NORMING OF CBM READING AND WRITING AND DIBELS INSTRUMENTS

FOR

SCHOOL DISTRICT NO. 57 (PRINCE GEORGE)

by

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ABSTRACT

This study explored the development of a series of local norming Tables for Curriculum Based Measurement (CBM) reading and writing measures and Dynamic Indicators of Basic Early Literacy Skills (DIBELS) for use in Grades Kindergarten through 7 of School District 57 (Prince George). A total of 2420 students from 44 elementary schools participated in a total of three testing sessions that took place in the fall, winter and spring of the 2002/2003 school year. The method of sampling and data collection was explained. The quality of the data set was evaluated. Stability and equivalence coefficients were calculated for these measures. Equivalence of the probes used for both reading and writing subtests were assessed using Analyses of Variance procedures. A series of norm tables for Grades 1 to 7 for the fall, winter, and spring testing periods were generated for CBM measures entitled Words Read Correctly, Total Words Written, and Words Spelled Correctly. A series of norm tables for Grades 1 and Kindergarten were generated for DIBELS measures which included Letter Naming Fluency, Nonsense Word Fluency, Initial Sound Fluency, Phoneme Segmentation Fluency and Oral Reading Fluency. These analyses indicate that the CBM and DIBELS measures possess the technical qualities necessary for their use as intended by School District 57. The increases in the CBM norm values over their 1996 values illustrate the wisdom of the completion of this renorming study in 2003 and more generally the need for renorming studies to be done on a regular basis.

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Chapter One: Introduction

Assessment of ability is a major component of any educational program (Deno, 1985). Types of assessment vary across a wide spectrum from the subjective to the objective and from the holistic to the atomistic. Currently, the Ministry of Education in the province of British Columbia places a strong emphasis on data collection as a measure of accountability within the school system. In their document entitled *District Accountability Contract*, the British Columbia Ministry of Education (2004) states, "Amendments to the School Act created an accountability cycle that requires each school, each district and the Ministry of Education to review performance measures and to plan, annually, for improvement" (p. 3). School Districts and individual schools across the province are preparing annual accountability documents to track student progress. In order to track student progress, schools need reliable assessment instruments. Two performance measures used to track student success are the atomistic assessments, Curriculum-Based Measurement (CBM) and Dynamic Indicators of Basic Early Literacy Skills (DIBELS) scores (Spruceland Elementary School, 2004). For example, a school could keep records of students reading at or above a certain percentile. This study will focus on the development of a set of norming tables for CBM and DIBELS that School District 57 (hereafter SD 57) uses, in part, as data to support its contract with the ministry.

Instruments

This study focused on CBM measures of Reading and Writing Fluency and DIBELS measures of Letter Naming Fluency, Initial Sound Fluency, Phoneme Segmentation Fluency, Nonsense Word Fluency and Oral Reading Fluency.

CBM measures. Shinn and Bamonto (1998) define CBM as "a set of standard, simple short-duration fluency measures of reading, spelling, written expression, and mathematics computation" (p.1). The CBM Reading Test is a fluency measure of Words Read Correctly (WRC) in one minute. The students are given a passage to read and the scorer counts the number of correct words read in one minute. The CBM Writing Test is a fluency measure of Total Words Written (TWW) in three minutes. The students are given a sentence starter and asked to continue the starter. The scorer counts the number of words correctly written in three minutes. A refinement of the CBM Writing Test, Words Spelled Correctly (WSC) counts the number of words spelled correctly from that same three minute writing sample.

DIBELS measures. Letter Naming Fluency (LNF) is a DIBELS measure that is administered for one minute. Students are presented with a printed page containing rows of randomly ordered upper and lower case letters and are asked to name as many letters as they can in one minute. The raw score is the total number of letters correctly identified in one minute.

Initial Sound Fluency (ISF) is a DIBELS measure that requires children to identify from an array of four pictures, the word that begins with a target sound. For example, the examiner would say, "This is an egg, dice, spider and ladder. Which picture begins with /l/?" There is a total of 16 items on each probe. The ISF measure takes about 3 minutes to administer and has over 20 alternate forms to monitor progress. A calculation is applied to determine the number of initial sounds in one minute.

Phoneme Segmentation Fluency (PSF) is a DIBELS measure that assesses a child's ability to fluently segment three- and four-phoneme words into individual

phonemes. In the simplest case each letter has a specific phoneme or distinctive sound. In the Kindergarten PSF test students are orally presented with three- to five-letter words and asked to repeat the word in segmented syllables or phonemes. In the example of "bad" the correct response are the sounds /b/, /a/ and /d/. In the word "beach" the correct response are the sounds /b/, /ea/ and /ch/. The number of correct phonemes segmented in one minute is the child's score.

Nonsense Word Fluency (NWF) is a DIBELS measure that assesses a child's ability to decode nonsense words. The student is presented with randomly ordered vowel/consonant and consonant/vowel/consonant nonsense words such as *et, dos*, and *tob*. The student can reproduce the letter sounds or read orally the whole word. The student would receive a score of three for the word *tob* whether the student produced the word by letter sounds or read the complete word. The number of letter sounds produced in one minute is the student's score. Good, Wallin, Simmons, Kame'enui, and Kaminski, (2002) state, "Because the measure is fluency based, students receive a higher score if they are phonologically recoding the word and receive a lower score if they are providing letter sounds in isolation" (p. 8).

Oral Reading Fluency (ORF) is a DIBELS measure that assesses a child's reading fluency. It is similar to the CBM reading measures and administered in a similar way. To ensure equivalent reading levels, "the Spache readability was used to revise and refine passages to keep the readability in a target range for each grade, but a broad range of readability estimates were considered in developing the passages" (Good et al. (2002) p. 10).

As mentioned previously, scoring of CBM and DIBELS measures is objective. The CBM measures, in brief, rely on word counts. The DIBELS measures rely on counts specific to each instrument. The method of scoring all of the CBM and DIBELS instruments is described in the CBM / DIBELS guidebook available from SD 57. (School District 57, 2003)

Advantages of CBM and DIBELS Measures

One of the primary advantages of using CBM and DIBELS instruments is their ease and speed of administration. The testing procedures are clear and do not require a great deal of training to administer. The CBM and DIBELS instruments that this study describes take only a matter of minutes to administer to students. A CBM or DIBELS score is not a diagnostic measure on its own. Certainly, an experienced test administrator may learn where a child is experiencing errors but the real value of CBM and DIBELS lies in allowing large numbers of children to be screened quickly. Students' scores are indicators that identify children who might need to be followed up with additional time consuming and expensive diagnostic testing.

The scoring of CBM and DIBELS instruments is, a much as possible, objective as a result of standardized rules. This eliminates subjective scoring and numerous different markers can obtain the same score. This very high inter-rater agreement is important (Sax, 1997) as many different teachers are going to administer and score the same instrument. It also increases the accuracy of student comparisons made based on score results.

Traditional assessment instruments measure skills indirectly. Curriculum-Based Measurement and DIBELS instruments measure skills directly. For example a traditional

reading test may ask the student to read a passage and perform another task such as matching or selecting a multiple-choice answer and filling in a blank on a "bubble" answer sheet. The fine motor and organizational skill needed to fill in the bubble sheet correctly has little to do with reading but it does make the test easy to mark. In other words, the measure of the students' reading ability will be related to their ability to track questions and answers accurately when they fill in a bubble sheet. Additionally, the cognitive skills needed to select a correct response to a multiple choice question may not be related to measure of reading comprehension in text.

Traditional types of assessment instruments also fall short when it comes to error analysis. All that is known is the student answered the question incorrectly but not where the student went wrong. CBM measures provide direct information to the scorer as to what type of errors the student is making. For example, when administrating CBM Reading Fluency the tester can notice if the child is stumbling over certain letter combinations. In another example, when administrating the DIBELS Letter Naming Fluency the tester can note which letters the child does not know.

Traditional published assessment tools are useful for measuring individual differences between students but are not useful for measuring individual student learning over time (Hively & Reynolds, 1975). Marston, Fuchs and Deno (1986) also established this point with a sixteen week comparison of CBM measures and published norm-referenced tests. Growth was far more evident using the CBM measures and was more in line with teacher evaluations as well. Marston and Magnusson (1985) reported similar findings in a ten week study. The DIBELS measures developed by Kaminski & Good (1998) were developed to monitor growth in the acquisition of critical early literacy

skills (Good, Gruba, & Kaminski 2001). DIBELS measures are designed to be used in a dynamic or ongoing way over time rather than as a summative measure.

Through the use of CBM and DIBELS instruments a tester can track student progress with a direct skill measurement normed against the peers from the student's school district. This is more desirable than the use of national norms of other instruments which may not accurately reflect the population of a particular region. As well, national norms often include grade equivalency scores which in my experience are sometimes misunderstood and misused by staff.

Another problem of published tests relates to the test-retest phenomena (Sax, 1997). The frequency of testing must be reduced to prevent a student from learning the test or recalling some of the questions. The tests are not designed to be used frequently. CBM measures on the other hand can be administered on a weekly basis by using one of many alternate forms generated from the student's curriculum. CBM and DIBELS measures are designed to be used frequently with no loss of reliability due to test-retest.

The advantages of ease and expediency of CBM and DIBELS assessments make them particularly useful for accountability purposes. Their direct measurement, error analysis and objective scoring provide further pedagogical advantages.

Rationale for Renorming

School District 57 (Prince George) has been using CBM atomistic measures district wide since 1996. Dr. Peter MacMillan of the University of Northern British Columbia and others developed the original sets of norm tables used to measure reading and writing fluency in 1995 (School District 57, 1995). These tables were developed before the CBM measures were in wide use in the district.

In light of the push for school districts to demonstrate accountability to the ministry through data collection, it was important that current norm tables were available. Given that the norm tables were over five years old and that CBM measurements are now in wide use in all of the schools in the district, district administrators decided it was time to renorm the tables that had been developed by SD 57 in 1996. To maintain the validity and reliability of any assessment tool it is necessary to renorm it on a regular basis and as with any norm-referenced test is important that the norms reflect the population that is being tested. (Sax, 1997) Renorming was also done to improve the delineation of student performance.

In addition to the CBM instruments being used, SD 57 officials decided to introduce a new set of similar measures, Dynamic Indicators of Basic Early Literacy Skills (DIBELS), to be used for Kindergarten and Grade One students. A series of norm tables was required to increase the utility and local relevance of the DIBELS instruments. The purpose of this study was to create a series of norm tables for CBM and DIBELS measures used in SD 57.

Chapter Two: Method

Sample

Shinn (1989) states "Guidelines established by the American Educational Research Association and the National Council on Measurement in Education (1985) state that all tests used in education and psychology must be valid, reliable, and, if they are to be used in a norm-referenced manner, have adequate normative data" (p. 19). For the renorming project over 2400 children were randomly selected to be in the norming sample. This was 25 percent of the population of Grades K-7 in the school district that commissioned the study.

Forty-four schools took part in three testing periods to make up the norming sample. Sample size is very important when developing district norms. Shinn (1989) suggests that 100 to 150 students per grade are needed in the sample group to develop district norms. The lowest number of students sampled in a grade in this present study was 258 with the highest being 353. (See Table 1 for a description of the numbers of students sampled.)

Sampling Procedures

In September 2002 teachers from every elementary school in SD 57 attended a workshop on the selection procedures for the norming sample and administration of the CBM and DIBELS instrument.

Students were selected for the norming sample from those who were registered in elementary schools by October 4, 2002. There were very few students excluded from the norming sample. The students who were excluded included level one and level two ESL students, students with mental disabilities, other hard-labeled students such as hearing-

impaired, visually impaired, or autistic students and students enrolled in French Immersion. Including students with a wide range of abilities in the norming sample was important to ensure that the norm tables were representative of the full population.

Table 1.

Norming Project Sample Size

Grade	Number of Students Sampled
K	258
1	263
2	288
3	298
4	330
5	301
6	329
7	353
Total	2420

An alphabetical list of students was generated for each grade of the school. Each school was provided a random start number that determined how to choose the first student to begin the selections of students from their alphabetized lists. After the first student was chosen every fourth student in the grade was included in the norming sample. For example if the first student selected was named Smith every fourth student after the name Smith would be chosen to be included in the norming sample. Upon reaching the end of the alphabetical list the students were then chosen from the

beginning on the alphabetical list while still following the "every fourth student" pattern until returning to the random start student.

Directions were very specific about the remaining students on the list for each grade. If there was only one name remaining it was not included in the sample. If there were two names remaining the second name was included in the sample. If there were three names remaining the third name was included in the sample.

Some procedures were developed in anticipation of problems that occur when dealing with large norming samples. For example if a target student was absent for the entire two week testing period they were not included in that norming period but they were included again in the next testing period. If the target student moved away from the school during the year, a list of students at that grade level that were new to the school was generated. The new students' names were put into a hat and one student was randomly selected to replace the missing student in the norming sample. If there were no new students at that grade level an alternate student was selected from the general grade population by flipping a coin. If the coin came up *heads* the student alphabetically above the target student who had left the school was selected. If the coin turned up *tails* the student alphabetically below the target student who had left the school was selected to be part of the norming sample.

