---|---|---|---|
| | | Between Subjects | |
| TW | 2 | 26.59 | .000 |
| CWS-ICWS | 2 | 9.10 | .001 |
| CWS | 2 | 19.11 | .000 |

The final research question looked at the relationship between performance on CBM writing measures and standardized measures (WKCE) for students in special education. Bivariate Pearson product-moment correlation coefficients were computed between the mean CBM scores from the writing samples and the criterion measures to answer this question. Results reported in Table 4 reveal inconsistent results. Fourth grade and tenth grade CBM samples scored for CWS-ICWS were the best predictors of the WKCE measures. Additionally, CWS were significantly correlated with the WKCE Language Arts test for tenth grade students. Criterion-related validity for the eighth grade appeared weak due to insignificant correlations.

Table 4

*Criterion-Related Validity of CBM writing samples*

| | TW[a] | | | CWS[b] | | | CWS-ICWS[c] | | |
|---|---|---|---|---|---|---|---|---|---|
| Grade/Measure | WS[d] | LA[e] | H[f] | WS[d] | LA[e] | H[f] | WS[d] | LA[e] | H[f] |
| Grade 4 | n = 24 | n = 24 | | n = 23 | n = 23 | | n = 23 | n = 23 | |
| Pearson *r* | -.036 | -.009 | - | .283 | .331 | - | .467* | .608* | - |
| Sig. | .867 | .968 | - | .191 | .123 | - | .025 | .002 | - |
| Grade 8 | n = 15 | n = 15 | | n = 15 | n = 15 | | n = 15 | n = 15 | |
| Pearson *r* | .236 | -.402 | - | .203 | -.136 | - | .111 | .085 | - |
| Sig. | .397 | .137 | - | .467 | .629 | - | .695 | .762 | - |
| Grade 10 | | n =16 | n =10 | | n = 16 | n =10 | | n = 16 | - n =10 |
| Pearson *r* | - | .234 | .588 | - | .524* | .498 | - | .622* | .588 |
| Sig. | - | .384 | .074 | - | .037 | .143 | - | .010 | .074 |

*Note.* [a]TW represents Total Words Written. [b]CWS represents Correct Word Sequences. [c]CWS-ICWS represents Correct Minus Incorrect Word Sequences. [d]WS represents the WKCE Writing Score. [e]LA represents the WKCE Language Arts Score. [f]H represents the teacher-applied holistic score for the 10th grade students.

* $p > .05$, two-tailed.

# CHAPTER 5

## *Summary and Discussion*

The primary purpose of this study was to further the knowledge available on CBM in written expression. The vast majority of research done in this area examined whole grade and/or school populations which encompassed general education students with those students in special education. Consequently, limited data exists on the validity of CBM measures when looking exclusively at students in special education. This current study directly measured the technical adequacy of curriculum-based measures in written expression for students in special education.

## Results

### Question #1

#### *Differentiating Students in General Education from Special Education*

Results of this study further validate that production-independent curriculum-based measures in written expression are able to accurately differentiate students in general education versus those in special education (Espin et al., 1999; Lee & Watkinson, 1992; Parker & Tindal, 1989). From a substantial body of research, it seems that schools can confidently use the number of correct word sequences and the number of correct minus incorrect word sequences in scoring curriculum-based measures of writing to assist in the identification of students with disabilities at multiple grade levels.

## Question #2

### *Using CBM as a Growth Indicator*

One of the defining features of curriculum-based measurement is that it can be used frequently to assess growth. When looking at fourth-, eighth-, and tenth-graders, one would expect to find significant differences in their performance from one grade level to the next. Thus, an eighth-grader should demonstrate better writing skills than a fourth-grader: As such, students will show growth from year to year in their writing abilities. Significant differences were found on these measures, indicating positive growth, when looking at the performance of students in special education in the fourth grade versus students in special education at the secondary level. Results were similar when looking at the measures of correct word sequences (CWS) and correct minus incorrect word sequences (CWS-ICWS). However, CWS and CWS-ICWS were not sensitive enough to measure growth from the eighth grade to the tenth grade in this study. Research completed by Espin et al. (1999) indicated that a combination of measures or more complex measures may be better at predicting scores at the high school level than any one simple measure. In keeping with this statement, perhaps a better way to assess writing growth from the eighth to the tenth grade would be to look at more complex or combination measures rather than one production-independent CBM measure such as CWS or CWS-ICWS, as was done in this study.

