1-1-2010

Predicting Mastery on the WESTEST 2 : A Comparison of MAP and WESTEST 2 Data

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Predicting Mastery on the WESTEST 2: A Comparison of MAP and WESTEST 2 Data

Thesis submitted to
Marshall University
Graduate College

In partial fulfillment of
the requirements for the degree of
Education Specialist
in the School Psychology Program

By

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May 2010

Abstract

Curriculum based measures are conducted in order to observe a student's progress and gauge the development in the school's curriculum. Schools are in need of gathering data to discover if students are progressing towards achieving proficiency on state standardized tests. This research determines what score or corresponding percentile needs to be reached on the MAP test in order to achieve mastery on WESTEST 2. Data was compared from students in a rural county in West Virginia who were tested in Mathematics and Reading on the MAP test and WESTEST 2. A Pearson product correlation between both the MAP test and WESTEST 2 was also calculated as well as the coefficient of determination. Results of this study projected what score or percentile in grades 3rd through 9th would be necessary in order to achieve mastery on the WESTEST 2. Future studies should include a broader range of schools in West Virginia.

Acknowledgements

First of all, I would like to thank God for all he has done for me in my life and being there for me when times were tough. I cannot express in words the gratitude I have for my family in standing beside me no matter what the day would bring, and we all know the day has brought everything imaginable to my life. This amazing family of mine is too important not to mention. Brian, you have never stood in front of me, always beside me and cheered me on. I love you and can't imagine life without you. My mother and stepfather, without your help and love, I would not be here today. To my brother, thank you for being a great role model and someone I will forever look up too. To my grandparents, thank you for teaching me that love is the most important thing in this world. A special thanks goes out to all those at Ritchie County Schools, who have made my internship an amazing experience, and without the help of the world's best supervisor, Kathy Roby, I would not be the School Psychologist that I am. I also have to thank my four-legged children who, without fail, were there by my side every step of the way. I also want to thank my committee: Dr. Krieg, you've made this program what it is and I am in awe of your knowledge and hope to continue to gain wisdom from you. Dr. Stroebel, you've been an excellent mentor and I thank you for all your help and guidance! Dr. Meisel, you made statistics not so scary and I can't thank you enough for that gift!

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Chapter One

Review of the Literature

Every year, students in West Virginia are required to take the state standardized test identified as the West Virginia Educational Standards Test 2, or more widely known as WESTEST 2. According to the No Child Left Behind Act of 2001, each state must administer a standardized test that follows the contents and objectives taught within the school year. The subjects that must be included in the test are mathematics, reading, language arts, and science. By administering a state standardized test such as the WESTEST 2, each school will be able to gain knowledge on whether or not the school has met the state standards. Schools are to be held accountable if they do not meet these high standards (NCLB, 2001).

With schools administering the WESTEST 2 only one time at the end of the school year, school systems have begun using items such as Curriculum Based Measurements in order to monitor how a student is progressing during the school year. By gathering data throughout the school year, teachers would be able to shift academic instruction to where students are best able to obtain the information and grow (Stecker, Fuchs & Fuchs, 2005). In turn, being able to monitor students academic achievement would only benefit the school system by making sure the students were on the correct path in meeting the state standards.

According to the No Child Left Behind Act of 2001, schools must meet certain state mandated scores on the standardized tests in order to make AYP, or Adequate Yearly Progress (NCLB, 2001). If schools do not meet the specified scores as well as other particular items such as 95% of students taking the test, elementary and middle schools attendance rate, and graduation rates, then schools could have to go into a school improvement plan. According to West Virginia Policy 2320, this current school year of 2010, 81.33% of elementary school

students, 83.33% of middle school students, and 80.66% of high school students must score mastery or above on the WESTEST 2 in order to meet the state standards. In mathematics, the numbers are 78% of elementary students, 76% of middle school students, and 72.67% of high school students must score at or above mastery. By the conclusion of the 2013-2014 school year, all West Virginia students must score at or above mastery in mathematics and reading/language arts sections of the WESTEST 2 as well as the other items previously listed used to measure AYP (WV Board of Education, 2007).

In order to reach these state goals, it is recommended that schools employ some type of curriculum based measure in order to monitor student's progress (Espin et al., 2008). Currently, Ritchie County is the only county in West Virginia using a Curriculum Based Measurement entitled Measures of Academic Progress, or MAP testing. After doing a book study on how districts have improved their schools assessments, Ritchie County contacted the makers of the MAP, the Northwest Evaluation Agency (NWEA) to find information about their testing and to have NWEA develop a test for Ritchie County Schools (D. Bever, personal communication, February 25, 2010). NWEA is a non-profit, research based organization (R. Johnson, personal communication, March 4, 2010). MAP testing is given three times per school year and is aligned with the current content standards and curriculum of Ritchie County Schools and the state of West Virginia (R. Johnson, personal communication, March 4, 2010). MAP testing is an adaptive computer-based test that shows the progress of students as they proceed throughout the school year. The data that is collected from this CBM is then analyzed in order to determine if the students are learning and what they may need to be taught. By administering the MAP tests, Ritchie County is able to monitor students' achievement and academic growth throughout the

school year; therefore when the students take the WESTEST in the spring, teachers should already be informed on where their students are academically.

Research on the MAP has taken place in other states, but has yet to be completed for West Virginia. According to the NWEA, a comparison of the MAP scores to each states individual standardized test has been conducted in 34 states with approximately three million students participating (R. Johnson, personal communication, March 4, 2010). This research, called an alignment report, compares different state standardized tests with the MAP. The same alignment report, using each state's unique standardized test, was conducted in 31 states.

Pennsylvania was recently used in the alignment report. NWEA compared their state standardized test called the Pennsylvania System of School Assessment (PSSA). The scores from six thousand students were compared with the RIT scores, or Rauch Units, on the MAP which were ranked in order from highest to lowest and assigned a percentile (NWEA, 2009). Those students who scores were below the proficient level on the PSSA were judged against the MAP scores which would show what RIT score or percentile that was needed in order to achieve proficiency on the PSSA (NWEA, 2009). The results of this report displayed two items. The first being if a particular score was achieved on the MAP test, what would be the probability that a student would achieve proficiency on the PSSA. Secondly, what score or corresponding percentile would be necessary on the MAP in order to obtain proficiency on the PSSA. In this Pennsylvania research, each grade was analyzed and all findings are available from NWEA. According to NWEA 2009, results of this study showed that students needed to perform at the following percentiles on the MAP test in mathematics in order to achieve proficiency on the PSSA:

Table 1

Percentile Needed to Achieve Proficiency on the PSSA

Grade	Percentile
2nd	24th
3rd	24th
4th	27th
5th	39th
6th	34th
7th	34th
8th	33rd
9th	42nd
10th	51st
11th	59th

Rob Johnson, partner relations representative for NWEA, speculated that students who score within the 40th percentile on the Reading and Mathematics portions of the MAP test will achieve mastery level on the corresponding areas of the WESTEST 2. This number of 40% was determined by Mr. Johnson to be "pretty safe" considering "proficiency across the country is set at a very low level" (R. Johnson, personal communication, March 4, 2010).

Curriculum Based Measures

In 2005, Stecker et.al. compiled a review of the research on Curriculum Based Measures. In the 1970's, the University of Minnesota's Institute for Research on Learning Disabilities began to follow student's development which appeared to be the start of Curriculum Based Measures that not only assist in student learning but help guide teachers instruction. CBM's are a way to monitor what is taught in the curricula and separate students that are on the verge of failing and help them reach their academic goals (Fore III, Boon, Lawson, Martin, 2007).

Teachers are then able to adjust their teaching strategies and form new lessons in order to facilitate a child's learning needs (Fore III et.al., 2007). By using this formative data rather than summative data, feedback is often quicker so teachers can immediately change direction in their teachings rather than waiting for a chapter test (Fore III et. al., 2007).

CBM's have certain unique characteristics with the first being the fact that CBM's are used to evaluate long-term goals. A second trait is the frequency and graphing whereas teachers are able to observe the students progress on a bi-weekly or weekly basis and plot the information collected on a graph. A third characteristic is being able to know that the CBM's that are being used within a classroom are positively helping student's achieve their goals in education (Stecker et. al., 2005).