Probe distribution. The reading passage given to students for the CBM reading measure is called a probe. There were six different CBM reading probes administered to students within each grade. The probes were collected by SD 57 staff from grade level reading materials and were not newly developed for this norming study. The reading

probes were chosen on the basis of mid-year readability level for each grade. (School District 57, 2003)

Each school was assigned a probe number with which to begin its cycle of testing to ensure that all probes were used by all grades in all three testing periods. In the 1995 norming sample one probe was administered to all the students at that school. In other words, School A may have administered Probe 1 and School B may have administered Probe 2. This may have led to some school effects that could have affected the reliability of the norming Tables. Test procedures in the 2002 norming project were designed to eliminate this possible effect in the second norming sample.

The story starter given to students for the CBM writing assessment is referred to as a writing probe. There were six writing probes that were given to all the students across the grades. These probes were developed by school district personnel. As with the reading probes, any one student would be exposed to three of the six possible probes during the testing cycle.

It was a little more difficult to randomize the use of the writing probe. The 44 schools that participated in the norming sample were divided into six groups of relatively equal populations. All of the schools participated in the three norming periods. The six writing probes were randomly yet equally divided among the six groups, grades and testing periods. Rather than the probes being administered to individual students, the probes were randomly administered to classes of students. The same six writing probes, as shown in Appendix E, were used for all the students in all grades.

In the SD 57 1996 norming sample there may have been some economic bias or school effect because the probes that were used to collect the previous set of data were

not distributed randomly to the subjects in the sample. It was thought at the time that due to the similarity of the probes, the data collected would be similar. Some school effect was noticed after the data was collected. Although it was not considered significant in the creation of the norming Tables an effort was made to clear this new data set of any such problem. In this new norming sample all six reading probes were distributed randomly to all the students in all schools. A similar process to that used for student selection was used to determine which student got which probe. As mentioned previously this was not the case for the writing probes. The reading probes were administered individually while the writing probes were administered to groups of children all at the same time.

Data Collection

Each school recorded the CBM results for individual students on recording forms created in FileMaker Pro™ by SD 57. The complete forms were transmitted electronically to the central office where all the individual school files were combined into a large district database. The data were screened for data entry errors and these were corrected. Next, the data were examined for inconsistencies and outliers. Overly high scores, which appeared to be at first outliers in the data set, were checked with individuals at schools. Upon investigation these high scores were found to correspond with the students' performance and ability in class so were not dropped. Some zero scores were dropped from WRC from each testing period when it was felt by the recorder that the student was not trying to complete the task. Scores that were dropped this way had little to no effect on the sample size. The data were exported as tab

separated text to SPSS 9.0 and saved as an SPSS file where analysis was completed. The data were sorted by grade before the quality was analyzed.

Chapter Three: Results

The data file was analyzed to evaluate its quality before norm tables were generated for CBM Words Read Correctly, CBM Words Spelled Correctly, CBM Total Words Written, DIBELS Letter Naming Fluency, DIBELS Nonsense Word Fluency, DIBELS Initial Sound Fluency, DIBELS Phonemic Segmentation Fluency, and DIBELS Oral Reading Fluency for three time periods; fall, winter and spring. Some of the analyses included descriptive statistics, the shape of the distribution of scores, distribution and differences of probes, the stability between testing periods, internal validity measures and the reliability of the data.

Descriptive Statistics

CBM. The descriptive statistics of the CBM instruments revealed skew and kurtosis values of intermediate students not greater than ± 0.31 and 0.91 respectively. The large majority of the CBM results had skew values that were less than two times the standard error: that is, the distributions do not deviate from normality in the population (see Appendix B for the complete results). Standard deviations were somewhat higher in the early grades and became smaller as the students got older. This suggests there is more variability in reading and writing scores at the Grade 2 level than at the Grade 7 level.

DIBELS. The descriptive statistics of the DIBELS instruments revealed that skew values were often more than twice than standard error which suggests that the distributions deviate from normality in the population. Kurtosis ranged from a high of 7.7 in fall scores of Grade 1 Nonsense Word Fluency to a low of -0.84 in spring testing on Kindergarten Phonemic Segmentation Fluency. In Kindergarten the standard

deviations were often greater than the mean which indicates a large variance in the scores. In Grade 1 the standard deviations were on a similar scale to those found in the CBM results. The high positive skew values in many of the DIBELS distributions were most likely the result of tasks presented to the children, prior to formal instruction of the skills of interest, which resulted in a large number of zero scores. The instruments used do not appear to be sensitive at the lower scores. As the children became more proficient at the skill, such as letter naming, (see Table 2) the skew and kurtosis values dropped. Standard deviation scores also dropped as a proportion of the mean. The drops in these values suggest the children were becoming more proficient at the task and that there was less variability in the scores.

Shape of the Distributions

Graphic displays of histograms, with a normal curve overlay, were observed for each instrument in each testing period. Normal data distributions are not required to generate the percentile ranks that make up the norming tables but given the large sample size, an instrument that is sensitive to the population should generate a normal data distribution. Normal distributions give a measure of reliability when using the norm tables with the larger population in the grade.

The shapes of the distributions were observed for one additional reason. One of the assumptions used when performing an ANOVA is that the data are normally distributed. I wanted to check the distributions to make sure that this assumption was valid.

Table 2.

Letter Naming Fluency Results for Kindergarten

	Mean	*SD*	Min	Max	Skew	Kurtosis
Fall	10.04	11.41	0	84	2.065	7.049
Winter	20.06	14.94	0	93	.905	1.503
Spring	29.85	15.78	0	84	.319	-0.002

CBM distributions. The distributions of the CBM reading and writing scores were all essentially normal in the intermediate grades. This was not surprising given the skew and kurtosis results observed from the descriptive statistics of the instruments. An example is given in Figure 1 of the spring testing of Grade 4 Words Read Correctly. This example is fairly typical of all the CBM distributions from Grades 3 to 7.

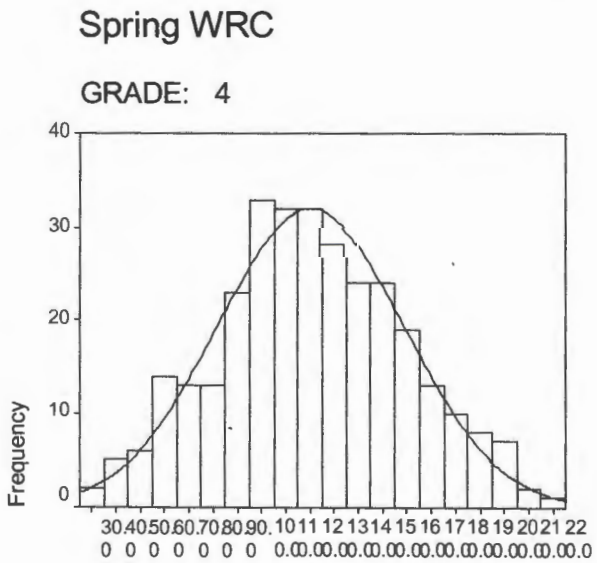

Figure 1. Example of typical CBM distribution

The Grade 2 Words Read Correctly distribution started with a slightly positive skew in the distribution as indicated in Figure 2. As the children progressed in their abilities the distribution moved to a more normal curve although with a small positive skew. The Grade 1 distributions showed a similar distribution to the positively skewed distribution of fall Grade 2 Words Read Correctly seen in Figure 2.

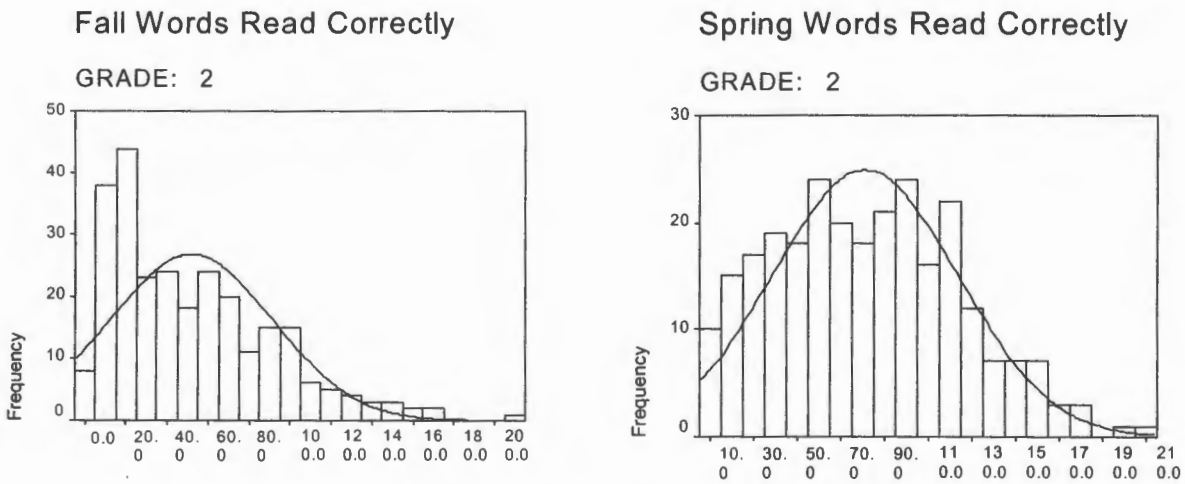

Figure 2. Change in Grade 2 reading distributions

DIBELS distributions. DIBELS distributions were in most cases not normal and more often positively skewed, sometimes dramatically so, as illustrated in Figure 3. The distributions, while remaining positively skewed, all reflected the growth in skills over

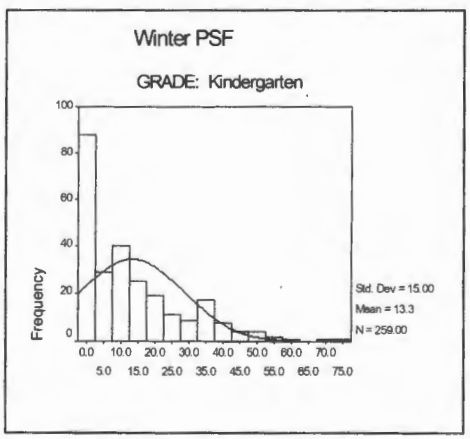

Figure 3. Winter phoneme segmentation fluency for kindergarten

time. This trend is well illustrated in Figure 4, which shows the changes in Letter Naming Fluency in Kindergarten over the three testing periods.

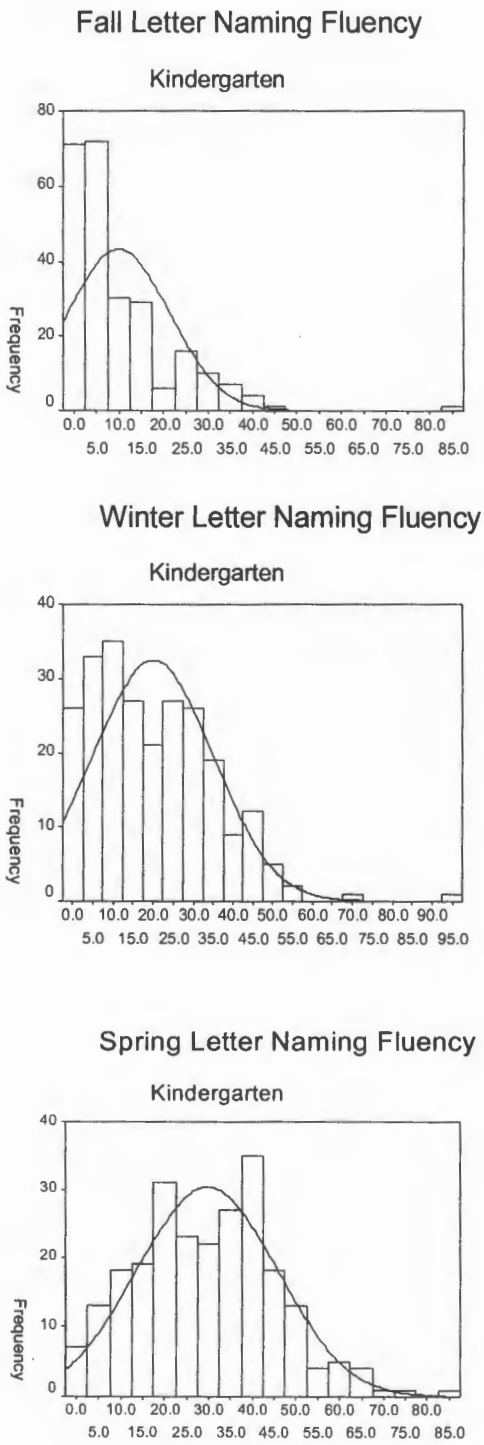

Figure 4. Change in distribution of Kindergarten Letter Naming Fluency over time

Probe Distribution

To ensure that the CBM norm tables fairly represented the population to which they were being applied it was important to ensure a fair distribution of the probes used to generate the data. The DIBELS measurements did not use different probes during the same testing period. All children received the same DIBELS probes so no analysis of probe distribution was necessary. The Grade 1 students were tested with CBM probes only in the spring.

CBM reading. Distributions for CBM reading probes presented in Table 3 indicate that there was a relatively even distribution of the probes in the three testing periods. The minor variations in the total number of probes distributed in each testing period are due to student absences.

CBM writing. The CBM writing probe distribution presented in Table 4 appears to be less well distributed as compared to the reading probe distribution. The reason for the unequal distribution is because the writing probes, as mentioned previously, were administered to entire classes. A small variation of distribution can make a large difference in the total number of scores for that probe because a two or three class difference in distribution can amount to a difference of 50 or 60 probes being administered. However, this variance in writing probe distribution was not considered large enough to have a meaningful impact on the norming tables.