## Question #3

### *Criterion-Related Validity*

Results from this study revealed inconsistent results when looking at the criterion-related validity of CBM writing samples with student performance on the WKCE for students in the fourth, eighth, and tenth grades. For special education students in the fourth grade, CWS-ICWS was the best predictor of performance on the WKCE Writing Score and the WKCE Language Arts subtest, indicating good criterion-related validity for this CBM measure at that grade level. For tenth graders, the CBM measures of CWS and CWS-ICWS were significantly correlated with performance on the WKCE Language Arts subtest. However, they did not correlate with the teacher applied holistic scores for the samples written by $10^{th}$ grade students with disabilities.

For students in special education in the eighth grade, no CBM measure was significantly related to the criterion measures. This finding is contrary to previous research that identified CBM production-independent measures as having good criterion-related validity for middle school students; however, this previous research included whole school populations, not just students in special education. More research needs to be done with larger special education populations as it appears that the assumption can not always be made that the performance of students with disabilities is similar to those in general education.

### *Limitations of Study*

The largest limitation of this study was the total number of participants. Unfortunately, the number of students in special education is typically around

10% of a total school population; consequently, this limits the sample size when collecting data from participating districts. As a result, the current findings may be skewed. Perhaps the poor criterion-related validity correlation coefficients generated by eighth grade students in special education would be improved if a larger number of participants with mild disabilities were included.

A further limitation of this study is the ability to generalize the results to other groups of students in special education. The data was collected from a specific area of west central Wisconsin, with the vast majority of students categorized as White or Caucasian and from rural or suburban areas.

Another limitation of this study is the lack of WKCE Writing Assessment holistic scores for 10th grade students. During data collection, the WKCE Writing Assessment was not administered to the tenth grade students as had been done in previous years. Consequently, a classroom teacher was hired to score the student writing samples as a substitute for the holistic score typically produced by the WKCE. Results showed that student performance was correlated with the WKCE Language Arts subtest; however, the CBM measures were not strongly correlated with the teacher constructed holistic scores at the 10th grade level.

Lastly, these findings should only be generalized to the specific grades assessed (4th-, 8th-, and 10th). It is easy to generalize these results to the elementary, middle, and high school level; however, each grade needs to be represented before making those types of generalizations.

### *Implications for Future Research*

This study points to the need for more research assessing the reliability and validity of curriculum-based measures for students in special education, as these results indicate educators should not always generalize results taken from whole school populations and apply them to students in special education. It would be particularly beneficial to look at the performance of students in special education with identified reading and/or writing delays. More research examining the use of more complex or a combination of CBM measures for students with disabilities at the secondary level would also be beneficial.

### *Implications for Practice*

A number of implications for practice can be taken from the current study. First, CWS and CWS-ICWS can be used to screen and/or identify students with disabilities at all grade levels. Additionally, TW, CWS, and CWS-ICWS can be used to measure writing growth from the fourth grade to the eighth grade for students with disabilities. Finally, CWS-ICWS can be used to predict performance on the WKCE Language Arts test for fourth and tenth grade students with disabilities.

### *Summary*

The purpose of this study was to examine the technical adequacy of curriculum-based measures in written expression for students in special education. Students in the $4^{th}$-, $8^{th}$-, and $10^{th}$- grades from three Wisconsin public school districts participated in the study. Students generated two writing samples in response to story starters. The current study joins multiple previous studies that

validate and warrant the use of production-independent curriculum-based measures (CWS and CWS-ICWS) to assist in identifying students with disabilities at multiple grade levels. Additionally, results suggest these measures, along with Total Words Written (TW), can be used to assess the writing growth of students with disabilities during their elementary and middle school years. However, more research needs to be conducted to examine the use of curriculum-based measures to monitor growth in writing proficiency for students with disabilities at all grade levels.

## References

Deno, S. (1985). Curriculum-based Measurement: The emerging alternative. *Exceptional Children,* 52, 219-232.

Deno, S. (1986). Formative evaluation of individual student programs: A new role for school psychologists. *School Psychology Review, 15,* 358-374.

Deno, S. (1989). Problem solving and special education services: A fundamental and direct relationship. In Shinn, M.R. (Ed.), *Curriculum-based measurement: Assessing special children* (pp. 1-17). New York: Guilford Press.