Stecker et.al (2005) followed their research with a look to the future of CBM's. They proposed that feedback become more elaborate and more individually based as well as making it more electronically and technologically based so the data is more easily understood. They also believed that CBM's may be used to track progress of students when they are preparing to take state standardized tests. (Stecker et. al., 2005). The MAP test appears to fulfill these recommendations.

Standardized Tests

Standardized testing is not a modern endeavor, it has been used for numerous years from testing immigrants who were about to embark in the United States of America to assessing those who chose to fight for this country (Amrein & Berliner, 2003). According to No Child Left Behind 2001, state standardized tests must be given in each state to track the progress and accountability of schools. These tests can only measure certain aspects of a child's skills and

must be kept up-to-date in order to fully be beneficial (Crane, Maurizio, Bruett, Jeannero, Wilson, Bealkowski, & O'Brien, 2004). Gallagher (2003), stated that these tests were used as early as the 1850's when Horace Mann inquired about the thought that these standardized tests would boost student moral and motivation as well as improve the achievement of students, which was the primary goal of these assessments when first developed (Amrein & Berliner, 2003).

When Title I of the Elementary and Secondary Education Act was passed in 1965, money was given to schools by the government. These schools were required to give the standardized tests to students in order to show that the funding they were receiving was being put to good use and worthwhile. In the 1970's, accountability came into the picture and standardized testing became more customary (Longo, 2010).

Testing is something that is not done in many other countries, especially before the age of sixteen (Kohn, 2000). Many believe that it weakens a student's creativity (Longo, 2010). As of February 2003, eighteen states use the standardized testing to not only monitor student progress, but to determine who will receive a high school diploma and who will not (Amrein & Berliner, 2003).

West Virginia has changed its standardized tests throughout the years to keep up with the ever changing policies of the Department of Education. The Stanford Achievement Test 9 (SAT 9) was used until 2003 and was tailored to the national norms. In 2004, West Virginia adapted a new criterion-referenced test that was created and based upon the contents standards taught in West Virginia (O'Byrne, Securro, Jones, & Cadle, 2006). This new standardized test was known as the WESTEST and has since been revamped into the WESTEST 2 in 2009.

Statement of the Problem

Meeting Adequate Yearly Progress (AYP) can be difficult for schools to do unless they are able to monitor their students throughout the year. By giving students Curriculum Based Measures (CBM) such as the MAP Test, schools may be able to see how the students are academically progressing. By taking advantage of this type of CBM, it can provide quantitative data that assists in analyzing specific academic skills needed for mastery performance on the WESTTEST 2.

Statement of Hypothesis

The hypothesis states there is a significant correlation between student reading scores on the MAP test and the reading score of mastery on the WESTEST 2. There is also a significant correlation between student math scores on the MAP test and the math score of mastery on the WESTEST 2. In addition, descriptive data will be used to predict the WESTEST 2 based on MAP scores.

Chapter Two

Method

Participants

The participants in this study were third through ninth grade students in a rural county in northern West Virginia. Names are not associated with scores, as to keep confidentiality. Demographics for this county include 98% Caucasian with 52.99% receiving free or reduced lunch.

Instruments

Measures of Academic Progress.

The Measures of Academic Progress assessment (MAP assessment), was created by the Northwest Evaluation Association (NWEA), a research based non-profit organization (R. Johnson, personal communication, March 4, 2010). According to the NWEA, the MAP assessment was developed with the school's curriculum in mind, and is given in the areas of reading, language, and mathematics. Questions are organized in a manner in that when a student answers a question correctly, a more difficult item is shown, but if the question is missed, an easier item is presented. MAP assessments allow educators to know where each student stands and be able to adjust their instruction if necessary. This assessment is given approximately every eight weeks throughout the school year. (NWEA, 2009).

Scoring of the MAP assessment is done via computer as to assure accuracy and a quick response. All answers are compatible with the RIT Scale, also known as Rauch Unit (NWEA, 2009). These scores are displayed in a print out that shows teachers where their student falls in each category. The data also compiles areas that the student is proficient in as well as what needs

to be mastered based on each state's Content Standards and Objectives (NWEA, 2009). This test not only tells which student is not performing well, but it informs the teachers what areas of the Content Standards and Objectives (CSO's) they are not mastering (R. Johnson, personal communication, March 4, 2010). The MAP assessment is an example of a curriculum based measure that can be used to monitor students during the year.

WESTEST 2.

Each spring, West Virginia students in third through eighth grade take the WESTEST 2 (McGraw-Hill, 2009). This criterion referenced test, which was designed specifically for West Virginia, assesses students in four main areas (McGraw-Hill, 2009). These areas are mathematics, reading/language arts, science, and social studies. The questions on the exam follow the West Virginia 21st Century Content Standard Objectives, or CSO's (WV Department of Education, 2010). The test produces scores of Novice, Partial Mastery, Mastery, Above Mastery, and Distinguished. As stated previously, a certain percentage of students must score at or above mastery in order to help maintain Adequate Yearly Progress (WV Board of Education, 2007).

Reliability is an important factor when developing a test because reliability is when a test is consistent time and time again on what it measures (McGraw-Hill, 2009). Using Cronbach's coefficient alpha, the publishers were able to determine the WESTEST 2's reliability. McGraw-Hill noted that the closer the value is to one, the high consistency of the test. Coefficient values above 0.8 are deemed as adequate (McGraw-Hill, 2009). According to the findings of the publishers, the results are mainly above .80. For all grades, the reading/language arts values

range from .85 to .88 and in mathematics .84 to .88 (except for tenth grade where .79 was found) (McGraw-Hill, 2009).

Procedures

In order to participate in this study, each participant must have taken both the Reading and Math sections of the WESTEST 2 as well as the Reading and Math portions of the MAP Test in the Spring of 2009. The tests were given by the teachers. WESTEST 2 data was taken from the county board of education office with permission and MAP scores were gathered from the online database.

Chapter Three

Results

This research was implemented in order to determine if a correlation exists between the MAP test and the WESTEST 2 as well as to establish what scores on the MAP test predicted Mastery on the WESTEST 2. First, a correlation was found between each subject in each grade along with the coefficient of determination. Next, the method the designers of the MAP test employed was used to find what RIT score, also known as Roush Unit, must be achieved in order to score Mastery on the WESTEST 2. Finally, the probability of obtaining Mastery on the WESTEST 2 by a particular RIT score was determined based on the technique that was used by NWEA, the creators of the MAP test.

A comparison of a student's reading score on the MAP test was compared with their reading score on the WESTEST 2. An identical comparison was completed with the student's math scores on both assessments. Pearson's product-moment correlation coefficient, which is also known as Pearson *r*, was used to determine the relationship between MAP Test scores and WESTEST 2 scores.

NWEA has previously collected data aligning different state standardized assessments along with MAP tests. NWEA's study showed what percentile you had to achieve in order to score at that particular state's proficiency level. Because this had not yet been done for West Virginia, the same method NWEA used, the equipercentile method was applied. The following steps come from NWEA's research in 2009 and were tailored to fit this WV study:

- "For each grade level within a state sample, the proportion of students achieving each of the No Child Left Behind Act (NCLB)-reported proficiency performance levels on their state assessment is computed" (NWEA, 2009). In this study, there

are five proficiency levels and the total number of students achieving each level was calculated into a percentage.

- "These same percentage points are used to determine the equivalent cut scores on the MAP assessment for that sample of students" (NWEA, 2009). For example, if 20% of the students score Novice on the WESTEST 2, the equivalent percentile on the MAP test was found.
- Lastly, the RIT scores achieved per grade and subject are ranked highest to lowest and a percentile was found.

The coefficient of determination was also found. This percentage shows that what is causing the x value has in common with what is causing the y value to vary or have different scores. Data was analyzed used Microsoft Excel Data Analysis when finding the correlation coefficient and the coefficient of determination.

Correlational research "permits a determination of the strength and direction of relations among variables" (Elmes, Kantowitz, Roediger III, 2003). This type of research was used in order to determine what score a student would need to achieve on the MAP Test in order to predict a score of Mastery on the WESTEST 2. By predicting this score, teachers will be able to ascertain those students who may not achieve the Mastery level on the WESTEST 2, thus affecting the schools Adequate Yearly Progress (AYP). This correlational research will distinguish between those who are in need of additional in-depth instruction within a certain subject area and those who should be achieving at or above Mastery.