Probe Differences

To discover if any one probe differed in difficulty from any other, an ANOVA was performed on each grade of the CBM probes using the options available in SPSS 9.0™. One of the difficulties in using six different probes is ensuring equality between

the probes. A question posed about the CBM writing task might be something like "What if the students are interested in one sentence starter over another? Wouldn't they

Table 3.

Reading Probe Distribution

	Probe Number	Gr. 7 N	Gr. 6 N	Gr. 5 N	Gr. 4 N	Gr. 3 N	Gr. 2 N	Gr. 1 N
Fall	1	55	52	46	52	44	44	
	2	56	51	45	49	44	41	
	3	54	50	43	50	46	42	
	4	53	50	43	52	47	44	
	5	55	52	50	52	47	47	
	6	55	51	46	52	49	44	
	Total	328	306	273	307	277	262	
Winter	1	56	52	48	55	50	46	
	2	56	53	46	49	46	43	
	3	58	53	47	49	46	43	
	4	55	49	44	52	45	41	
	5	54	49	42	52	48	45	
	6	56	54	51	52	48	47	
	Total	335	310	278	309	283	265	
Spring	1	56	56	50	53	48	45	45
	2	56	53	49	53	46	46	44
	3	58	55	44	53	47	49	42
	4	56	52	48	49	47	43	37
	5	56	49	43	50	45	41	41
	6	55	49	42	51	48	42	39
	Total	337	314	276	309	281	266	248

Table 4.

Writing Probe Distribution

	Probe Number	Gr. 7 N	Gr. 6 N	Gr. 5 N	Gr. 4 N	Gr. 3 N	Gr. 2 N	Gr. 1 N
Fall	1	55	60	49	57	45	44	
	2	62	52	52	54	51	44	
	3	21	28	51	65	59	50	
	4	71	68	38	46	46	42	
	5	71	61	49	51	40	44	
	6	55	44	40	36	40	40	
	Total	335	313	279	309	281	264	
Winter	1	56	59	37	38	39	42	
	2	57	55	49	55	45	46	
	3	70	59	58	53	44	39	
	4	19	50	52	65	66	54	
	5	71	28	44	48	52	46	
	6	62	64	44	51	40	44	
	Total	335	315	284	310	286	271	
Spring	1	69	59	45	54	43	45	38
	2	67	55	43	46	47	45	44
	3	61	59	48	54	44	44	37
	4	56	50	52	51	43	39	50
	5	20	28	53	65	60	49	53
	6	64	64	42	46	48	43	29
	Total	337	315	283	316	285	265	251

be inspired to write more?" If one set of scores is significantly better than another, then the starting sentence of the probe could be considered to be one of the reasons for the

difference. It was also important to ensure that the reading probes were of the same level of difficulty. Before running the ANOVA the data was tested for homogeneity of variance which is one of the underlying assumptions of an ANOVA. Of the 18 groups (seven grades and three testing periods) tested for Words Read Correctly there were some groups that showed some small departures from the assumption of equal variance. No violations of homogeneity of variance were repeated consistently between testing periods or in any grade. Significant findings using the Levene statistic included F (5, 241) = 3.59, p<.01 for the spring test of Grade 1 Words Read Correctly and F (5, 256) = 4.50, p<.001 in the fall testing of Grade 2 Words Read Correctly. I do not think the violations of homogeneity of variance affected the results of the ANOVA which is a robust test given the large similar sample sizes (balanced design) and normality of the distribution as mentioned previously.

CBM reading. Due to developmental reading abilities, each grade was given a different set of six reading probes. After performing the ANOVA there were some probes in some testing periods that appeared to be discrepant from the others as shown in Table 5. An alpha level of .01 was considered appropriate, as the Bonferoni corrected alpha for 3 testing periods would have been .016. The significant findings are I believe, either a Type I error or a form of group effect. Type I errors are a false positive which means a difference is shown as significant when no there is no actual difference. If indeed a probe was different from the others the differences should consistently appear in each testing period.

The suggestion of a group effect is based on the observation that Probe 4 and Probe 5 administered to Grade 5 students in the fall and winter respectively showed a

significant difference. Given the research design, Probe 5 would be given to students after Probe 4. The differences in the probes showed they were generating higher mean scores than the

Table 5.

Analysis of Variance for Probe Differences in Words Read Correctly

	Fall			Winter			Spring		
Grade	df_w	F	p	df_w	F	p	df_w	F	p
7	326	2.03	.075	334	2.84	.016	334	3.79	.002*
6	305	3.65	.003*	309	.399	.850	311	1.23	.294
5	271	2.30	.046	276	3.96	.002*	273	1.88	.097
4	304	1.4	.224	308	2.64	.023	308	2.98	.012*
3	274	1.66	.144	281	2.77	.019	280	1.66	.144
2	261	3.58	.004*	263	1.25	.298	264	2.14	.049
1							246	2.36	.041

(df_b was 5 for all cases) * $p < .01$

other probes. Perhaps, by chance, a capable group of students was given these probes in succession.

CBM writing. The results in Table 6 show some significant differences using a conservative alpha of 0.01 in Total Words Written in fall of Grade 5 and 6, winter of Grade 3 and spring of Grade 7. Further analysis showed that Probe 3 appeared discrepant, generating a lower mean score in Grade 6. Probe 4 appeared to be generating a lower mean score and was the cause of the discrepancy in the fall of Grade 5. In the winter of Grade 3, Probe 6 generated a higher mean score and appeared discrepant from

the rest of the probes. In the spring of Grade 7 Probe 4 was discrepant, generating a higher score than the other probes. I believe these were all false positive results or Type I errors. In one testing period Probe 4 generated a lower mean, while in another testing period the same probe generated a higher mean than the other probes. As mentioned

Table 6.

Analysis of Variance for Probe Differences in Total Words Written

	Fall			Winter			Spring		
Grade	df_w	F	p	df_w	F	p	df_w	F	p
7	334	1.67	.142	332	2.47	.033	333	3.39	.005*
6	312	4.71	.000*	311	1.48	.196	310	.82	.537
5	277	3.96	.002*	279	.84	.552	276	.34	.890
4	306	.78	.563	306	1.59	.162	308	.45	.816
3	280	.73	.600	282	3.82	.002*	278	.85	.520
2	263	1.77	.120	266	1.60	.159	264	1.50	.191
1							246	2.40	.038

(df_b was 5 for all cases) * $p < .01$

previously the differences between probes should be repeatable in different testing periods and at the very least the probe should be discrepant in the same way generating a consistently higher or lower mean score. Replication of differences does not occur either across grades or testing periods; therefore I think the all the significant differences were the result of a Type I error.

One of the reasons for the differences in probes might be attributed to class effect. Unlike the reading probes that were evenly distributed across the sample

population the writing probes were given to a whole class at the same time. Therefore, the means of a few poorly performing classes writing the same probe could influence the results.

Probe summary

In summary analysis of both the reading and writing probes show them to be equivalent due to their even distribution and similar scores. Actual distributions of the probes reflect positively on the procedures developed to ensure a wide, even distribution of the probes.

Measures of Stability and Equivalency

Equivalence and stability of scores over time are measures of reliability. The scores change because of variability in external contributing factors. The children also progress in skill performance but given the large sample used in this study, the progress of the groups is similar or equivalent. High correlations for CBM scores between testing periods observed in Table 7 suggest that the students are performing in a similar way on a similar task.

CBM coefficients of equivalence and stability. Pearson correlations for the CBM instruments across norming periods were also performed (Table 7). They are a measure of equivalence because of the different probes used and a measure of stability because they compare different testing times. As expected, as the students improve over time, the spring scores are less highly correlated to the fall scores as compared to contiguous testing periods. The correlations are high, and given that they are a combined measure of stability and equivalence, a researcher might expect even higher correlations of either equivalency or stability when measured in isolation. Lower, yet consistent, correlations

between writing scores across testing periods suggest that the writing task has more variability for individual students.

Table 7.

Pearson correlations for CBM measures between norming periods

Words Read Correctly			
Grade	$r_{fall\text{-}winter}$	$r_{winter\text{-}spring}$	$r_{fall\text{-}spring}$
1	—	—	—
2	.87	.86	.84
3	.87	.89	.83
4	.86	.87	.86
5	.87	.86	.84
6	.89	.85	.81
7	.89	.89	.86
Total Words Written			
Grade	$r_{fall\text{-}winter}$	$r_{winter\text{-}spring}$	$r_{fall\text{-}spring}$
1	—	—	—
2	.62	.65	.59
3	.66	.65	.59
4	.62	.56	.60
5	.60	.62	.60
6	.74	.67	.65
7	.70	.63	.58

(All correlations are significant at the 0.01 level two tailed)

DIBELS coefficients of stability. Correlations for the DIBELS instruments across norming periods were also performed. The results are displayed in Table 8 and 9. Only one DIBELS measure, Letter Naming Fluency, was used over the three testing periods as compared to the CBM measures. The values are generally higher than CBM measures of TWW but lower than CBM WRC. PSF values of .69 are identical for winter-spring

Table 8.

Pearson Correlation for DIBELS Kindergarten Scores Between Norming Periods

	$r_{fall\text{-}winter}$	$r_{winter\text{-}spring}$	$r_{fall\text{-}spring}$
Letter naming fluency (LNF)	.79	.77	.65
Nonsense word fluency (NWF)		.74	
Initial sound fluency (ISF)	.70		
Phoneme segmentation fluency (PSF)		.69	

(all correlations are significant at the 0.01 level, two tailed)

Table 9.

Pearson correlation for DIBELS Grade one scores between norming periods

	$r_{fall\text{-}winter}$	$r_{winter\text{-}spring}$	$r_{fall\text{-}spring}$
Nonsense word fluency (NWF)	.67	.82	.65
Phoneme segmentation fluency (PSF)	.70	.69	.55
Oral reading fluency (ORF)		.90	

(all correlations are significant at the 0.01 level, two tailed)

for both Kindergarten and Grade 1. Again, as noted in the CBM values the correlations are lower when comparing fall-winter and fall-spring scores, varying for Kindergarten

LNF from .79 to .65 respectively. A similar change can be observed in the Grade 1 PSF measure that drops from .70 for fall-winter to .55 for fall-spring. The low fall-winter correlation in Grade 1 NWF (.67) may be due to the dramatic positive skew to the distribution of the fall sample. In other words, it is difficult to get strong correlations to different set of scores if one set has a large number of zero scores. Severely non-normal distributions will produce lower correlations so the correlations in Table 8 are good. The winter-spring correlation for NWF is notably higher (.82) because the distributions are less positively skewed and approach a more normal distribution. As the students improve over time, the spring scores are less highly correlated to the fall scores as compared to concurrent testing periods. This is similar to the CBM results.

Measures of Internal Validity

Correlations among measures that are related conceptually or theoretically are coefficients of internal validity. High correlations between similar skills suggest that the instruments are valid because they are both measuring what they are supposed to measure. Lower correlations between dissimilar skills can also be an indicator of validity. Measures of internal validity confirm for the researcher that the instruments are behaving as expected.

CBM validity measures. Very high correlations ranging between .94 and .99 for Total Words Written (TWW) and Words Spelled Correctly (WSC) displayed in Table 10 are expected because they measure a skill in the same domain. If the correlations between these two measures were low it might indicate some problems with reliability, validity, or data collection. Lower, but relatively consistent correlations in each grade, between total words written and total words read correctly displayed in Table 11 suggest

that a different yet related skill is being measured. The consistency and stability of the correlations gives evidence of good reliability.

DIBELS validity measures. Correlations between DIBELS skills remain fairly constant as displayed in Tables 12 and 13. High correlations (.74, .82) between Oral Reading Fluency (ORF) and Nonsense Word Fluency are expected as they both measure

Table 10.

Pearson correlation between total words written and words spelled correctly

Grade	Fall	Winter	Spring
1	-	-	.94
2	.94	.94	.96
3	.97	.97	.97
4	.97	.98	.98
5	.98	.98	.98
6	.98	.98	.99
7	.99	.99	.99

(All correlations are significant at the 0.01 level two tailed)

very similar skills. The correlation between Oral Reading Fluency (ORF) and Words Read Correctly (WRC) is even higher (.93) as the children are in both cases reading familiar words. Although ORF and WRC are both fluency levels in reading, the measures are not more highly correlated because of the slightly different reading levels of the instruments. Correlations of PSF and ORF (.36) are expected to be low because the students are asked to perform different tasks and must produce letter sounds in PSF

Table 11.

Pearson correlation between total words written and words read correctly

Grade	Fall	Winter	Spring
1	-	-	.45
2	.48	.49	.45
3	.40	.40	.32
4	.34	.29	.38
5	.42	.27	.29
6	.39	.39	.43
7	.33	.27	.29

(All correlations are significant at the 0.01 level two tailed)

Table 12.

Grade one DIBELS Validity correlations

	Fall	Winter	Spring
PSF - NWF	.52	.56	.47
PSF – ORF		.36	.36
NWF - ORF		.74	.82
ORF - WRC			.93

(All correlations are significant at the 0.01 level two tailed)

compared to the ORF test where some students are able to sight-read entire words. The consistency and stability of the correlations gives evidence of good reliability.

Table 13.

Grade Kindergarten DIBELS Validity Correlations

	Fall	Winter	Spring
PSF - NWF		.51	.52
PSF – LNF		.39	.41
NWF -LNF		.65	.69

(All correlations are significant at the 0.01 level two tailed)

Reliability

One of the issues concerning any measurement instrument is reliability. Cronbach's Alpha coefficients are reliability coefficients that examine internal consistency, based on the average inter-item correlation. Reliability coefficients were calculated for both the CBM and DIBELS instruments. To interpret the reliability coefficients George and Mallery (2003) suggest the rules of thumb presented in Figure 5.