Deno, S. (1992). The nature and development of curriculum-based measurement. *Preventing School Failure, 36*(2), 5-10.

Deno, S., & Fuchs, L.S. (1987). Developing curriculum-based measurement systems for data-based special education problem solving. *Focus on Exceptional Children, 19,* 1-15.

Deno, S. L., Marston, D., & Mirkin, P. L. (1982). Valid measurement procedures for continuous evaluation of written expression. *Exceptional Children, 48,* 368-371.

Deno, S. L., Marston, D., Mirkin, P. L., Lowry, L., Sindelar, P., & Jenkins, J. (1982). *The use of standard tasks to measure achievement in reading, spelling, and written expression: A normative and developmental study* (Research Report No. 87). Minneapolis: University of Minnesota, Institute for Research on Learning Disabilities.

Deno, S. L., Mirkin, P. K., & Marston, D. (1980). *Relationships among simple*

*measures of written expression and performance on standardized achievement tests* (Research Report No. 22). Minneapolis: University of Minnesota, Institute for Research on Learning Disabilities.

Espin, C. A., De La Paz, S., Scierka, B. J., & Roelofs, L. (2005). The relationship between curriculum-based measures in written expression and quality and completeness of expository writing for middle school students. *Journal of Special Education, 38,* 208-217.

Espin, C. A., Scierka, B. J., Skare, S., & Halverson, N. (1999). Criterion-related validity of curriculum-based measures in writing for secondary students. *Reading and Writing Quarterly, 15*(1), 5-27.

Espin, C. A., Shin, J., Deno, S. L., Skare, S., Robinson, S., & Benner, B. (2000). Identifying indicators of written expression proficiency for middle school students. *Journal of Special Education, 34* (3), 140-154.

Fuchs, L. S., & Fuchs, D. (1986). Effects of systematic formative evaluation on student achievement: A meta-analysis. *Exceptional Children, 53*, 199-208.

Gansle, K. A., Noell, G. H., VanDerHeyden, A. M., Slider, N. S., Naquin, G. M., Hoffpauir, L. D., & Whitmarsh, E. L. (2004). An examination of the criterion validity and sensitivity of alternate curriculum-based measures of writing skills. *Psychology in the Schools, 41,* 291-300.

Hammill, D., & Larsen, S. (1978). *Test of Written Language*. Austin, TX: Pro-Ed.

Hunt, K. W. (1966). Recent measures in syntactic development. *Elementary English, 42*, 732-739.

Jewell, J., & Malecki, C. K. (2005). The utility of CBM written language indices:

An investigation of production-dependent, production-independent, and accurate-production scores. *School Psychology Review, 34,* 27-44.

Lee, L., & Canter, S. (1971). Developmental sentence scoring: A clinical procedure for estimating syntactic development in children's spontaneous speech. *Journal of Speech and Hearing Disorders, 36,* 315-340.

Madden, R., Gardner, E., Rudman, H., Karlsen, B., & Merwin, J. (1978). *Stanford Achievement Test.* New York: Harcourt Brace Jovanovich.

Marston, D., Fuchs, L. S., & Deno S. L. (1986). Measuring pupil progress: A comparison of standardized achievement tests and curriculum-related measures. *Diagnostique, 11,* 77-90.

Marston, D., Lowry, L.., Deno, S. L., & Mirkin, P. (1981). *An analysis of learning trends in simple measures of reading, spelling, and written expression: A longitudinal study* (Research Report No. 49). Minneapolis: University of Minnesota, Institute for Research on Learning Disabilities.

Messick, S. (1995). Validity of psychological assessment: Validation of inferences from persons' responses and performances as scientific inquiry into score meaning. *American Psychologist, 50*(9), 741-749.

Parker, R., Tindal, G., & Hasbrouck, J. (1991). Countable indices of writing quality: Their suitability for screening-eligibility decisions. *Exceptionality, 2,* 1-17.

Shinn, M. R. (Ed.). (1998). *Advanced applications of curriculum-based measurement.* New York: Guilford Press.

Shinn, M. R., & Marston, D. (1985). Differentiating mildly handicapped, low-

achieving, and regular education students: A curriculum-based approach. *Remedial and Special Education, 6*(2), 31-45.

Shinn, M. R., Ysseldyke, J. E., Deno, S. L., & Tindal, G. A. (1986). A comparison of differences between students labeled learning disabled and low achieving on measures of classroom performance. *Journal of Learning Disabilities, 19*, 545-552.