The Pearson-Product correlation was determined at each grade level. Corresponding graphs are listed in the appendix as Figures 1.1-1.7. All the correlation tests showed significance

at degrees of freedom 100 at the .01 probability level. The correlation yielded the following results all at the .05 probability level:

Table 2

Correlation Between WESTEST 2 and MAP in Mathematics

Grade	Correlation
3rd	.73
4th	.79
5th	.79
6th	.80
7th	.81
8th	.75
9th	.67

For reading, corresponding graphs are listed in the appendix as Figures 2.1-2.7. All the correlation tests showed significance at degrees of freedom 100 at the .01 probability level. The Pearson-Product correlation at the .05 probability level is as follows:

Table 3

Correlation Between WESTEST 2 and MAP in Reading

Grade	Correlation
3rd	.82
4th	.66
5th	.69
6th	.66
7th	.80
8th	.68
9th	.48

Determining the RIT score with corresponding percentile on the MAP test that will predict Mastery on the WESTEST 2 was found according to the process afforded by NWEA. The findings show a fifty percent probability and are displayed in Table 4 and Table 5. The percentiles ranged from the 39th to 56th percentile when determining what scores were needed on the MAP to predict mastery on the WESTEST 2 in math. The percentiles ranged from the 38th to 64th percentile when determining what scores were needed on the MAP to predict mastery on the WESTEST 2 in reading.

The probability of achieving Mastery on the WESTEST 2 while scoring at any RIT score was also calculated based on NWEA's previous studies using the equipercentile method. All RIT scores obtained per grade level and subject were ranked highest to lowest and the probability was found based on percentile rank. The aforementioned statistics can be found in Table 6 and Table 7.

Chapter Four

Discussion

Being able to predict which students need extra assistance and helping those students achieve Mastery on the WESTEST 2 is why this study was completed. Schools are being held accountable by No Child Left Behind and having the ability to foresee what students are not going to meet proficiency is a necessity in today's education. By using a curriculum based measure such as MAP testing, a student's progress towards Mastery on this state test would be able to be identified.

Results from this study produced three main items. The first showed the correlation of the MAP tests to the WESTEST 2 when comparing the scores and percentiles. Each MAP RIT score is given a corresponding percentile. This percentile was correlated with the WESTEST 2 score. In math, all grades illustrated a strong correlation coefficient except for 9th grade math, where there was a moderate correlation of .67. In reading, all grades showed a moderate correlation coefficient except for 3rd grade (.82) and 7th grade (.80) where strong correlations were determined. These findings are unique in that NWEA has not yet done research within its alignment reports to determine correlations between state standardized tests and the MAP test. It is of importance to note that low MAP scores are also predicting mastery on the WESTEST 2, which can be a problem. This finding suggests that students who achieve almost any RIT score may reach mastery on the WESTEST 2.

The second finding in this study calculated what RIT score (or percentile) on the MAP test needed to be reached in order to achieve Mastery on the WESTEST 2. This study was determining if the percentile that was stated from the makers of the MAP test (NWEA) to Ritchie County was indeed fact. The 40th percentile was NWEA's prediction and it was a low estimate.

Table 1 and Table 2 show what estimated percentile should be reached in order to gain Mastery on the WESTEST 2. Scores at a minimum of 199 on the MAP test were needed in order to achieve mastery on the WESTEST 2 while the majority required approximately 45% to achieve mastery.

The third and final result in this study was also based on the method used by NWEA to uncover what chance a student has of achieving Mastery on the WESTEST 2 based on the RIT score on the MAP test. This percentile gives a prediction of who will achieve proficiency. When comparing this percentile chart to previous charts done in different states in the alignment report, it is apparent that similarities are present. For example, in Pennsylvania, the percentile chart's slope is similar to the chart done in this research. The approximation that a student in the 9th grade will achieve proficiency on the Pennsylvania System of School Assessment (PSSA) in math by receiving a RIT score of 285 is 100%, whereas the research done in this rural county shows that same student would need a 270 on the MAP.

Limitations of this study include using only one county in West Virginia with a very high rate of Caucasian students. The population of students is not varied, nor does it come from a longitudinal sample. Future suggestions for this research study should consist of a more diverse sample of students in all West Virginia counties. This should be followed by collecting data from the MAP tests for one continuous school year and comparing those findings in order to observe if there is any type of change from one benchmark test during the year to the next (examples would be fall to winter, winter to spring). Currently, more counties in West Virginia are beginning to adopt this test (R. Johnson, personal communication, March 4, 2010) and having other counties to compare data with would be beneficial due to the fact that all counties have the same Content Standard Objectives (CSO's).

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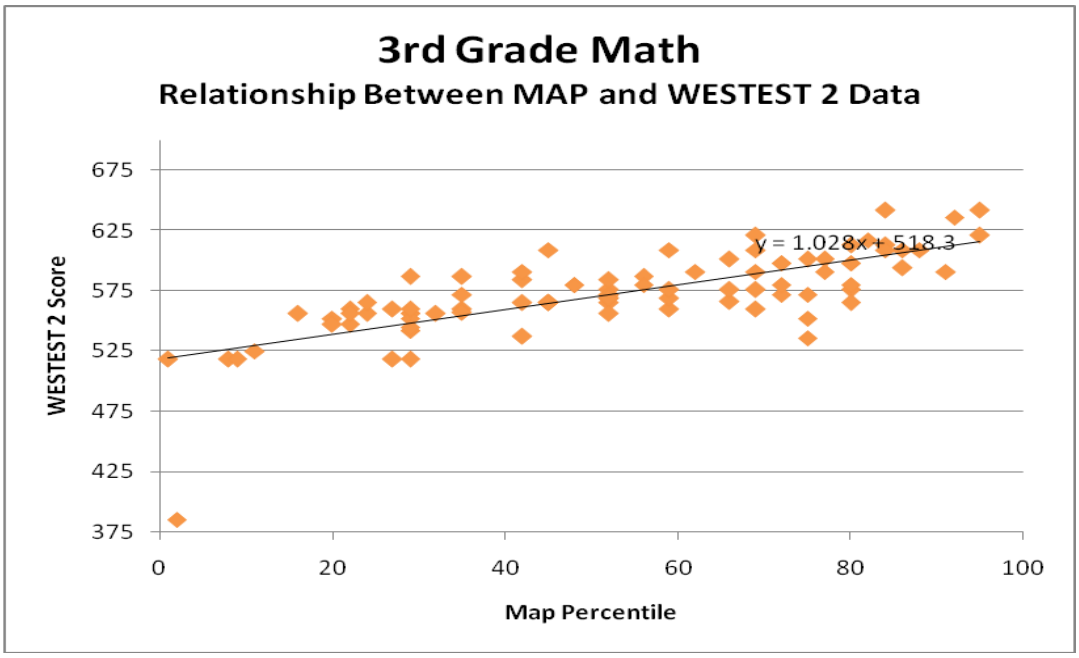
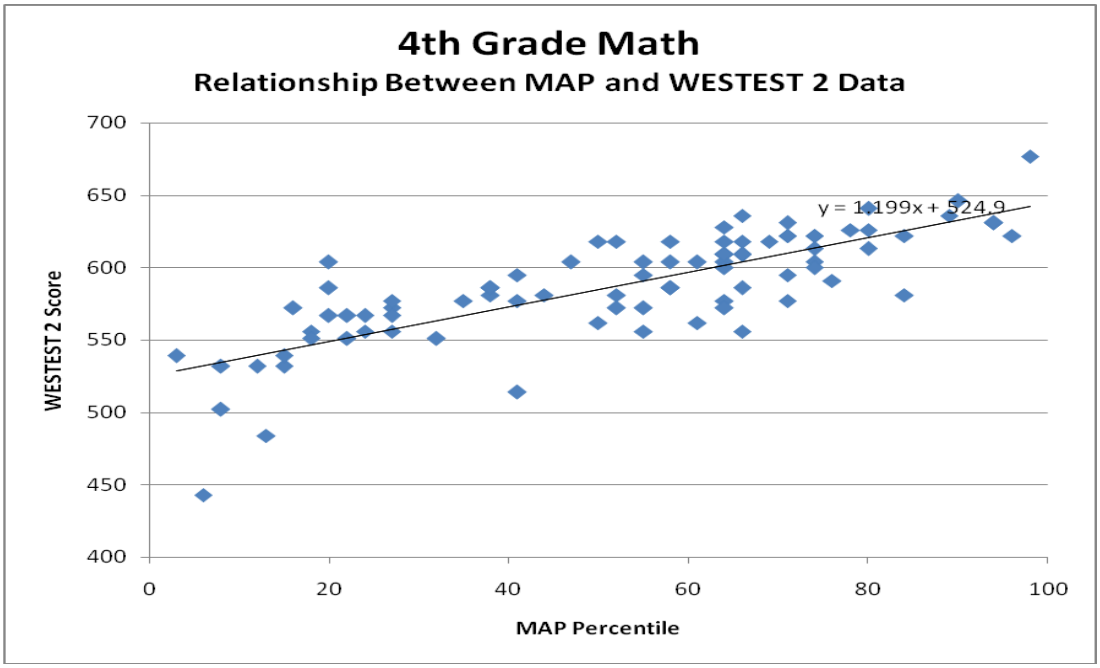
Appendix