Alpha Score	**Rating**
> .9	excellent
> .8	good
> .7	acceptable
> .6	questionable
> .5	poor
< .5	unacceptable

Figure 5. Ratings of Cronbach Alpha scores

CBM. For the CBM coefficients the results from the three testing periods were compared to each other. The average intraclass measure correlation is reported in Table 14. All of the coefficients are above .80 and many are above .94 which is a good to

excellent measure of reliability. These measures should be considered as the lower bounds of reliability given that they span 6 grades over a time period of 6 months.

DIBELS. For the DIBELS coefficients two and sometimes three results were compared. All of the DIBELS results presented in Table 15 are above .81 with the highest being .96. Considering the variability in the rates of student achievement and that some measures such as Grade K LNF (.88), Grade 1 PSF (.85) and Grade 1 NWF (.85) cover three testing periods over a span of 6 months, the results indicate a high degree of reliability for the scores.

Table 14.

CBM Reliability - Alpha Coefficients (Cronbach)

	Words Read Correctly (WRC)	Total Words Written (TWW)	Words Spelled Correctly (WSC)
Grade 7	.94	.84	.84
Grade 6	.96	.86	.88
Grade 5	.95	.82	.83
Grade 4	.95	.81	.82
Grade 3	.95	.84	.85
Grade 2	.95	.82	.83

Summary of Data Set

In conclusion the CBM data set can be considered to be of good quality and of high reliability because of the equivalency of the probes used in both reading and writing, the normal distributions, high correlations between testing periods, stable

validity correlations and good to excellent Cronbach alpha coefficients. The DIBELS data set is also of good quality and reliability. Although the DIBELS distributions are mostly non-normal there are good correlations between testing periods, stable validity correlations and good Cronbach alpha coefficients.

Table 15.

DIBELS Reliability - Alpha Coefficients (Cronbach)

	Phoneme Segmentation Fluency (PSF)	Initial Sound Fluency (ISF)	Nonsense Word Fluency (NWF)	Oral Reading Fluency (ORF)	Letter Naming Fluency (LNF)
Grade 1	.85	-	.85	.93	-
Grade K	.81	.81	.82	-	.88

Norm Tables

The goal of SD 57's norming study was to develop a series of percentile rank tables or norm tables for both the CBM and DIBELS instruments. The complete tables are displayed in Appendix A. The percentile tables can be considered highly reliable due to factors mentioned previously in the summary of the data set. The CBM tables covered Words Read Correctly, Words Written Correctly, and Words Spelled Correctly for grades one to seven for the fall, winter, and spring testing periods. The DIBELS tables covered Letter Naming Fluency, Nonsense Word Fluency, Initial Sound Fluency, Phoneme Segmentation Fluency and Oral Reading Fluency for testing periods determined by SD 57 that followed the same fall, winter and spring pattern of the CBM

testing periods. The format of all the norm tables, which has been in use in the school district since the first set of norm tables were developed, is similar to the example given in Figure 6.

GRADE FIVE Words Read Correctly				
	Fall	**Winter**	**Spring**	
Percentile	**Score**	**Score**	**Score**	**Description**
99	196	218	215	
95	169	188	191	
90	**159**	**169**	**180**	**Well Above Average**
85	151	164	173	
80	148	156	166	
75	**143**	**147**	**158**	**Above Average**
70	138	140	151	
65	132	138	146	
60	127	133	140	
55	121	128	135	
50	**116**	**124**	**131**	**Average**
45	111	118	125	
40	104	113	122	
35	98	106	117	
30	94	98	112	
25	**86**	**92**	**103**	**Below Average**
20	81	85	95	
15	75	80	84	
10	**68**	**72**	**80**	**Well Below Average**
5	59	61	69	
1	24	36	41	

Figure 6. Example of Norm Table

Chapter Four: Discussion

The purpose of this study was to create a series of norm tables for CBM and DIBELS measures based on a large reliable data set. Comparison of the 1996 norm tables to the 2003 norm tables created in this study shows some good reasons why the school district made the correct choice to commission new norm tables. Discussion of the CBM results will be followed by discussion of the DIBELS results.

CBM Norm Tables

As expected all of the norm tables generally show progressive growth across time and grade. Table 16 displays raw scores at the 20th percentile for both Words Read Correctly and Total Words Written over a period of three years beginning with the spring of Grade 1. The scores of the children do not show a drop from spring to fall until the fall of Grade 4 in Words Read Correctly and the fall of Grade 3 in Total Words Written. This might be surprising to some who anticipate the children will lose skills over the summer break and be less proficient at reading and writing in the fall.

Table 16.

Student Scores for Words Read Correctly and Total Words Written at the 20th Percentile from Spring Grade 1 to Winter Grade 4

	Gr 1 Spring	Gr 2 Fall	Gr 2 Winter	Gr 2 Spring	Gr 3 Fall	Gr 3 Winter	Gr 3 Spring	Gr 4 Fall	Gr 4 Winter
Words Read Correctly	11	16	28	41	49	69	79	64	81
Total Words Written	6	9	14	18	18	21	25	25	28

CBM Comparisons

CBM Reading. One of the interesting outcomes of this study was the noticeable difference in Words Read Correctly between the 1996 norm tables and the 2003 norm tables. One of the larger differences in reading scores is illustrated in Figure 7. In grade 6 measures of Words Read Correctly, the fall reading scores at the 50th percentile have a raw score difference of 16 between the 1996 and 2003 norm tables. This means that the students are reading 16 more words per one minute sample in the 2003 sample than they were reading in the 1996 sample. A 1996 raw score of 130 would place a student at the 65th percentile while the same score in the 2003 tables would place them at the 50th percentile.

Overall, reading scores were up about 10 percentile points over the year regardless of the grade or testing period. The complete reading comparison tables are available in Appendix D. Some exceptions were larger gains such as 15 percentile points in the fall of Grade 6 and smaller changes in the scores at or below the 25th percentile in Grade 2. These changes in the norm tables validate the school district's decision to carry out the re-norming project.

CBM Writing. The overall differences between the 2003 and 1996 writing norms were not as dramatic as the reading differences. There was a slight positive change of about 5 percent overall in Grade 6 and 7 between the 1996 and 2003 writing norms. For example a score of 69 in the spring of Grade 7 fell at the 65th percentile on the old tables but fell at the 60th percentile on the new tables. The remaining grades show little overall change between the 1996 and 2003 norms aside from Grade 4 which shows a better than 5 percent positive change overall.

There was a much more noticeable change in the fall writing scores across the grades. These scores increased ten to twenty percentile ranks from the 1996 norm tables. (See appendix D for the complete tables) For example, in the fall Grade 7 writing tables

	GRADE SIX Words Read Correctly						
	2003 Fall	***1996 Fall***	**2003 Winter**	***1996 Winter***	**2003 Spring**	***1996 Spring***	
Percentile	**Score**	***Score***	**Score**	***Score***	**Score**	***Score***	**Description**
99	214	*215*	215	*220*	217	*225*	
95	194	*185*	195	*189*	196	*192*	
90	**175**	***164***	**180**	***175***	**185**	***181***	**Well Above Average**
85	167	*155*	173	*165*	179	*170*	
80	161	*149*	166	*154*	172	*162*	
75	**155**	***140***	**159**	***148***	**164**	***158***	**Above Average**
70	149	*135*	154	*141*	159	*149*	
65	144	*130*	150	*135*	154	*142*	
60	140	*125*	146	*128*	150	*137*	
55	135	*121*	139	*123*	144	*130*	
50	**130**	***114***	**135**	***118***	**141**	***125***	**Average**
45	124	*110*	129	*113*	136	*119*	
40	119	*102*	124	*109*	131	*113*	
35	111	*93*	116	*104*	125	*108*	
30	105	*87*	111	*97*	117	*101*	
25	**100**	***81***	**102**	***91***	**111**	***95***	**Below Average**
20	92	*75*	96	*81*	105	*89*	
15	84	*67*	91	*75*	98	*78*	
10	**77**	***54***	**79**	***62***	**86**	***69***	**Well Below Average**
5	67	*44*	69	*49*	71	*55*	
1	39	*21*	26	*24*	38	*27*	

Figure 7. Comparisons of 2003 and 1996 Grade 6 Reading Scores

a raw score of 50 ranked at the 45th percentile. A raw score of 50 in the 2003 tables only ranks at the 25th percentile. This change is also evident in the Grade 6 scores when comparing a 1996 raw score of 39 to a 2003 raw score of 39 as shown in Figure 8. The raw score of 39 changes ten percentile points between the 1996 and 2003 testing periods. Similar changes in percentile rank of the fall writing scores were present across all grades.

Although not as dramatic, the fall increase is also noted at the lower percentile ranks as noted in Table 17. CBM scores are used by SD 57 as an indicator of which children may need to be followed up with more diagnostic testing or be referred to

	GRADE SIX Total Words Written						
	2003 Fall	***1996 Fall***	**2003 Winter**	***1996 Winter***	**2003 Spring**	***1996 Spring***	
Percentile	**Score**	***Score***	**Score**	***Score***	**Score**	***Score***	**Description**
99	95	*85*	96	*91*	110	*101*	
95	81	*74*	85	*79*	87	*84*	
90	**75**	***67***	**77**	***72***	**79**	***77***	**Well Above Average**
85	70	*63*	72	*67*	76	*73*	
80	67	*59*	69	*64*	73	*69*	
75	**64**	***56***	**66**	***62***	**70**	***67***	**Above Average**
70	62	*55*	65	*61*	68	*65*	
65	59	*52*	62	*58*	65	*63*	
60	57	*50*	60	*56*	63	*61*	
55	56	*48*	57	*55*	61	*59*	
50	**55**	***46***	**56**	***52***	**59**	***57***	**Average**
45	52	*44*	54	*50*	57	*55*	
40	50	*43*	52	*47*	55	*53*	
35	47	*41*	49	*46*	52	*52*	
30	44	*39*	47	*44*	50	*50*	
25	**42**	***37***	**44**	***42***	**47**	***48***	**Below Average**
20	39	*35*	42	*40*	45	*45*	
15	35	*33*	39	*37*	41	*42*	
10	**33**	***30***	**36**	***35***	**38**	***37***	**Well Below Average**
5	28	*25*	31	*28*	33	*33*	
1	19	*16*	22	*19*	16	*21*	

Figure 8. Comparisons of 2003 and 1996 Grade 6 Writing Scores

a learning assistant teacher for additional support. If, for example, the school district is using a cut score of the 20th percentile to refer for further assistance, a Grade 2 child who scored 8 Total Words Written may not have been not be referred using the 1996 norms as this score would have them placed at the 25th percentile. The same child scores at the 15th percentile using the 2003 norm tables and may therefore be referred for

assistance. There is a similar change in scores for other grades as noted in Table 17. Referral of students often occurs in the fall and recognizing students in the early grades who are in need of extra support at this time is critical.

Table 17.

Comparison of 2003 and 1996 Lower Percentile Fall Writing Scores for Grades 2 to 4

	Grade 2		Grade 3		Grade 4	
Percentile	2003 Scores	*1996 Scores*	2003 Scores	*1996 Scores*	2003 Scores	*1996 Scores*
35	12	*10*	22	*19*	30	*25*
30	11	*9*	20	*18*	28	*24*
25	10	*8*	19	*16*	26	*23*
20	9	*7*	18	*15*	25	*21*
15	8	*6*	16	*14*	22	*20*
10	7	*5*	14	*12*	20	*17*
5	3	*3*	11	*9*	17	*13*
1	0	*1*	6	*3*	6	*8*

One of the reasons for the differences in the fall writing scores may be that the students are more familiar with the task now than they were when the first norming project was completed. If this were the only reason though, the pattern of increased output in Grade 2 would not occur as these students haven't had a great deal of practice with the task. Another explanation for the increased fall output in writing may be that the administration of the test may have improved for this norming sample.

Summary of CBM Changes

The large changes to the percentile ranks in Words Read Correctly and slightly smaller but consistent changes to percentile ranks in Total Words Written give strong reasons for maintaining current CBM norm tables in SD 57.

DIBELS

The series of norm tables created for DIBELS included Letter Naming Fluency, Nonsense Word Fluency, Initial Sound Fluency, Phoneme Segmentation Fluency and Oral Reading Fluency. The norm tables are similar in design to the CBM tables used by the district as shown in Figure 9. The DIBELS tables are often missing scores from one or two of the three testing periods because the test was not administered to students in that period.

One of the norm tables created in this study, fall scores for Kindergarten Initial Sound Fluency, compares very favourably with percentile tables created for the same measure by Good et al. (2002) *System-wide Percentile Ranks for DIBELS Benchmark Assessment* (Technical Report 9). The Good et al study had a sample size for fall Kindergarten of 37849 children. The SD 57 and the Good et al study percentile rank scores, for the fall, differ by a maximum of 4 percentile ranks below the 60th percentile. In other words, the same raw score in the SD 57 study would place the student at a slightly higher percentile rank than the same score in the Good et al study. This pattern of similarity is not repeated for the winter Kindergarten Initial Sound Fluency scores. The differences here are very large. A score of 5 in the winter SD 57 sample scores at the 20th percentile locally while only scoring at the 8th percentile in the Good et al study.