Tindal, G., & Parker, R. (1989). Assessment of written expression for students in compensatory and special education programs. *The Journal of Special Education, 23*, 169-183.

Tindal, G., & Parker, R. (1991). Identifying measures for evaluating written expression. *Learning Disabilities Research & Practice, 6*, 211-218.

Videen J., Deno, S. L., & Marston, D. (1982). *Correct word sequences: A valid indicator of writing proficiency in written expression* (Research Report No. 84). Minneapolis: University of Minnesota, Institute of Research on Learning Disabilities.

Watkinson, J. T., & Lee, S. W. (1992). Curriculum-based measures of written expression for learning-disabled and non-disabled students. *Psychology in the Schools, 29*, 184-191.

Appendix

## PROCEDURES FOR SCORING CORRECT WORD SEQUENCES

1. Read the entire sample before beginning to score.
2. Underline or highlight incorrect words (words that are spelled incorrectly or that are grammatically incorrect).
3. Place a vertical line at the place where a sentence should end. At the end of the passage, give credit for a sentence if there is at least one sentence unit in the last phase, e.g., ^She^went^to^the^store^and" would be a sentence because "She went to the store" is a sentence unit.
4. Score the passage for correct and incorrect word sequences using the following definition developed by Videen, Deno, and Marston (1982):
    a. A correct word sequence is any two adjacent, correctly spelled words that are acceptable, within the context of the sample, to a native speaker of the English language.
    b. The term "acceptable" means that a native speaker would judge the word sequence as syntactically and semantically correct.
5. Use the carat method for scoring. Place a carat above two words if it represents a correct word sequence, and below the words if it represents an incorrect sequence.
6. Score a correct word sequence at the beginning of the sentence if the first word is capitalized and the word is spelled correctly. Score a correct word sequence at the ending of a sentence if the last word is spelled correctly and the student uses correct end punctuation.

## SPECIFIC RULES FOR

## SCORING CORRECT WORD SEQUENCES

1. Capitalization and Punctuation

    a. Pay attention only to capitalization at the beginning of the sentence and capitalization of proper names, place, etc. If a word is not capitalized at the beginning of the sentence, there is one wrong sequence. If the word is not capitalized and not spelled correctly, it is two wrong sequences.

**Examples:** **she^went^to^the^store.^ shee went^to^the^store.^**

    b. Assign a correct sequence for a sensible beginning of a sentence; that is, a blank followed by a sensible sentence beginning. This first word of the sentence must be capitalized.

    c. Do not accept "and" or "but" or "then" or "so" as correct words at the beginning of a sentence.

**Example:** **And I^didn't^clean^my^room^either.^**

The only exception to this rule is the first sentence in the story, since the students have been given a story starter. They may be just finishing the sentence.

**Example:** **The story starter was, "It was a dark and stormy night."**

**The student writes the first sentence in the story:**

**^and ^I^had^just^gone^to^bed.^**

    d. Ignore capitalization of words within a sentence, i.e., if a student writes in all capitals or if a student writes some letters as capitals.

**Example:** **^She^ went^ To^ the^ stoRe.^**

e. The word "I" must be capitalized.

f. Assign a correct sequence for a sensible ending to the sentence and correct punctuation. Count only end punctuation. Ignore all other punctuation in the middle of the sentence, e.g., commas, quotes, etc. The only exception to this rule is an apostrophe, because a missing apostrophe would make the word an incorrectly spelled word, e.g., "dont."

2. Misspelled Words

a. Sequence before and after misspelled word as incorrect.

b. Compound words that are written as two words are counted as three incorrect sequences.

**Example:** **^I^didn't^do^my home work because^I^was^tired.^**

3. Sentence Structure

a. Run-on Sentences

- If the sentence is a run-on sentence, the scorer must decide where the sensible ending to the sentence is. Place a vertical line at this point.
- If a run-on sentence is connected by conjunctions, the scorer must determine where to break the sentence apart. As a general rule, allow only one or two conjunctions per sentence. Cross out extra conjunctions, and mark the end of the sentence.

(Note that this rule does not refer to a list of things connected by "ands," e.g., I want a book and a pencil and a piece of paper).

- In a run-on sentence, do not give the student credit for end punctuation or for capitalizing the beginning of the next sentence.