Figure A1



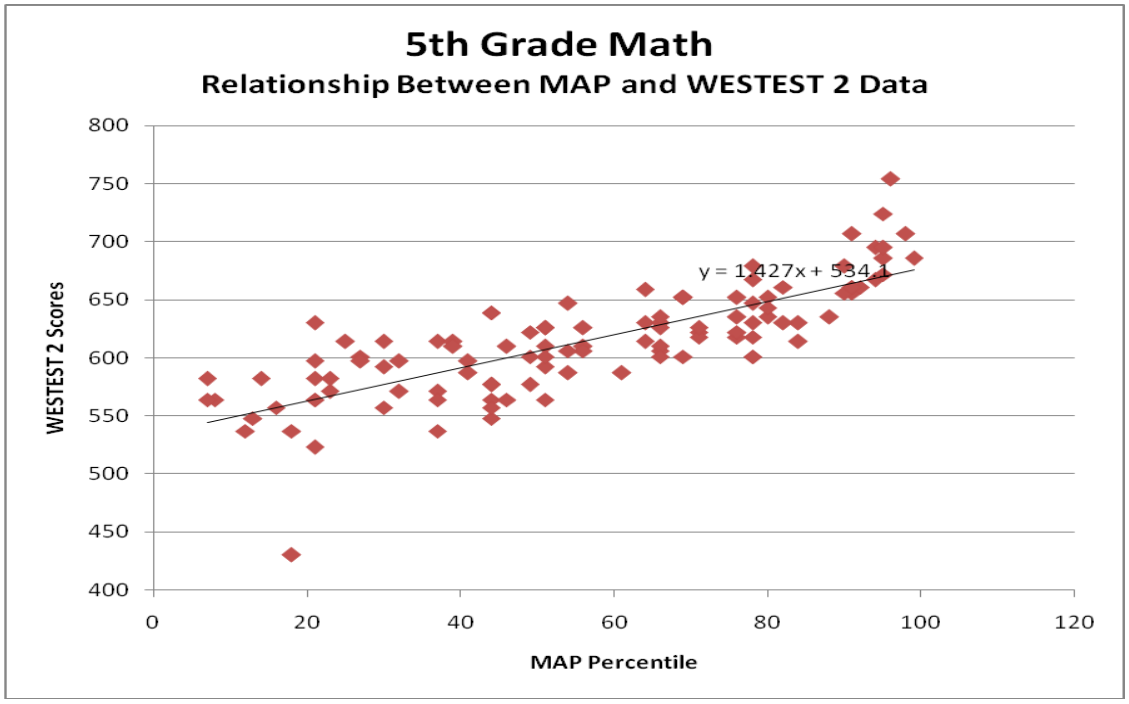
Note. For 3rd grade, a score of 577 must be attained on the WESTEST 2 to achieve Mastery.

Figure A2



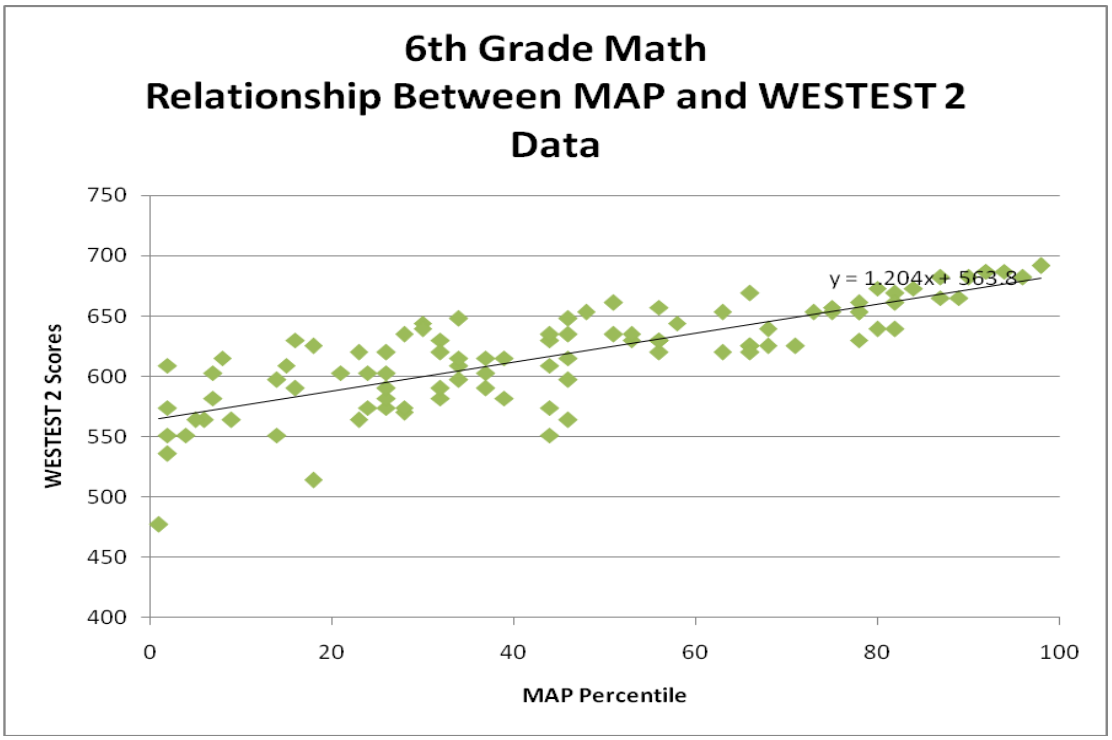
Note. For 4th grade, a score of 570 must be attained on the WESTEST 2 to achieve Mastery.

Figure A3



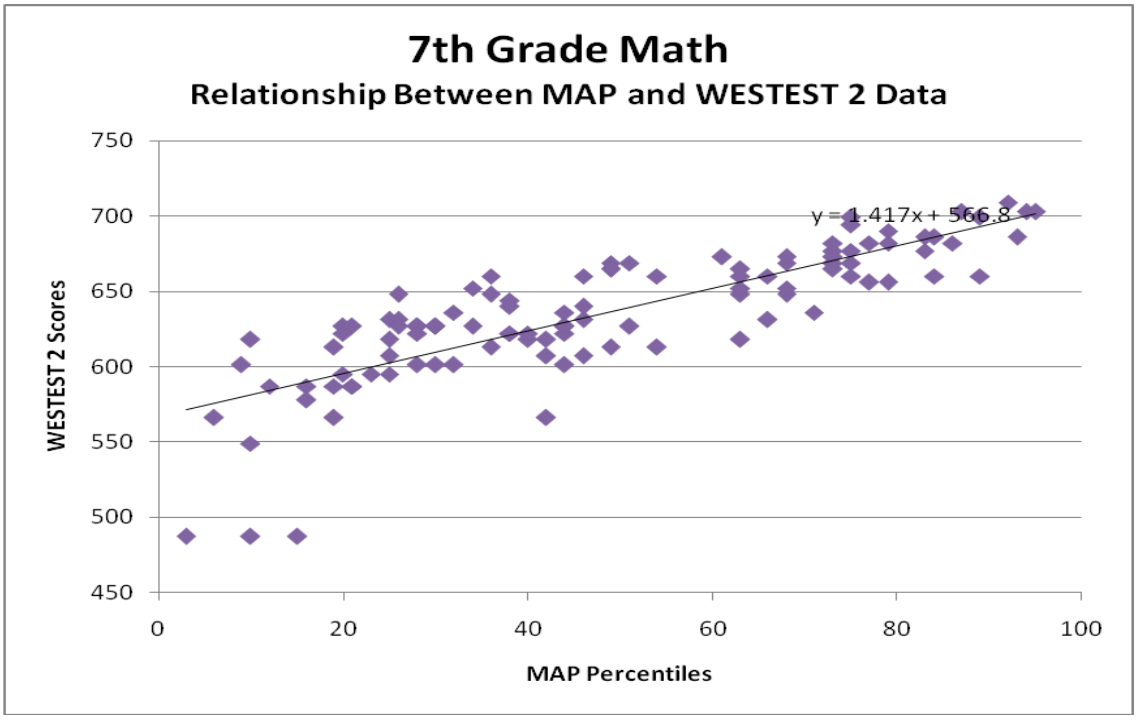
Note. For 5th grade, a score of 591 must be attained on the WESTEST 2 to achieve Mastery.