There were similar wide differences in other DIBELS percentiles generated by the Good et al study and this study. A sampling of the differences is provided in Table 18 and 19.

Kindergarten Nonsense Word Fluency (NWF)				
	Fall	Winter	Spring	
Percentile	Score	Score	Score	Description
99	-	38	75	
95	-	27	39	
90	-	**20**	**33**	**Well Above Average**
85	-	16	28	
80	-	14	25	
75	-	**11**	**22**	**Above Average**
70	-	9	19	
65	-	7	18	
60	-	6	16	
55	-	5	13	
50	-	**3**	**12**	**Average**
45	-	2	11	
40	-	1	9	
35	-	0	8	
30	-	0	6	
25	-	**0**	**5**	**Below Average**
20	-	0	3	
15	-	0	0	
10	-	**0**	**0**	**Well Below Average**
5	-	0	0	
1	-	0	0	

Figure 9 Example of DIBELS Table

One possible reason for the widely discrepant percentile ranks between the Good et al study and this study may be that in the Good et al study many of the schools used in the sample had been using DIBELS measurements for three or four years (Good et al., 2002) and may have adjusted their academic programs to teach more of the skills sooner or in a systematic fashion. An example of this might be the Phoneme Segmentation Fluency scores observed in Table 17. There is a very large difference between the two studies.

Table 18.

Comparison of Kindergarten DIBELS Scores at the 20th Percentile

	Fall		Winter		Spring	
	Good score	SD 57 score	Good score	SD 57 score	Good score	SD 57 score
Initial Sound Fluency	4.2	4.8	10.66	5		
Letter Naming Fluency	2	1	14.5	6	29	15
Phoneme Segmentation Fluency			7	0	22	4
Nonsense Word Fluency			4.66	0	15	3

Table 19.

Comparison of Grade One DIBELS Scores at the 20th Percentile

	Fall		Winter		Spring	
	Good score	SD 57 score	Good score	SD 57 score	Good score	SD 57 score
Oral Reading Fluency			11	5	26	14.6
Letter Naming Fluency	25	17				
Phoneme Segmentation Fluency	24	6	33	17	39.5	29
Nonsense Word Fluency	13	5	32.5	17.4	43	29.8

Perhaps the Kindergarten students from the Good et al study had been receiving instruction on this skill before the winter testing period.

Implications for Practice

Development of the norm tables in this study allows teachers a current standard to evaluate student achievement in specific skill areas. Valid, reliable and stable norm tables allow teachers to be confident that the scores students are receiving are an accurate reflection of their ability.

The changes in the norm tables from 1996 to 2003 demonstrate the need for up to date norm tables. Given the large changes in the CBM norming Tables from the old sample to the new sample and given the large discrepancies for DIBELS when compared to Good et al (2002) study this researcher recommends that the DIBELS norming Tables for SD 57 be re-normed in the future. It would likely be beneficial for this renorming to occur after teachers have had a chance to become familiar and comfortable with administering the new measures. Additionally, allowing time for the school district to fully implement early basic literacy skills into the Grade K and 1 curriculum is recommended before re-norming the DIBELS measures.

Implications for Future Research

Given that this study found large differences in percentile ranks when compared to the study by Good et al. (2002) *System-wide Percentile Ranks for DIBELS Benchmark Assessment* (Technical Report 9) follow up research could focus on the reasons for the large differences. Additionally benchmark scores referred to in the Good study appear unsuitable for the SD 57 population at this time. It would be beneficial to develop benchmark scores for the SD 57 population. Benchmark scores supported by a validity study that compares DIBELS scores to classroom achievement will give more validity and reliability to the DIBELS measures.

If SD 57 performs a similar CBM renorming study in the future every effort should be made to develop equivalent reading and writing probes before the norming study begins. Although this study found no real differences between the probes the result is more serendipity rather than good research design. If there had been differences in the probes the norming study would have been much more difficult and perhaps the results would be less reliable.

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Appendix A Norm Tables

GRADE ONE NORMS

READING

GRADE ONE Words Read Correctly				
	Fall	**Winter**	**Spring**	
Percentile	**Score**	**Score**	**Score**	**Description**
99			126	
95			99	
90			**82**	**Well Above Average**
85			70	
80			60	
75			**53**	**Above Average**
70			46	
65			42	
60			36	
55			30	
50			**26**	**Average**
45			22	
40			20	
35			18	
30			15	
25			**13**	**Below Average**
20			11	
15			9	
10			**7**	**Well Below Average**
5			4	
1			0	

N.B. Grade One students were tested only once, during the spring norming period.

GRADE TWO NORMS

READING

GRADE TWO Words Read Correctly				
	Fall	**Winter**	**Spring**	
Percentile	**Score**	**Score**	**Score**	**Description**
99	168	153	186	
95	125	137	157	
90	**104**	**126**	**139**	**Well Above Average**
85	95	115	126	
80	87	106	117	
75	**75**	**98**	**110**	**Above Average**
70	69	91	104	
65	62	84	98	
60	56	78	92	
55	55	70	86	
50	**41**	**63**	**78**	**Average**
45	36	56	73	
40	32	52	65	
35	28	45	60	
30	21	38	54	
25	**18**	**31**	**46**	**Below Average**
20	16	28	41	
15	13	23	32	
10	**10**	**18**	**25**	**Well Below Average**
5	7	12	18	
1	1	3	8	

GRADE THREE NORMS

READING

GRADE THREE Words Read Correctly				
	Fall	**Winter**	**Spring**	
Percentile	**Score**	**Score**	**Score**	**Description**
99	196	213	213	
95	162	174	177	
90	**141**	**156**	**160**	**Well Above Average**
85	130	146	152	
80	122	136	146	
75	**119**	**129**	**136**	**Above Average**
70	109	120	129	
65	103	116	125	
60	98	110	120	
55	94	104	115	
50	**89**	**99**	**109**	**Average**
45	85	94	104	
40	78	89	99	
35	70	83	94	
30	66	79	89	
25	**60**	**76**	**83**	**Below Average**
20	49	69	79	
15	41	58	70	
10	**36**	**44**	**62**	**Well Below Average**
5	24	34	42	
1	15	12	27	

GRADE FOUR NORMS

READING

GRADE FOUR Words Read Correctly				
	Fall	**Winter**	**Spring**	
Percentile	**Score**	**Score**	**Score**	**Description**
99	190	208	206	
95	173	181	186	
90	**162**	**168**	**172**	**Well Above Average**
85	147	160	162	
80	138	148	152	
75	**132**	**143**	**147**	**Above Average**
70	127	133	141	
65	121	128	134	
60	114	123	130	
55	108	117	124	
50	**103**	**112**	**119**	**Average**
45	95	108	114	
40	89	100	110	
35	83	94	104	
30	77	89	100	
25	**70**	**85**	**95**	**Below Average**
20	64	81	89	
15	58	74	79	
10	**50**	**62**	**69**	**Well Below Average**
5	37	47	57	
1	26	29	36	

GRADE FIVE NORMS

READING

GRADE FIVE Words Read Correctly				
	Fall	**Winter**	**Spring**	
Percentile	**Score**	**Score**	**Score**	**Description**
99	196	218	215	
95	169	188	191	
90	**159**	**169**	**180**	**Well Above Average**
85	151	164	173	
80	148	156	166	
75	**143**	**147**	**158**	**Above Average**
70	138	140	151	
65	132	138	146	
60	127	133	140	
55	121	128	135	
50	**116**	**124**	**131**	**Average**
45	111	118	125	
40	104	113	122	
35	98	106	117	
30	94	98	112	
25	**86**	**92**	**103**	**Below Average**
20	81	85	95	
15	75	80	84	
10	**68**	**72**	**80**	**Well Below Average**
5	59	61	69	
1	24	36	41	

GRADE SIX NORMS

READING

GRADE SIX Words Read Correctly				
	Fall	**Winter**	**Spring**	
Percentile	**Score**	**Score**	**Score**	**Description**
99	214	215	217	
95	194	195	196	
90	**175**	**180**	**185**	**Well Above Average**
85	167	173	179	
80	161	166	172	
75	**155**	**159**	**164**	**Above Average**
70	149	154	159	
65	144	150	154	
60	140	146	150	
55	135	139	144	
50	**130**	**135**	**141**	**Average**
45	124	129	136	
40	119	124	131	
35	111	116	125	
30	105	111	117	
25	**100**	**102**	**111**	**Below Average**
20	92	96	105	
15	84	91	98	
10	**77**	**79**	**86**	**Well Below Average**
5	67	69	71	
1	39	26	38	

GRADE SEVEN NORMS

READING

GRADE SEVEN Words Read Correctly				
	Fall	**Winter**	**Spring**	
Percentile	**Score**	**Score**	**Score**	**Description**
99	230	236	239	
95	207	209	213	
90	**193**	**195**	**197**	**Well Above Average**
85	176	181	185	
80	169	172	175	
75	**159**	**166**	**170**	**Above Average**
70	155	160	165	
65	150	154	158	
60	144	148	152	
55	138	143	148	
50	**133**	**139**	**145**	**Average**
45	127	133	139	
40	121	127	134	
35	118	123	129	
30	113	117	122	
25	**105**	**110**	**116**	**Below Average**
20	101	104	109	
15	93	97	101	
10	**84**	**87**	**91**	**Well Below Average**
5	72	73	74	
1	46	51	60	

GRADE ONE NORMS

WRITTEN EXPRESSION

GRADE ONE Written Expression						
	Fall		**Winter**		**Spring**	
	TWW	**WSC**	**TWW**	**WSC**	**TWW**	**WSC**	
Percentile	**Score**		**Score**		**Score**		**Description**
99					37	32	
95					29	23	
90					**25**	**20**	**Well Above**
85					23	17	
80					21	16	
75					**18**	**14**	**Above Average**
70					16	12	
65					15	11	
60					14	10	
55					13	9	
50					**12**	**8**	**Average**
45					11	7	
40					10	6	
35					9	6	
30					8	5	
25					**7**	**4**	**Below Average**
20					6	4	
15					5	3	
10					**4**	**2**	**Well Below**
5					2	0	
1					0	0	

N.B. Grade One students were tested only once, during the Spring norming period.

GRADE TWO NORMS

WRITTEN EXPRESSION

GRADE TWO Written Expression							
	Fall		Winter		Spring		
	TWW	WSC	TWW	WSC	TWW	WSC	
Percentile	**Score**		**Score**		**Score**		**Description**
99	45	40	55	52	59	56	
95	32	28	41	37	47	45	
90	**28**	**23**	**35**	**30**	**41**	**37**	**Well Above**
85	26	20	32	27	37	32	
80	24	18	30	24	34	30	
75	**22**	**17**	**28**	**22**	**32**	**27**	**Above Average**
70	21	16	26	21	31	26	
65	20	14	25	20	30	25	
60	19	13	24	19	29	24	
55	17	12	22	18	27	22	
50	**15**	**11**	**21**	**16**	**26**	**21**	**Average**
45	14	10	20	15	25	20	
40	13	10	19	14	23	19	
35	12	9	18	13	22	18	
30	11	8	17	12	21	16	
25	**10**	**7**	**15**	**12**	**19**	**15**	**Below Average**
20	9	6	14	11	18	14	
15	8	5	12	10	16	12	
10	**7**	**4**	**11**	**7**	**14**	**11**	**Well Below**
5	3	2	7	5	11	8	
1	0	0	3	1	4	2	

GRADE THREE NORMS

WRITTEN EXPRESSION

GRADE THREE Written Expression							
	Fall		Winter		Spring		
	TWW	WSC	TWW	WSC	TWW	WSC	
Percentile	**Score**		**Score**		**Score**		**Description**
99	66	60	62	61	69	64	
95	47	43	53	50	59	54	
90	**41**	**37**	**49**	**44**	**51**	**46**	**Well Above**
85	37	35	45	41	47	44	
80	35	32	42	39	44	442	
75	**32**	**29**	**39**	**37**	**43**	**41**	**Above Average**
70	30	26	38	35	42	39	
65	29	25	36	33	39	36	
60	28	24	34	31	37	33	
55	27	23	32	29	35	32	
50	**25**	**22**	**30**	**27**	**34**	**31**	**Average**
45	24	20	29	26	33	29	
40	23	19	28	24	32	28	
35	22	18	26	23	30	27	
30	20	17	25	21	28	25	
25	**19**	**16**	**23**	**19**	**27**	**23**	**Below Average**
20	18	15	21	17	25	22	
15	16	13	20	16	23	19	
10	**14**	**10**	**18**	**13**	**21**	**17**	**Well Below**
5	11	7	14	11	17	13	
1	6	3	4	3	0	0	

GRADE FOUR NORMS

WRITTEN EXPRESSION

GRADE FOUR Written Expression							
	Fall		Winter		Spring		
	TWW	WSC	TWW	WSC	TWW	WSC	
Percentile	**Score**		**Score**		**Score**		**Description**
99	71	64	70	69	83	77	
95	60	54	63	60	69	67	
90	**52**	**49**	**57**	**55**	**66**	**62**	**Well Above**
85	48	45	55	51	61	59	
80	45	42	51	48	59	56	
75	**43**	**40**	**47**	**45**	**56**	**54**	**Above Average**
70	41	39	45	42	55	52	
65	40	37	44	41	52	49	
60	39	35	42	39	49	47	
55	37	33	40	37	47	45	
50	**34**	**31**	**39**	**35**	**45**	**43**	**Average**
45	33	30	37	34	43	41	
40	32	27	35	33	42	39	
35	30	26	34	31	40	37	
30	28	25	32	29	38	35	
25	**26**	**23**	**30**	**28**	**36**	**33**	**Below Average**
20	25	21	28	26	34	31	
15	22	20	25	23	32	28	
10	**20**	**18**	**23**	**20**	**28**	**24**	**Well Below**
5	17	13	18	15	23	19	
1	6	4	11	8	6	5	