**Example:** **^She^went^to^the^store^and^asked^for^some bread /**

**and looked^at^some^books^and^then^went^home.^**

b. Word Order Reversed

- If the student reverses the order of two words, there are three incorrect word sequences. They often do this when embedding a question in a sentence.

**Example:** **^I^was^thinking^about^what would my^friend say.^**

c. Omitted Words

- One wrong word sequence for an omitted word or words.

**Example:** **^I^checked^every^room if^any^light^was^on.^**

("to see" has been omitted).

d. Added Words

- Sometimes the student uses words incorrectly and it is difficult to tell what part of the sentence to score wrong. In many cases, one word can be deleted to

make a coherent sentence. This "word" should be marked wrong, just as a misspelled word is.

**Example:** **^I^thought since I^wanted^to^be^home^as^soon^as**
**possible^because^it^was^storming.**

(If the word "since" is removed, the sentence makes sense).

e. Sentence Fragments

- There are two types of sentence fragments. In one, the student places end punctuation in the middle of two phrases that should be connected together. In such cases, the end of the first sentence and the beginning of the next sentence are marked wrong.

**Example: ^When^I came^home.**

**The^door^to^the^house^was^open.^**

- In the second type of sentence fragment error, there is just one fragment by itself. In such as a case, either the beginning of the sentence or the end punctuation is marked wrong.

**Example: ^The^kids^in^my^school^wear^all^types^of^clothes. ^**

**Baggy bit,cotton^clothes^like^Levi^jeans.^**

**^My^friends^wear^tight^fitting^clothes.^**

f. Repeated Phases

- The repeated part is incorrect.

**Example: ^When^I^saw^the^old^buildings^and the old buildings and**

**the^saloon,^I^ran.^**

4. Grammar
   a. Wrong tense, e.g., **^First^we ^went^home^and^then^we go to^the^store.^**
   b. Number, e.g., **^We^had^three car.**
   c. Case, e.g., **Me and Joe went^to^the^store.^**
   d. Possessive, e.g., **^My mothers house^is^on^that^avenue.^**
   e. Word choice, e.g., **^I^am^the^only^one who is^here.^**

5. Miscellaneous
   a. Give credit for very common slang words when used in dialogue, such as "gonna," "yeah," and "kinda." If not used in dialogue, count as a misspelled word.
   b. Count numbers, dates, and amounts as one correct word.
   c. Count the ampersand sign (&) as one correct word.
   d. Count hyphenated words as one word.
   e. "All of a sudden," all of the sudden," and "all the sudden" are all ok.
   f. "A lot" is two words, not one.
   g. "Lunchroom" is one word, not two.
   h. "Gray" and "grey" are both okay.
   i. "T-shirts," "teeshirts," and "t shirts" are all okay and are counted as one word.
   j. "Like" in the middle of the sentence is wrong:

      e.g., **He^wore like a^t-shirt.^**

k. Abbreviations are okay, e.g., min., hr., and lb.

## ADDENDUM TO PROCEDURES FOR SCORING CORRECT WORD SEQUENCES

1. Score hyphenated words as if they are correct, even if the student did not follow proper hyphen rules (but not if the word is incorrectly spelled).
2. Do not accept "so" as a correct word the beginning of a sentence, such as "and," "but," or "then."

   **Example: So I^didn't^clean^my^room^either.^**

3. If the student used the story starter as part of the sentence, and the student writes "and I had just gone to bed," give a correct word sequence before and after "and."

   **Example: ^and^I^had^just^gone^to^bed.^**

4. Compound words are difficult. Remember, the following words should be one word:

   homework

   sleepover

   flashlight

   step dad or stepdad are OK

   caveman

   headphones

   Gameboy

- If they are not written as one word, it should be counted as three incorrect word sequences.

5. At the end of the three- and five-minute slash lines, place your correct or incorrect word sequence carrots on the **right** of the slash line unless it is between a sentence:

   **Examples**: **^I^went^to^the^store.^ / ^I^saw^my^friend,^Tommy.^**

   **^I^went^to^the^store^and /**

   **^I^saw^my^friend,^Tommy.^**

6. Proper names should be capitalized (e.g., Barney, Nintendo, Gameboy, etc.). If a word is not capitalized and not spelled correctly, it is two wrong word sequences.
7. If a student leaves out a word or several words, count it as one incorrect word sequence.
8. Allow only one conjunction per sentence. Otherwise, it is a run-on sentence.