Figure A4



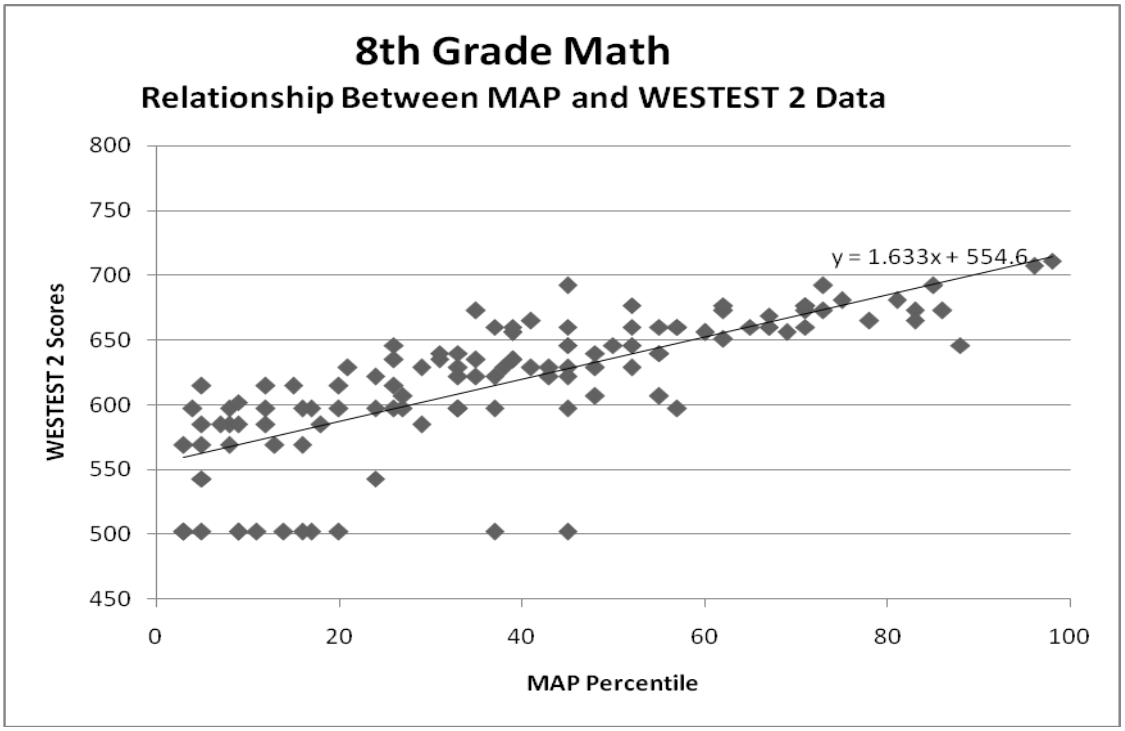
Note. For 6th grade, a score of 609 must be attained on the WESTEST 2 to achieve Mastery.

Figure A5



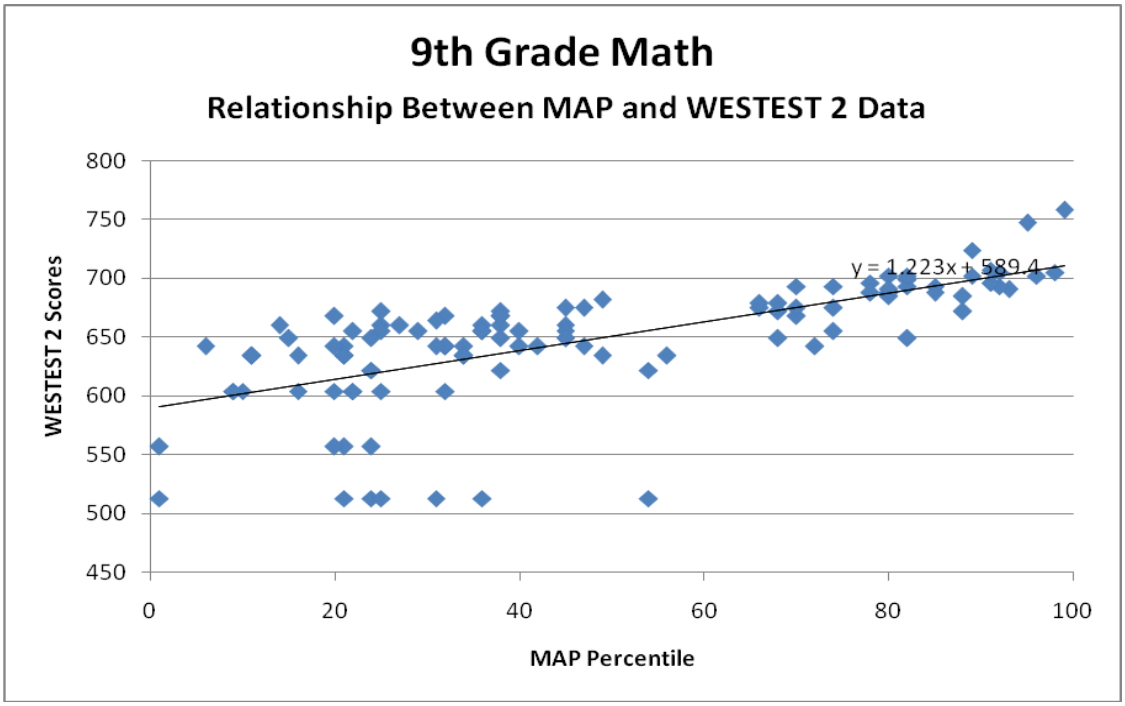
Note .For 7th grade, a score of 624 must be attained on the WESTEST 2 to achieve Mastery.

Figure A6



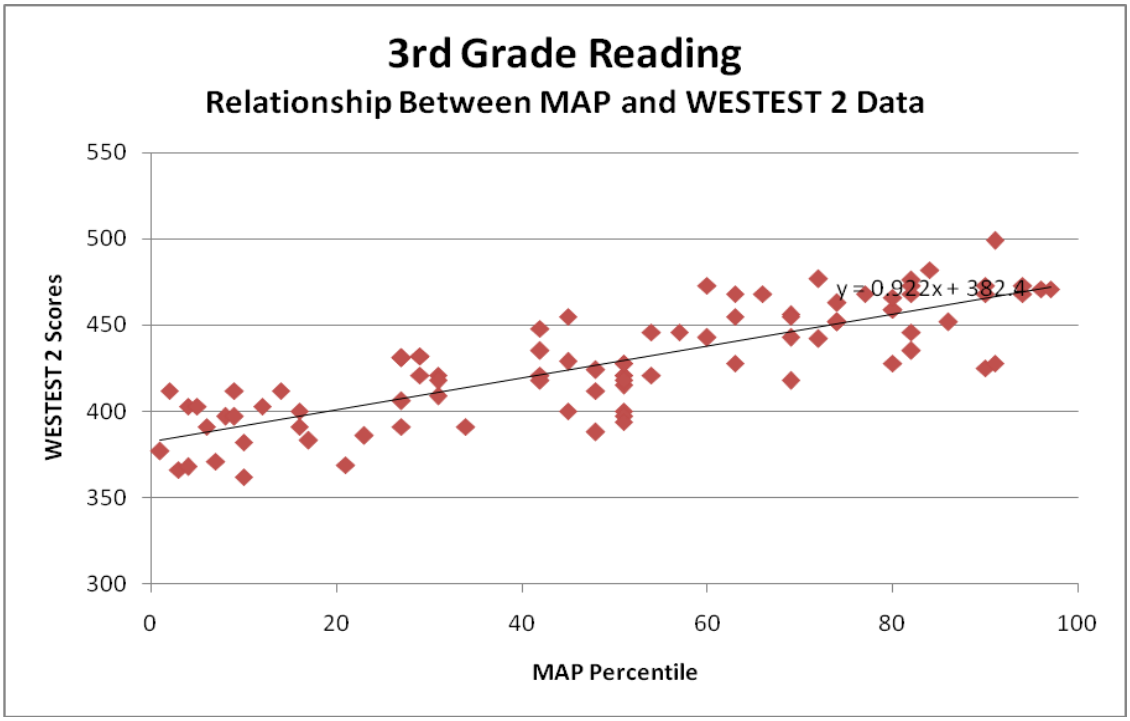
Note. For 8th grade, a score of 624 must be attained on the WESTEST 2 to achieve Mastery.