GRADE FIVE NORMS

WRITTEN EXPRESSION

GRADE FIVE Written Expression							
	Fall		**Winter**		**Spring**		
	TWW	**WSC**	**TWW**	**WSC**	**TWW**	**WSC**	
Percentile	**Score**		**Score**		**Score**		**Description**
99	80	76	81	77	93	90	
95	69	66	72	68	80	77	
90	**63**	**60**	**65**	**63**	**71**	**69**	**Well Above**
85	59	57	62	59	67	65	
80	56	53	58	55	64	61	
75	**52**	**50**	**55**	**53**	**61**	**58**	**Above Average**
70	50	48	53	51	59	56	
65	48	46	52	49	58	54	
60	47	44	50	47	55	52	
55	46	42	48	45	52	51	
50	**44**	**40**	**47**	**43**	**51**	**49**	**Average**
45	42	39	45	41	49	47	
40	40	37	43	40	47	45	
35	38	35	41	38	45	43	
30	36	32	40	36	43	41	
25	**33**	**30**	**37**	**34**	**41**	**39**	**Below Average**
20	31	28	35	32	39	37	
15	29	26	32	30	36	34	
10	**25**	**22**	**29**	**27**	**34**	**30**	**Well Below**
5	21	19	24	23	27	25	
1	14	12	11	8	12	10	

GRADE SIX NORMS

WRITTEN EXPRESSION

GRADE SIX Written Expression							
	Fall		Winter		Spring		
	TWW	WSC	TWW	WSC	TWW	WSC	
Percentile	**Score**		**Score**		**Score**		**Description**
99	95	93	96	94	110	103	
95	81	79	85	82	87	84	
90	**75**	**73**	**77**	**74**	**79**	**78**	**Well Above**
85	70	69	72	70	76	74	
80	67	64	69	66	73	72	
75	**64**	**61**	**66**	**64**	**70**	**68**	**Above Average**
70	62	59	65	62	68	66	
65	59	57	62	59	65	63	
60	57	55	60	57	63	60	
55	56	53	57	55	61	58	
50	**55**	**51**	**56**	**52**	**59**	**57**	**Average**
45	52	49	54	50	57	55	
40	50	47	52	48	55	53	
35	47	45	49	46	52	50	
30	44	42	47	44	50	47	
25	**42**	**38**	**44**	**42**	**47**	**45**	**Below Average**
20	39	35	42	39	45	42	
15	35	33	39	37	41	39	
10	**33**	**29**	**36**	**32**	**38**	**36**	**Well Below**
5	28	26	31	28	33	30	
1	19	19	22	17	16	13	

GRADE SEVEN NORMS

WRITTEN EXPRESSION

GRADE SEVEN Written Expression							
	Fall		**Winter**		**Spring**		
	TWW	**WSC**	**TWW**	**WSC**	**TWW**	**WSC**	
Percentile	**Score**		**Score**		**Score**		**Description**
99	105	100	105	104	119	117	
95	88	86	93	89	95	91	
90	**83**	**80**	**84**	**82**	**85**	**84**	**Well Above**
85	79	76	80	77	81	79	
80	76	74	77	75	79	76	
75	**73**	**71**	**74**	**72**	**75**	**73**	**Above Average**
70	71	69	72	70	73	71	
65	69	67	70	68	71	69	
60	66	63	67	65	69	67	
55	63	60	65	63	67	65	
50	**61**	**59**	**63**	**60**	**65**	**63**	**Average**
45	59	56	61	58	63	61	
40	56	53	58	56	62	59	
35	54	52	57	54	59	57	
30	52	50	54	52	57	55	
25	**50**	**47**	**51**	**49**	**54**	**52**	**Below Average**
20	47	45	48	46	52	49	
15	45	42	46	43	48	47	
10	**41**	**39**	**42**	**40**	**46**	**44**	**Well Below**
5	35	33	37	35	40	38	
1	27	23	26	24	25	22	

KINDERGARTEN NORMS

INITIAL SOUND FLUENCY

Kindergarten Initial Sound Fluency (ISF)				
	Fall	**Winter**	**Spring**	
Percentile	**Score**	**Score**	**Score**	**Description**
99	43.08	49.86	-	
95	26.84	33.39	-	
90	**23.48**	**28.70**	-	**Well Above Average**
85	19.82	25.00	-	
80	16.96	23.00	-	
75	**15.00**	**20.13**	-	**Above Average**
70	13.00	17.61	-	
65	12.50	16.00	-	
60	**11.00**	15.00	-	
55	10.00	14.00	-	
50	9.10	**11.92**	-	**Average**
45	**8.00**	10.55	-	
40	7.00	9.22	-	
35	6.37	8.43	-	
30	**6.00**	7.43	-	
25	5.40	**6.81**	-	**Below Average**
20	4.81	5.00	-	
15	**3.37**	3.90	-	
10	**2.06**	**2.23**	-	**Well Below Average**
5	0	0	-	
1	0	0	-	

KINDERGARTEN NORMS

LETTER NAMING FLUENCY

Kindergarten Letter Naming Fluency (LNF)				
	Fall	**Winter**	**Spring**	
Percentile	**Score**	**Score**	**Score**	**Description**
99	43	63	73	
95	33	47	58	
90	**27**	**41**	**49**	**Well Above Average**
85	23	36	45	
80	17	33	43	
75	**14**	**29**	**41**	**Above Average**
70	12	28	39	
65	10	26	37	
60	**8**	23	**35**	
55	7	20	33	
50	6	**18**	30	**Average**
45	**5**	15	**27**	
40	4	13	25	
35	3	11	22	
30	**3**	10	**20**	
25	2	**8**	18	**Below Average**
20	1	6	15	
15	**1**	4	**12**	
10	**0**	**2**	**9**	**Well Below Average**
5	0	0	5	
1	0	0	0	

KINDERGARTEN NORMS

PHONEME SEGMENTATION FLUENCY

Kindergarten Phoneme Segmentation Fluency (PSF)				
	Fall	**Winter**	**Spring**	
Percentile	**Score**	**Score**	**Score**	**Description**
99	-	67	57	
95	-	43	48	
90	-	**37**	**44**	**Well Above Average**
85	-	33	43	
80	-	27	38	
75	-	**22**	**34**	**Above Average**
70	-	19	31	
65	-	16	27	
60	-	14	25	
55	-	11	21	
50	-	**10**	**17**	**Average**
45	-	8	15	
40	-	7	12	
35	-	5	10	
30	-	3	8	
25	-	**1**	**6**	**Below Average**
20	-	0	4	
15	-	0	2	
10	-	**0**	**0**	**Well Below Average**
5	-	0	0	
1	-	0	0	

KINDERGARTEN NORMS

NONSENSE WORD FLUENCY

Kindergarten Nonsense Word Fluency (NWF)				
	Fall	**Winter**	**Spring**	
Percentile	**Score**	**Score**	**Score**	**Description**
99	-	38	75	
95	-	27	39	
90	-	**20**	**33**	**Well Above Average**
85	-	16	28	
80	-	14	25	
75	-	**11**	**22**	**Above Average**
70	-	9	19	
65	-	7	18	
60	-	6	16	
55	-	5	13	
50	-	**3**	**12**	**Average**
45	-	2	11	
40	-	1	9	
35	-	0	8	
30	-	0	6	
25	-	**0**	**5**	**Below Average**
20	-	0	3	
15	-	0	0	
10	-	**0**	**0**	**Well Below Average**
5	-	0	0	
1	-	0	0	

GRADE ONE NORMS

LETTER NAMING FLUENCY

Grade One Letter Naming Fluency (LNF)				
	Fall	**Winter**	**Spring**	
Percentile	**Score**	**Score**	**Score**	**Description**
99	75	-	-	
95	62	-	-	
90	**58**	-	-	**Well Above Average**
85	52	-	-	
80	50	-	-	
75	**45**	-	-	**Above Average**
70	41	-	-	
65	38	-	-	
60	**37**	-	-	
55	36	-	-	
50	34	-	-	**Average**
45	**31**	-	-	
40	28	-	-	
35	24	-	-	
30	**23**	-	-	
25	19	-	-	**Below Average**
20	17	-	-	
15	14	-	-	
10	**11**	-	-	**Well Below Average**
5	7	-	-	
1	1	-	-	

GRADE ONE NORMS

PHONEME SEGMENTATION FLUENCY

Grade One Phoneme Segmentation Fluency (PSF)				
	Fall	**Winter**	**Spring**	
Percentile	**Score**	**Score**	**Score**	**Description**
99	70	73	78	
95	61	65	73	
90	**50**	**60**	**62**	**Well Above Average**
85	47	53	59	
80	43	50	57	
75	**39**	**48**	**54**	**Above Average**
70	36	45	51	
65	33	43	49	
60	29	42	46	
55	25	40	44	
50	**21**	**38**	**42**	**Average**
45	18	35	40	
40	14	33	38	
35	12	30	36	
30	10	26	33	
25	**8**	**21**	**31**	**Below Average**
20	6	17	29	
15	4	13	24	
10	**2**	**9**	**17**	**Well Below Average**
5	0	4	10	
1	0	0	0	

GRADE ONE NORMS

NONSENSE WORD FLUENCY

Grade One Nonsense Word Fluency (NWF)				
	Fall	Winter	Spring	
Percentile	Score	Score	Score	Description
99	89	106	141	
95	47	74	117	
90	**42**	**67**	**100**	**Well Above Average**
85	36	59	84	
80	32	55	76	
75	**29**	**51**	**70**	**Above Average**
70	26	47	64	
65	23	44	58	
60	21	41	54	
55	19	38	50	
50	**17**	**36**	**47**	**Average**
45	15	34	44	
40	13	31	41	
35	11	28	38	
30	9	24	35	
25	**7**	**21**	**33**	**Below Average**
20	5	17	30	
15	3	15	27	
10	**1**	**11**	**20**	**Well Below Average**
5	0	5	12	
1	0	1	2	

GRADE ONE NORMS

ORAL READING FLUENCY

Grade One Oral Reading Fluency (ORF)				
	Fall	Winter	Spring	
Percentile	**Score**	**Score**	**Score**	**Description**
99	-	105	123	
95	-	67	96	
90	-	**47**	**81**	**Well Above Average**
85	-	36	71	
80	-	32	59	
75	-	**27**	**55**	**Above Average**
70	-	23	50	
65	-	20	46	
60	-	18	41	
55	-	16	37	
50	-	**13**	**33**	**Average**
45	-	10	29	
40	-	9	24	
35	-	8	22	
30	-	7	20	
25	-	**6**	**18**	**Below Average**
20	-	5	15	
15	-	4	12	
10	-	**2**	**9**	**Well Below Average**
5	-	0	6	
1	-	0	1	

Appendix B Descriptive Statistics

Descriptive Statistics of CBM Instruments

Grade One Results Writing TWW

	Mean	S.D.	Min	Max	Skew	Kurtosis
Fall	-	-	-	-	-	-
Winter	-	-	-	-	-	-
Spring	13.45	8.28	0	40	0.71	0.13

Grade One Results Writing WSC

	Mean	S.D.	Min	Max	Skew	Kurtosis
Fall	-	-	-	-	-	-
Winter	-	-	-	-	-	-
Spring	9.77	7.03	0	34	0.92	0.5

Grade One Results Reading WRC

	Mean	S.D.	Min	Max	Skew	Kurtosis
Fall	-	-	-	-	-	-
Winter	-	-	-	-	-	-
Spring	36.02	29.60	0	144	1.15	0.8

Grade Two Results Writing TWW

	Mean	S.D.	Min	Max	Skew	Kurtosis
Fall	16.8	8.84	0	53	.72	1.04
Winter	22.21	8.05	1	58	0.66	0.88
Spring	26.84	10.98	0	74	0.73	1.3

Grade Two Results Writing WSC

	Mean	S.D.	Min	Max	Skew	Kurtosis
Fall	12.72	8.05	0	50	1.21	2.37
Winter	17.98	9.47	0	54	1.01	1.59
Spring	22.63	10.83	0	71	0.97	1.7

Grade Two Results Reading WRC

	Mean	S.D.	Min	Max	Skew	Kurtosis
Fall	51.72	39.57	0	210	1.00	0.75
Winter	67.65	39.80	0	162	0.31	-0.93
Spring	81.03	42.32	7	209	0.33	-0.46

Grade Three Results Writing TWW

	Mean	S.D.	Min	Max	Skew	Kurtosis
Fall	26.59	11.06	0	78	0.96	2.1
Winter	31.9	12.16	0	72	0.34	0.05
Spring	35.01	12.39	0	74	0.23	0.61

Grade Three Results Writing WSC

	Mean	S.D.	Min	Max	Skew	Kurtosis
Fall	23.00	10.94	0	70	0.93	1.52
Winter	28.34	12.19	0	70	0.39	0.01
Spring	31.72	12.25	0	70	0.32	0.34

Grade Three Results Reading WRC

	Mean	S.D.	Min	Max	Skew	Kurtosis
Fall	88.65	43.34	2	217	0.47	-0.15
Winter	101.72	42.41	8	216	0.26	-0.27
Spring	110.31	41.25	9	225	0.18	-0.20

Grade Four Results Writing TWW

	Mean	S.D.	Min	Max	Skew	Kurtosis
Fall	35.44	12.89	5	77	0.36	0.22
Winter	39.28	13.54	0	79	0.10	-0.02
Spring	46.03	15.00	0	95	0.05	0.31

Grade Four Results Writing WSC

	Mean	S.D.	Min	Max	Skew	Kurtosis
Fall	32.07	12.54	1	76	0.30	0.11
Winter	36.42	13.22	0	75	0.12	-0.05
Spring	43.12	14.84	0	91	0.02	0.12

Grade Four Results Reading WRC

	Mean	S.D.	Min	Max	Skew	Kurtosis
Fall	102.89	40.89	7	198	0.15	0.1
Winter	114.07	40.13	25	225	0.11	0.17
Spring	120.29	38.30	25	224	0.10	0.07

Grade Five Results Writing TWW

	Mean	S.D.	Min	Max	Skew	Kurtosis
Fall	43.73	14.37	4	85	0.23	-0.17
Winter	45.53	14.26	0	82	-0.03	0.25
Spring	51.64	15.77	0	110	0.20	0.90

Grade Five Results Writing WSC

	Mean	S.D.	Min	Max	Skew	Kurtosis
Fall	40.84	14.21	2	81	0.27	-0.20
Winter	43.84	14.10	0	80	0.03	0.07
Spring	49.84	15.74	0	105	0.23	0.78

Grade Five Results Reading WRC

	Mean	S.D.	Min	Max	Skew	Kurtosis
Fall	115.05	36.08	15	216	-0.02	-0.37
Winter	121.50	37.83	9	230	0.08	-0.27
Spring	130.57	38.55	12	233	-0.09	-0.32

Grade Six Results Writing TWW

	Mean	S.D.	Min	Max	Skew	Kurtosis
Fall	53.75	16.38	0	111	0.18	0.25
Winter	55.71	15.87	11	103	0.28	0.06
Spring	59.14	17.19	0	122	0.17	0.89

Grade Six Results Writing WSC

	Mean	S.D.	Min	Max	Skew	Kurtosis
Fall	51.01	16.54	0	104	0.20	0.07
Winter	53.36	16.17	11	98	0.26	-0.06
Spring	56.96	17.33	0	121	0.15	0.68

Grade Six Results Reading WRC

	Mean	S.D.	Min	Max	Skew	Kurtosis
Fall	128.01	42.47	16	220	-.07	-0.32
Winter	131.48	42.21	20	252	-0.12	-0.18
Spring	137.78	41.28	19	277	-0.21	0.22

Grade Seven Results Writing TWW

	Mean	S.D.	Min	Max	Skew	Kurtosis
Fall	61.82	16.62	24	118	0.28	-0.12
Winter	63.20	16.99	21	127	0.36	0.36
Spring	65.40	16.77	11	134	0.39	1.40

Grade Seven Results Writing WSC

	Mean	S.D.	Min	Max	Skew	Kurtosis
Fall	59.40	16.43	20	115	0.21	-0.12
Winter	60.87	16.80	20	125	0.36	0.37
Spring	63.29	16.90	10	134	0.41	1.38

Grade Seven Results Reading WRC

	Mean	S.D.	Min	Max	Skew	Kurtosis
Fall	135.32	40.49	40	248	0.29	-0.27
Winter	139.16	40.66	35	263	0.18	-0.22
Spring	143.93	40.18	40	278	0.14	-0.07

Descriptive Statistics of DIBELS Instruments

Grade Kindergarten Results LNF

	Mean	S.D.	Min	Max	Skew	Kurtosis
Fall	10.04	11.41	0	84	2.065	7.049
Winter	20.06	14.94	0	93	.905	1.503
Spring	29.85	15.78	0	84	.319	-.002

Grade Kindergarten Results ISF

	Mean	S.D.	Min	Max	Skew	Kurtosis
Fall	11.1648	8.5667	0	47.69	1.340	2.243
Winter	14.0861	10.4192	0	53.00	1.000	1.046
Spring	-	-	-	-	-	-

Grade Kindergarten Results PSF

	Mean	S.D.	Min	Max	Skew	Kurtosis
Fall	-	-	-	-	-	-
Winter	14.311	15.061	.0	74	1.257	1.371
Spring	20.65	16.41	0	70	.471	-.843

Grade Kindergarten Results NWF

	Mean	S.D.	Min	Max	Skew	Kurtosis
Fall	-	-	-	-	-	-
Winter	7.01	9.08	0	43	1.628	2.384
Spring	14.89	13.87	0	100	1.930	7.264

Grade One Results Reading LNF

	Mean	S.D.	Min	Max	Skew	Kurtosis
Fall	33.17	17.04	0	77	.245	-.576
Winter	-	-	-	-	-	-
Spring	-	-	-	-	-	-

Grade One Results Writing PSF

	Mean	S.D.	Min	Max	Skew	Kurtosis
Fall	24.50	19.05	0	72	.550	-.665
Winter	35.90	18.83	0	78	.064	-.428
Spring	41.07	16.44	0	74	-.421	-.208

Grade One Results NWF

	Mean	S.D.	Min	Max	Skew	Kurtosis
Fall	19.77	17.06	0	128	1.905	7.703
Winter	37.41	21.48	0	121	.654	.771
Spring	53.59	30.40	0	146	.887	.543

Grade One Results ORF

	Mean	S.D.	Min	Max	Skew	Kurtosis
Fall	-	-	-	-	-	-
Winter	19.73	20.79	0	107	1.930	4.174
Spring	39.24	28.29	0	145	1.030	.729

Appendix C Comparison of 1996 and 2003 Reading Scores

	GRADE SEVEN Words Read Correctly						
	2003 Fall	***1996 Fall***	**2003 Winter**	***1996 Winter***	**2003 Spring**	***1996 Spring***	
Percentile	**Score**	***Score***	**Score**	***Score***	**Score**	***Score***	**Description**
99	230	*220*	236	*224*	239	*228*	
95	207	*194*	209	*199*	213	*204*	
90	**193**	***183***	**195**	***185***	**197**	***193***	**Well Above Average**
85	176	*174*	181	*177*	185	*181*	
80	169	*165*	172	*170*	175	*175*	
75	**159**	***158***	**166**	***162***	**170**	***169***	**Above Average**
70	155	*152*	160	*155*	165	*161*	
65	150	*144*	154	*148*	158	*155*	
60	144	*137*	148	*143*	152	*150*	
55	138	*131*	143	*136*	148	*143*	
50	**133**	***126***	**139**	***132***	**145**	***136***	**Average**
45	127	*123*	133	*127*	139	*130*	
40	121	*117*	127	*121*	134	*124*	
35	118	*114*	123	*116*	129	*119*	
30	113	*106*	117	*111*	122	*113*	
25	**105**	***100***	**110**	***105***	**116**	***109***	**Below Average**
20	101	*94*	104	*101*	109	*103*	
15	93	*89*	97	*92*	101	*97*	
10	**84**	***74***	**87**	***79***	**91**	***84***	**Well Below Average**
5	72	*58*	73	*66*	74	*69*	
1	46	*32*	51	*34*	60	*39*	

	GRADE SIX Words Read Correctly						
	2003 Fall	***1996 Fall***	**2003 Winter**	***1996 Winter***	**2003 Spring**	***1996 Spring***	
Percentile	**Score**	***Score***	**Score**	***Score***	**Score**	***Score***	**Description**
99	214	*215*	215	*220*	217	*225*	
95	194	*185*	195	*189*	196	*192*	
90	**175**	***164***	**180**	***175***	**185**	***181***	**Well Above Average**
85	167	*155*	173	*165*	179	*170*	
80	161	*149*	166	*154*	172	*162*	
75	**155**	***140***	**159**	***148***	**164**	***158***	**Above Average**
70	149	*135*	154	*141*	159	*149*	
65	144	*130*	150	*135*	154	*142*	
60	140	*125*	146	*128*	150	*137*	
55	135	*121*	139	*123*	144	*130*	
50	**130**	***114***	**135**	***118***	**141**	***125***	**Average**
45	124	*110*	129	*113*	136	*119*	
40	119	*102*	124	*109*	131	*113*	
35	111	*93*	116	*104*	125	*108*	
30	105	*87*	111	*97*	117	*101*	
25	**100**	***81***	**102**	***91***	**111**	***95***	**Below Average**
20	92	*75*	96	*81*	105	*89*	
15	84	*67*	91	*75*	98	*78*	
10	**77**	***54***	**79**	***62***	**86**	***69***	**Well Below Average**
5	67	*44*	69	*49*	71	*55*	
1	39	*21*	26	*24*	38	*27*	

	GRADE FIVE Words Read Correctly						
	2003 Fall	***1996 Fall***	**2003 Winter**	***1996 Winter***	**2003 Spring**	***1996 Spring***	
Percentile	**Score**	***Score***	**Score**	***Score***	**Score**	***Score***	**Description**
99	196	*205*	218	*210*	215	*221*	
95	169	*185*	188	*192*	191	*195*	
90	**159**	***172***	**169**	***175***	**180**	***178***	**Well Above Average**
85	151	*161*	164	*164*	173	*168*	
80	148	*151*	156	*155*	166	*162*	
75	**143**	***142***	**147**	***148***	**158**	***154***	**Above Average**
70	138	*134*	140	*140*	151	*149*	
65	132	*127*	138	*134*	146	*141*	
60	127	*121*	133	*125*	140	*135*	
55	121	*114*	128	*118*	135	*128*	
50	**116**	***107***	**124**	***113***	**131**	***121***	**Average**
45	111	*102*	118	*106*	125	*117*	
40	104	*93*	113	*99*	122	*113*	
35	98	*86*	106	*93*	117	*105*	
30	94	*84*	98	*90*	112	*99*	
25	**86**	***78***	**92**	***85***	**103**	***90***	**Below Average**
20	81	*72*	85	*78*	95	*85*	
15	75	*61*	80	*73*	84	*78*	
10	**68**	***55***	**72**	***63***	**80**	***68***	**Well Below Average**
5	59	*42*	61	*50*	69	*57*	
1	24	*23*	36	*31*	41	*38*	

	GRADE Four Words Read Correctly						
	2003 Fall	***1996 Fall***	**2003 Winter**	***1996 Winter***	**2003 Spring**	***1996 Spring***	
Percentile	**Score**	***Score***	**Score**	***Score***	**Score**	***Score***	**Description**
99	190	*191*	208	*199*	206	*211*	
95	173	*168*	181	*176*	186	*188*	
90	**162**	***149***	**168**	***161***	**172**	***166***	**Well Above Average**
85	147	*140*	160	*148*	162	*153*	
80	138	*131*	148	*138*	152	*146*	
75	**132**	***125***	**143**	***132***	**147**	***138***	**Above Average**
70	127	*118*	133	*125*	141	*134*	
65	121	*110*	128	*120*	134	*128*	
60	114	*105*	123	*115*	130	*124*	
55	108	*100*	117	*107*	124	*118*	
50	**103**	***92***	**112**	***103***	**119**	***111***	**Average**
45	95	*87*	108	*96*	114	*105*	
40	89	*80*	100	*91*	110	*99*	
35	83	*73*	94	*88*	104	*93*	
30	77	*67*	89	*81*	100	*88*	
25	**70**	***62***	**85**	***75***	**95**	***81***	**Below Average**
20	64	*57*	81	*66*	89	*72*	
15	58	*50*	74	*58*	79	*64*	
10	**50**	***41***	**62**	***47***	**69**	***58***	**Well Below Average**
5	37	*24*	47	*34*	57	*41*	
1	26	*11*	29	*13*	36	*17*	

	GRADE THREE Words Read Correctly						
	2003 Fall	***1996 Fall***	**2003 Winter**	***1996 Winter***	**2003 Spring**	***1996 Spring***	
Percentile	**Score**	***Score***	**Score**	***Score***	**Score**	***Score***	**Description**
99	196	*180*	213	*190*	213	*208*	
95	162	*163*	174	*171*	177	*175*	
90	**141**	***139***	**156**	***154***	**160**	***162***	**Well Above Average**
85	130	*123*	146	*140*	152	*150*	
80	122	*113*	136	*126*	146	*138*	
75	**119**	***104***	**129**	***118***	**136**	***130***	**Above Average**
70	109	*99*	120	*113*	129	*123*	
65	103	*93*	116	*109*	125	*117*	
60	98	*86*	110	*103*	120	*110*	
55	94	*82*	104	*96*	115	*106*	
50	**89**	***79***	**99**	***91***	**109**	***100***	**Average**
45	85	*75*	94	*86*	104	*97*	
40	78	*70*	89	*81*	99	*91*	
35	70	*66*	83	*77*	94	*86*	
30	66	*57*	79	*71*	89	*82*	
25	**60**	***47***	**76**	***66***	**83**	***78***	**Below Average**
20	49	*36*	69	*57*	79	*72*	
15	41	*29*	58	*46*	70	*61*	
10	**36**	***24***	**44**	***36***	**62**	***49***	**Well Below Average**
5	24	*17*	34	*25*	42	*31*	
1	15	*7*	12	*10*	27	*19*	