Figure A7



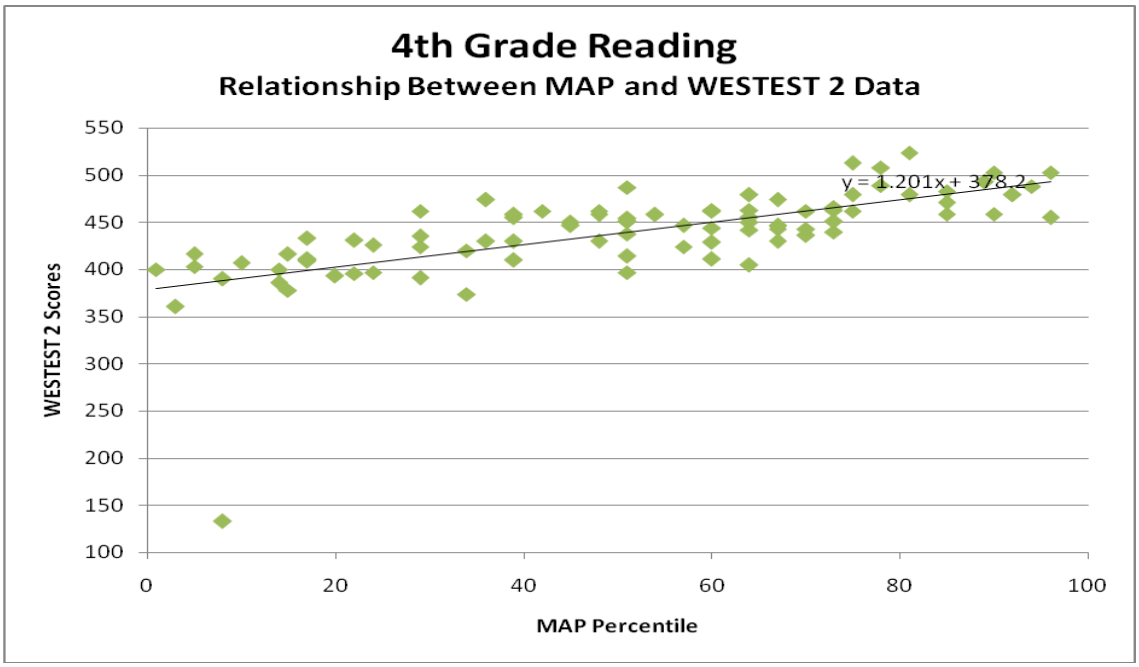
Note. For 9th grade, a score of 642 must be attained on the WESTEST 2 to achieve Mastery.

Figure B1



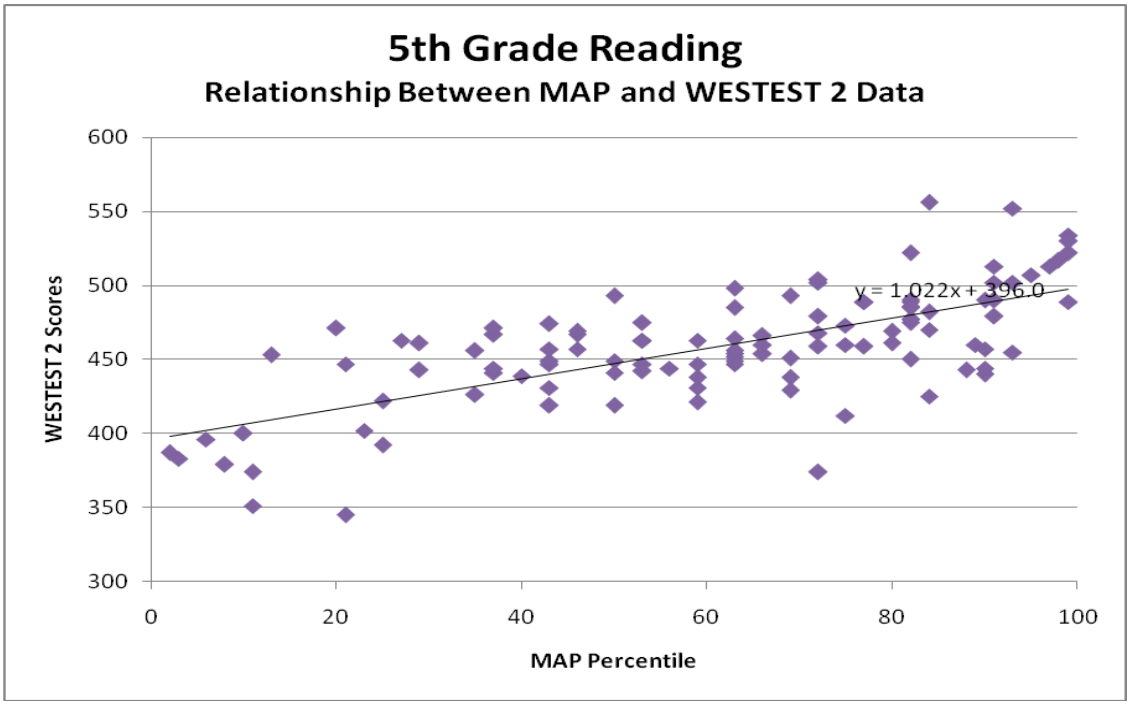
Note. For 3rd grade, a score of 413 must be attained on the WESTEST 2 to achieve Mastery.

Figure B2



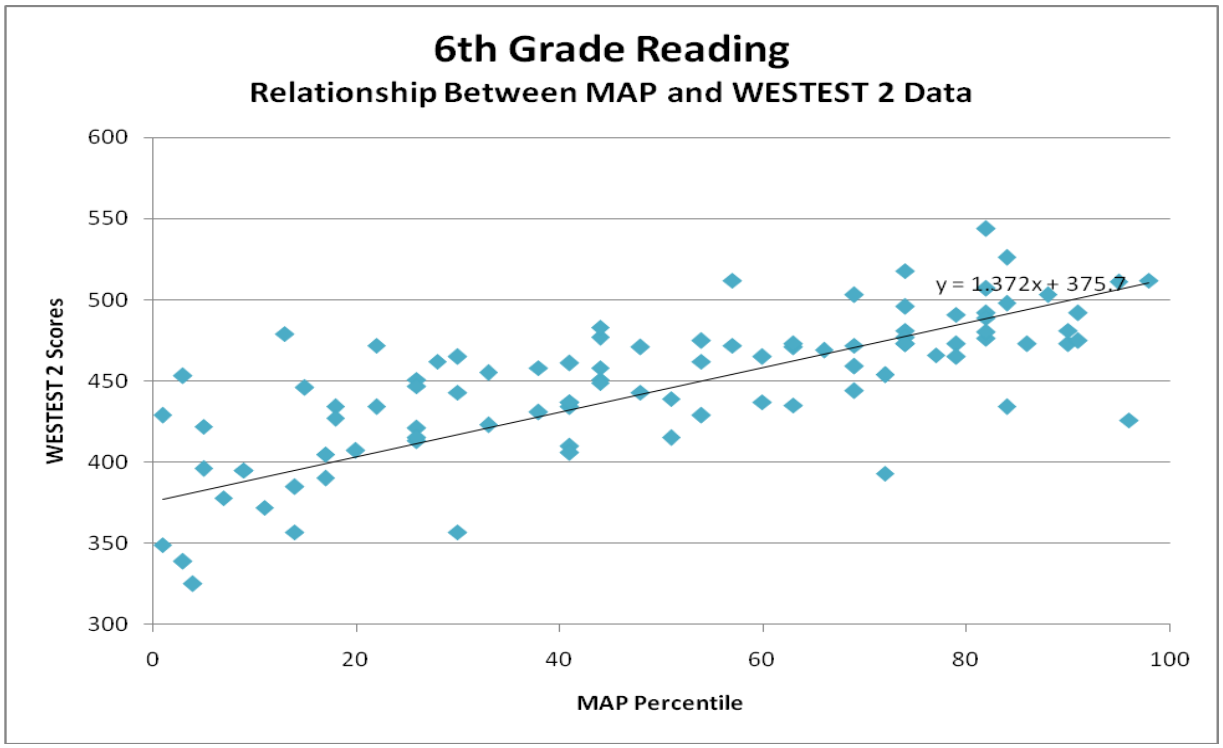
Note. For 4th grade, a score of 427 must be attained on the WESTEST 2 to achieve Mastery.