	GRADE TWO Words Read Correctly						
	2003 Fall	***1996 Fall***	**2003 Winter**	***1996 Winter***	**2003 Spring**	***1996 Spring***	
Percentile	**Score**	***Score***	**Score**	***Score***	**Score**	***Score***	**Description**
99	168	*143*	153	*148*	186	*155*	
95	125	*98*	137	*117*	157	*140*	
90	**104**	***88***	**126**	***104***	**139**	***121***	**Well Above Average**
85	95	*76*	115	*96*	126	*113*	
80	87	*69*	106	*90*	117	*102*	
75	**75**	***62***	**98**	***85***	**110**	***97***	**Above Average**
70	69	*56*	91	*79*	104	*91*	
65	62	*47*	84	*73*	98	*86*	
60	56	*42*	78	*66*	92	*84*	
55	55	*39*	70	*61*	86	*79*	
50	**41**	***35***	**63**	***57***	**78**	***74***	**Average**
45	36	*32*	56	*49*	73	*68*	
40	32	*27*	52	*44*	65	*61*	
35	28	*22*	45	*38*	60	*54*	
30	21	*19*	38	*33*	54	*49*	
25	**18**	***17***	**31**	***30***	**46**	***45***	**Below Average**
20	16	*14*	28	*26*	41	*40*	
15	13	*12*	23	*23*	32	*33*	
10	**10**	***10***	**18**	***18***	**25**	***27***	**Well Below Average**
5	7	*7*	12	*14*	18	*19*	
1	1	*2*	3	*7*	8	*11*	

	GRADE ONE Words Read Correctly						
	2003 Fall	*1996 Fall*	2003 Winter	*1996 Winter*	2003 Spring	*1996 Spring*	
Percentile	Score	*Score*	Score	*Score*	Score	*Score*	Description
99					126	*137*	
95					99	*97*	
90					**82**	***86***	**Well Above Average**
85					70	*74*	
80					60	*65*	
75					**53**	***54***	**Above Average**
70					46	*45*	
65					42	*40*	
60					36	*35*	
55					30	*29*	
50					**26**	***25***	**Average**
45					22	*22*	
40					20	*19*	
35					18	*17*	
30					15	*15*	
25					**13**	***14***	**Below Average**
20					11	*11*	
15					9	*8*	
10					**7**	***6***	**Well Below Average**
5					4	*3*	
1					0	*1*	

Appendix D Comparison of 1996 and 2003 Reading Scores

	GRADE SEVEN Total Words Written						
	2003 Fall	***1996 Fall***	**2003 Winter**	***1996 Winter***	**2003 Spring**	***1996 Spring***	
Percentile	**Score**	***Score***	**Score**	***Score***	**Score**	***Score***	**Description**
99	105	*103*	105	*110*	119	*121*	
95	88	*82*	93	*86*	95	*93*	
90	**83**	***70***	**84**	***75***	**85**	***82***	**Well Above Average**
85	79	*67*	80	*73*	81	*80*	
80	76	*64*	77	*71*	79	*77*	
75	**73**	***62***	**74**	***68***	**75**	***74***	**Above Average**
70	71	*60*	72	*66*	73	*72*	
65	69	*57*	70	*64*	71	*69*	
60	66	*55*	67	*62*	69	*66*	
55	63	*54*	65	*60*	67	*65*	
50	**61**	***52***	**63**	***58***	**65**	***62***	**Average**
45	59	*50*	61	*56*	63	*60*	
40	56	*49*	58	*53*	62	*59*	
35	54	*48*	57	*51*	59	*56*	
30	52	*46*	54	*49*	57	*55*	
25	**50**	***44***	**51**	***47***	**54**	***51***	**Below Average**
20	47	*41*	48	*45*	52	*50*	
15	45	*38*	46	*42*	48	*46*	
10	**41**	***34***	**42**	***38***	**46**	***43***	**Well Below Average**
5	35	*28*	37	*33*	40	*37*	
1	27	*20*	26	*23*	25	*25*	

	GRADE SIX Total Words Written						
	2003 Fall	***1996 Fall***	**2003 Winter**	***1996 Winter***	**2003 Spring**	***1996 Spring***	
Percentile	**Score**	***Score***	**Score**	***Score***	**Score**	***Score***	**Description**
99	95	*85*	96	*91*	110	*101*	
95	81	*74*	85	*79*	87	*84*	
90	**75**	***67***	**77**	***72***	**79**	***77***	**Well Above Average**
85	70	*63*	72	*67*	76	*73*	
80	67	*59*	69	*64*	73	*69*	
75	**64**	***56***	**66**	***62***	**70**	***67***	**Above Average**
70	62	*55*	65	*61*	68	*65*	
65	59	*52*	62	*58*	65	*63*	
60	57	*50*	60	*56*	63	*61*	
55	56	*48*	57	*55*	61	*59*	
50	**55**	***46***	**56**	***52***	**59**	***57***	**Average**
45	52	*44*	54	*50*	57	*55*	
40	50	*43*	52	*47*	55	*53*	
35	47	*41*	49	*46*	52	*52*	
30	44	*39*	47	*44*	50	*50*	
25	**42**	***37***	**44**	***42***	**47**	***48***	**Below Average**
20	39	*35*	42	*40*	45	*45*	
15	35	*33*	39	*37*	41	*42*	
10	**33**	***30***	**36**	***35***	**38**	***37***	**Well Below Average**
5	28	*25*	31	*28*	33	*33*	
1	19	*16*	22	*19*	16	*21*	

	GRADE FIVE Total Words Written						
	2003 Fall	***1996 Fall***	**2003 Winter**	***1996 Winter***	**2003 Spring**	***1996 Spring***	
Percentile	**Score**	***Score***	**Score**	***Score***	**Score**	***Score***	**Description**
99	80	*70*	81	*80*	93	*90*	
95	69	*53*	72	*68*	80	*78*	
90	**63**	***56***	**65**	***63***	**71**	***73***	**Well Above Average**
85	59	*52*	62	*60*	67	*68*	
80	56	*48*	58	*57*	64	*64*	
75	**52**	***46***	**55**	***55***	**61**	***61***	**Above Average**
70	50	*44*	53	*52*	59	*59*	
65	48	*42*	52	*50*	58	*57*	
60	47	*41*	50	*49*	55	*56*	
55	46	*40*	48	*47*	52	*54*	
50	**44**	***38***	**47**	***45***	**51**	***52***	**Average**
45	42	*36*	45	*43*	49	*50*	
40	40	*35*	43	*42*	47	*49*	
35	38	*33*	41	*40*	45	*46*	
30	36	*31*	40	*38*	43	*45*	
25	**33**	***30***	**37**	***36***	**41**	***43***	**Below Average**
20	31	*28*	35	*34*	39	*40*	
15	29	*26*	32	*32*	36	*37*	
10	**25**	***23***	**29**	***29***	**34**	***33***	**Well Below Average**
5	21	*19*	24	*24*	27	*27*	
1	14	*10*	11	*17*	12	*22*	

	GRADE Four Total Words Written						
	2003 Fall	*1996 Fall*	2003 Winter	*1996 Winter*	2003 Spring	*1996 Spring*	
Percentile	**Score**	***Score***	**Score**	***Score***	**Score**	***Score***	**Description**
99	71	*64*	70	*74*	83	*85*	
95	60	*54*	63	*65*	69	*70*	
90	**52**	***49***	**57**	***57***	**66**	***66***	**Well Above Average**
85	48	*43*	55	*53*	61	*61*	
80	45	*40*	51	*50*	59	*57*	
75	**43**	***38***	**47**	***47***	**56**	***54***	**Above Average**
70	41	*36*	45	*45*	55	*50*	
65	40	*34*	44	*43*	52	*48*	
60	39	*33*	42	*41*	49	*46*	
55	37	*31*	40	*39*	47	*44*	
50	**34**	***29***	**39**	***37***	**45**	***42***	**Average**
45	33	*28*	37	*35*	43	*40*	
40	32	*26*	35	*33*	42	*38*	
35	30	*25*	34	*32*	40	*36*	
30	28	*24*	32	*30*	38	*35*	
25	**26**	***23***	**30**	***28***	**36**	***33***	**Below Average**
20	25	*21*	28	*25*	34	*31*	
15	22	*20*	25	*23*	32	*28*	
10	**20**	***17***	**23**	***21***	**28**	***25***	**Well Below Average**
5	17	*13*	18	*18*	23	*21*	
1	6	*8*	11	*10*	6	*12*	

	GRADE THREE Total Words Written						
	2003 Fall	***1996 Fall***	**2003 Winter**	***1996 Winter***	**2003 Spring**	***1996 Spring***	
Percentile	**Score**	***Score***	**Score**	***Score***	**Score**	***Score***	**Description**
99	66	*53*	62	*60*	69	*64*	
95	47	*43*	53	*51*	59	*56*	
90	**41**	***38***	**49**	***46***	**51**	***53***	**Well Above Average**
85	37	*34*	45	*44*	47	*50*	
80	35	*31*	42	*42*	44	*47*	
75	**32**	***30***	**39**	***41***	**43**	***45***	**Above Average**
70	30	*29*	38	*38*	42	*42*	
65	29	*27*	36	*36*	39	*40*	
60	28	*26*	34	*34*	37	*39*	
55	27	*24*	32	*32*	35	*37*	
50	**25**	***23***	**30**	***31***	**34**	***35***	**Average**
45	24	*21*	29	*29*	33	*34*	
40	23	*20*	28	*27*	32	*33*	
35	22	*19*	26	*26*	30	*31*	
30	20	*18*	25	*25*	28	*30*	
25	**19**	***16***	**23**	***23***	**27**	***28***	**Below Average**
20	18	*15*	21	*20*	25	*26*	
15	16	*14*	20	*17*	23	*24*	
10	**14**	***12***	**18**	***15***	**21**	***21***	**Well Below Average**
5	11	*9*	14	*13*	17	*18*	
1	6	*3*	4	*7*	0	*10*	

GRADE TWO Total Words Written							
Percentile	**2003 Fall Score**	***1996 Fall Score***	**2003 Winter Score**	***1996 Winter Score***	**2003 Spring Score**	***1996 Spring Score***	**Description**
99	45	*44*	55	*50*	59	*57*	
95	32	*27*	41	*38*	47	*45*	
90	**28**	***23***	**35**	***33***	**41**	***40***	**Well Above**
85	26	*21*	32	*30*	37	*37*	
80	24	*19*	30	*27*	34	*34*	
75	**22**	***18***	**28**	***26***	**32**	*32*	**Above Average**
70	21	*17*	26	*24*	31	*31*	
65	20	*16*	25	*23*	30	*30*	
60	19	*15*	24	*22*	29	*28*	
55	17	*14*	22	*21*	27	*26*	
50	**15**	***12***	**21**	***20***	**26**	***25***	**Average**
45	14	***12***	20	*19*	25	*24*	
40	13	*10*	19	*18*	23	*23*	
35	12	*10*	18	*16*	22	*22*	
30	11	*9*	17	*15*	21	*20*	
25	**10**	***8***	**15**	***14***	**19**	***19***	**Below Average**
20	9	*7*	14	*12*	18	*17*	
15	8	*6*	12	*11*	16	*15*	
10	**7**	***5***	**11**	***9***	**14**	***13***	**Well Below**
5	3	*3*	7	*6*	11	*11*	
1	0	*1*	3	*3*	4	*6*	

GRADE ONE Total Words Written							
	2003 Fall	***1996 Fall***	**2003 Winter**	***1996 Winter***	**2003 Spring**	***1996 Spring***	
Percentile	**Score**	***Score***	**Score**	***Score***	**Score**	***Score***	**Description**
99					37	*33*	
95					29	*25*	
90					**25**	***23***	**Well Above**
85					23	*21*	
80					21	*20*	
75					**18**	***19***	**Above Average**
70					16	*17*	
65					15	*16*	
60					14	*15*	
55					13	*13*	
50					**12**	***12***	**Average**
45					11	*11*	
40					10	*10*	
35					9	*9*	
30					8	*8*	
25					**7**	***7***	**Below Average**
20					6	*6*	
15					5	*5*	
10					**4**	***4***	**Well Below**
5					2	*2*	
1					0	*0*	

Appendix E Writing probes

Name _____ **Grade** _____ **Date** _____

Written Expression **probe 1**

Write a story that begins with:

I opened the door and

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

SCHOOL DISTRICT # 57
C.B.M. NORMING PROJECT 2002-3

TWW _____

WSC _____

Name _____ **Grade** _____ **Date** _____

Written Expression **probe 2**

Write a story that begins with:

The cat climbed the telephone pole and …

SCHOOL DISTRICT # 57
C.B.M. NORMING PROJECT 2002-3

TWW _____

WSC _____

Name _____ **Grade** _____ **Date** _____

Written Expression **probe 3**

Write a story that begins with:

Yesterday, a monkey climbed through the window at school and …

SCHOOL DISTRICT # 57
C.B.M. NORMING PROJECT 2002-3

TWW _____

WSC _____

Name _____ **Grade** _____ **Date** _____

Written Expression **probe 4**

Write a story that begins with:

I saw strange footprints…

SCHOOL DISTRICT # 57
C.B.M. NORMING PROJECT 2002-3

TWW _____

WSC _____

Name _____ **Grade** _____ **Date** _____

Written Expression **probe 5**

Write a story that begins with:

I was walking my dog and all of a sudden a pack of wolves came running out and…

SCHOOL DISTRICT # 57
C.B.M. NORMING PROJECT 2002-3

TWW _____

WSC _____

Name _____ **Grade** _____ **Date** _____

Written Expression **probe 6**

Write a story that begins with:

In the middle of the night I heard some strange sounds. I got out of bed and…