Figure B3



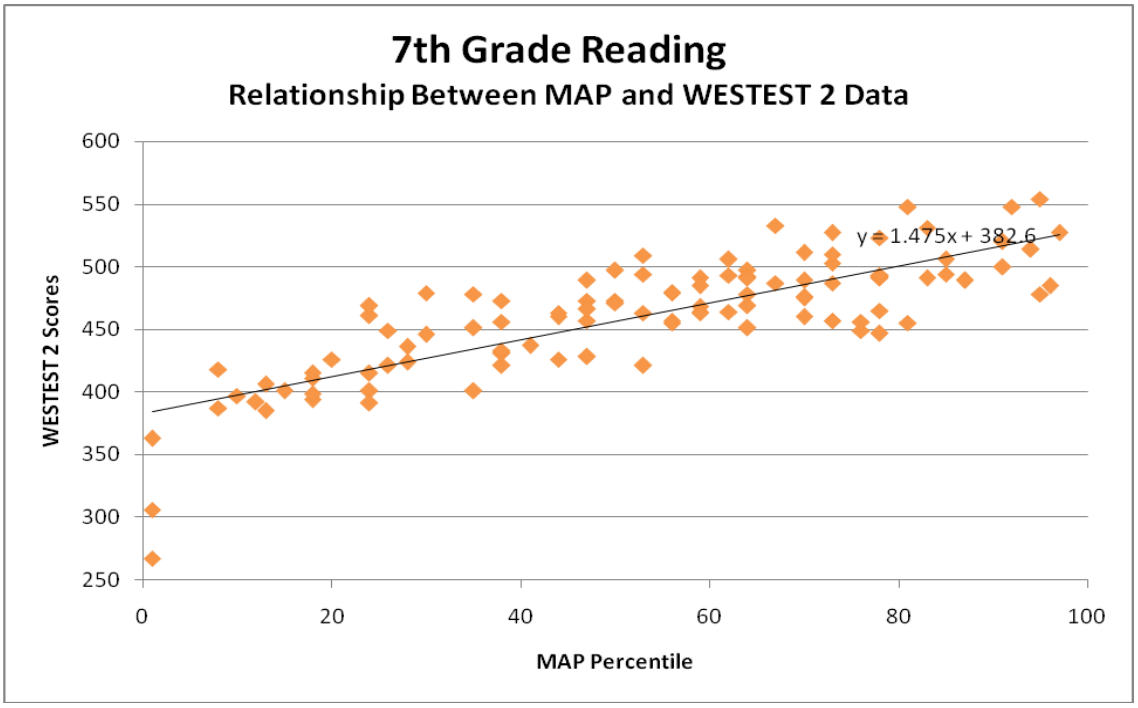
Note. For 5th grade, a score of 434 must be attained on the WESTEST 2 to achieve Mastery.

Figure B4



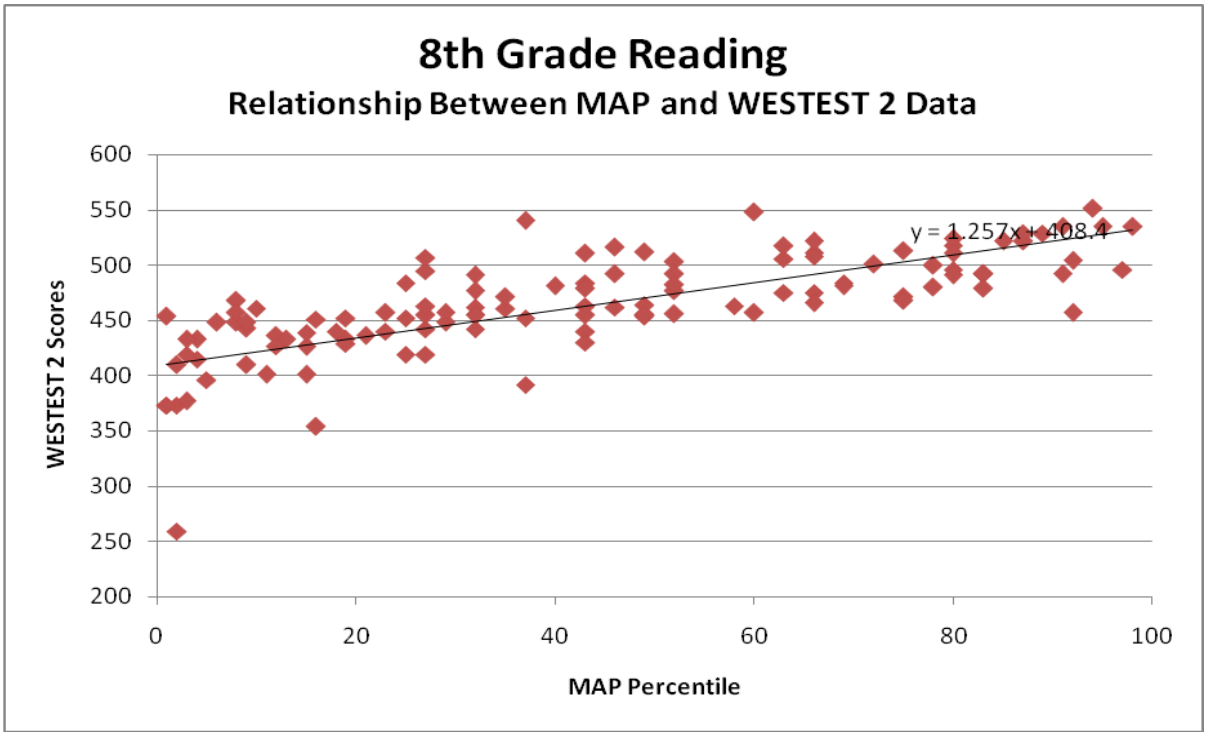
Note. For 6th grade, a score of 445 must be attained on the WESTEST 2 to achieve Mastery.

Figure B5



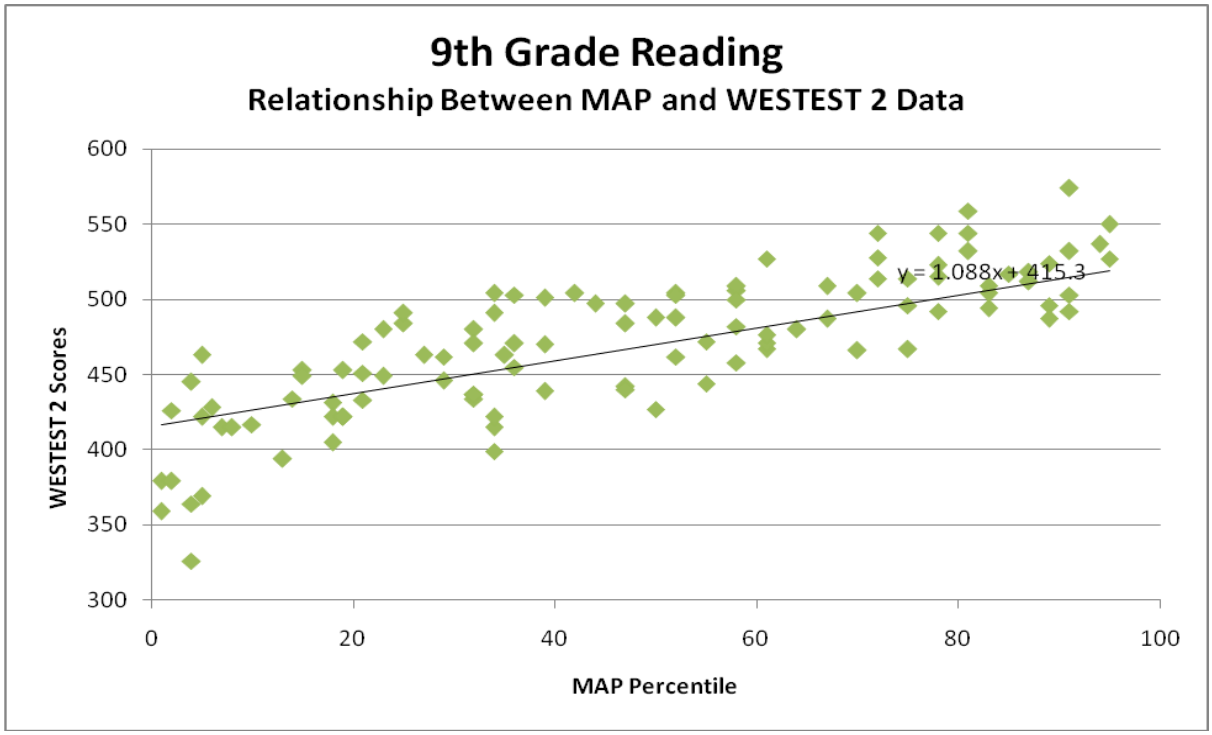
Note. For 7th grade, a score of 455 must be attained on the WESTEST 2 to achieve Mastery.

Figure B6



Note. For 8th grade, a score of 460 must be attained on the WESTEST 2 to achieve Mastery.

Figure B7



Note. For 9th grade, a score of 474 must be attained on the WESTEST 2 to achieve Mastery.

Table 4

Pearson-Product Correlation for Math at the .05 Probability Level

Grade	Correlation
3rd	.73
4th	.79
5th	.79
6th	.80
7th	.81
8th	.75
9th	.67

Note. All correlation tests showed significance at degrees of freedom 100 at the .01 probability level.

Table 5

Pearson-Product Correlation for Reading at the .05 Probability Level

Grade	Correlation
3rd	.82
4th	.66
5th	.69
6th	.66
7th	.80
8th	.68
9th	.48

Note. All correlation tests showed significance at degrees of freedom 100 at the .01 probability level.

Table 6

Spring Math RIT Cut Score and Percentile Estimates for WESTEST 2 Proficiency Levels

	Novice		Partial Mastery		Mastery		Above Mastery		Distinguished	
Grade	RIT	%	RIT	%	RIT	%	RIT	%	RIT	%
3rd	<195	<26	195	26	199	40	208	70	223	97
4th	<202	<25	202	25	208	39	219	70	235	95
5th	<210	<27	210	27	217	43	220	52	233	82
6th	<215	<28	215	28	221	42	239	83	245	92
7th	<221	<32	221	32	229	49	248	89	253	94
8th	<225	<32	225	32	232	45	258	94	262	99
9th	<220	<21	200	21	238	56	256	90	267	98

Table 7

Spring Reading RIT Cut Score and Percentile Estimates for WESTEST 2 Proficiency Levels

	Novice		Partial Mastery		Mastery		Above Mastery		Distinguished	
Grade	RIT	%	RIT	%	RIT	%	RIT	%	RIT	%
3rd	<193	<33	193	33	199	48	210	81	220	99
4th	<199	<30	199	30	206	48	216	82	227	98
5th	<199	<17	199	17	211	48	220	75	229	92
6th	<209	<32	209	32	212	38	229	85	237	97
7th	<212	<31	212	31	219	51	233	87	241	97
8th	<215	<30	215	30	219	41	238	90	245	99
9th	<223	<48	223	48	228	64	238	87	244	99

Note. No student scored Distinguished on the WESTEST 2 in 3rd, 8th, or 9th grades therefore a cut score and percentile were estimated.

Table 8

Estimated Probability of Achieving Mastery on WESTEST 2 With Given RIT Score in Math

RIT	3rd	4th	5th	6th	7th	8th	9th
130	0%	0%	0%	0%	0%	0%	0%
135	0%	0%	0%	0%	0%	0%	0%
140	0%	0%	0%	0%	0%	0%	0%
145	0%	0%	0%	0%	0%	0%	0%
150	0%	0%	0%	0%	0%	0%	0%
155	0%	0%	0%	0%	0%	0%	0%
160	0%	0%	0%	0%	0%	0%	0%
165	0%	0%	0%	0%	0%	0%	0%
170	0%	1%	0%	0%	0%	0%	0%
175	1%	2%	0%	0%	0%	0%	0%
180	2%	3%	0%	0%	0%	0%	0%
185	3%	3%	0%	0%	0%	0%	0%
190	7%	5%	0%	4%	0%	0%	0%
195	16%	9%	1%	6%	1%	0%	2%
200	33%	18%	4%	9%	2%	4%	2%
205	55%	31%	8%	12%	3%	9%	3%
210	75%	41%	17%	19%	8%	16%	6%
215	93%	56%	27%	30%	16%	21%	9%
220	98%	80%	42%	46%	30%	29%	16%
225	100%	92%	55%	59%	43%	38%	34%
230	100%	96%	70%	69%	60%	55%	47%
235	100%	98%	84%	79%	64%	68%	62%
240	100%	100%	92%	90%	80%	83%	66%
245	100%	100%	98%	95%	92%	93%	74%
250	100%	100%	99%	98%	97%	97%	83%
255	100%	100%	100%	99%	100%	98%	90%
260	100%	100%	100%	100%	100%	99%	97%
265	100%	100%	100%	100%	100%	100%	98%
270	100%	100%	100%	100%	100%	100%	100%
275	100%	100%	100%	100%	100%	100%	100%
280	100%	100%	100%	100%	100%	100%	100%
285	100%	100%	100%	100%	100%	100%	100%
290	100%	100%	100%	100%	100%	100%	100%
295	100%	100%	100%	100%	100%	100%	100%
300	100%	100%	100%	100%	100%	100%	100%

Table 9

Estimated Probability of Achieving Mastery on WESTEST 2 With Given RIT Score in Reading

RIT	3rd	4th	5th	6th	7th	8th	9th
130	0%	0%	0%	0%	0%	0%	0%
135	0%	0%	0%	0%	0%	0%	0%
140	0%	0%	0%	0%	0%	0%	0%
145	0%	0%	0%	0%	0%	0%	0%
150	0%	0%	0%	0%	0%	0%	0%
155	0%	1%	0%	0%	0%	0%	0%
160	1%	2%	1%	0%	0%	0%	0%
165	1%	3%	1%	1%	0%	0%	0%
170	2%	5%	1%	1%	0%	0%	0%
175	7%	6%	1%	2%	0%	0%	0%
180	11%	7%	2%	3%	1%	1%	0%
185	18%	10%	3%	5%	2%	4%	1%
190	23%	13%	4%	9%	2%	7%	2%
195	35%	22%	6%	11%	3%	10%	4%
200	47%	30%	8%	15%	6%	12%	10%
205	66%	41%	14%	24%	10%	18%	12%
210	79%	58%	24%	36%	20%	26%	17%
215	91%	83%	41%	51%	28%	38%	30%
220	99%	91%	65%	62%	45%	51%	44%
225	100%	98%	83%	79%	66%	68%	55%
230	100%	99%	94%	93%	86%	78%	70%
235	100%	100%	96%	98%	93%	90%	83%
240	100%	100%	98%	99%	99%	97%	94%
245	100%	100%	100%	100%	100%	99%	99%
250	100%	100%	100%	100%	100%	99%	100%
255	100%	100%	100%	100%	100%	100%	100%
260	100%	100%	100%	100%	100%	100%	100%
265	100%	100%	100%	100%	100%	100%	100%
270	100%	100%	100%	100%	100%	100%	100%
275	100%	100%	100%	100%	100%	100%	100%
280	100%	100%	100%	100%	100%	100%	100%
285	100%	100%	100%	100%	100%	100%	100%
290	100%	100%	100%	100%	100%	100%	100%
295	100%	100%	100%	100%	100%	100%	100%
300	100%	100%	100%	100%	100%	100%	100%