RUNNING HEAD: MAP Score Predictability

PREDICTING MAP SCORES FROM SRI LEXILES

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Submitted to

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Submitted in Fulfillment for the Requirements for
61-683 Research Paper

Fall 2013

March 24, 2014
Abstract

The study was conducted to determine if there is predictive power between students’ Scholastic Reading Inventory (SRI) lexile score and their MAP score at the end of the year. The SRI lexile and MAP scale scores from the 2012-2013 school year were analyzed for the third grade cohort. Each of the 56 third grade students’ SRI lexile was compared to their MAP scale score at the end of the year. The data was analyzed through different statistical analyses, and through reviewing of literature and research regarding assessment and reading instruction. It was found that the MAP scale scores can be predicted from SRI lexiles. Therefore, teachers should be form instruction based on this reading achievement.
Introduction

**Background, Issues and Concerns**

In the school district students in grades 3-6 are required to take the Scholastic Reading Inventory (SRI). At many schools, they take this computerized reading assessment multiple times a year. At the elementary school, students in these grades take the SRI each quarter of the year. This is done to monitor reading progress throughout the year. At the end of each school year grades 3-6 are also required to take the MAP in Communication Arts and Math. Throughout the year teachers monitor their students’ progress in order to differentiate instruction, modify instruction, and create skills groups. Teachers and administrators also monitor progress to project individual performance on the MAP test. Some may assume that a student’s performance on the SRI in the middle of the year may help predict his/her performance on the MAP test. By predicting students’ MAP score, then the teacher will be able to include specific students in different skill groups based, which are based on the needs of the students. These skill groups can influence student achievement, because the students will be in a smaller group receiving more individualized instruction. Students can also receive one-on-one instruction from the teacher to help the student focus more on specific needs. These small skill groups and one-on-one instructional times help teachers focus on the specific needs of these students, and help the students avoid distractions. Student achievement could show growth if students are able to receive this type of instruction more often.
**Practice under Investigation**

The practice under investigation is the use of the SRI lexile reading levels to predict performance on the MAP test.

**School Policy to be Informed by Study**

This study can help improve teaching strategies based on lexile levels and performance on the MAP test. This study could help find the best practices and instructional strategies to improve student achievement on both assessments.

**Conceptual Underpinning**

Teachers use a variety of teaching strategies to help improve student achievement. These instructional strategies are based on performance on reading assessments throughout the year. These reading assessments help decide which strategies are working and which are not. The hope is that not only will students learn, but that students will show a greater level of achievement on state assessments such as the MAP test. Some educators believe that the reading lexile levels from the SRI can predict MAP scores, because of the comprehension questions that pertain to reading passages. Students are required to answer comprehension questions about reading passages on portions of the Communication Arts MAP test. Some educators believe that the level of questioning on the SRI matches with the MAP test. If a lexile prediction is accurate, then it could help student achievement by allowing teachers to form instruction based on scores. Teachers could use the SRI data at the beginning and middle of the year to analyze what types of questions students are missing. Teachers could then form whole group and/or small group
instruction around these types of questions. It would give teachers more time to assess the needs of the students. This type of analyzing could help improve student achievement at the end of the year.

**Statement of the Problem**

Many teachers search for multiple ways to predict and improve student achievement on the MAP test by using multiple reading assessments.

**Purpose of the Study**

The purpose of this study is to determine if students’ reading lexiles can predict their performance on state assessments such as the MAP Test. This can research can help determine how much emphasis to put on reading assessments such as the Scholastic Reading Inventory (SRI) throughout the year. This can also later help in determining what instructional strategies are effective for the students in proficient and advanced levels of the SRI.

**Research Question**

Is there predictive power between students’ reading lexile levels and performance on the MAP state assessment?

**Null Hypothesis**

There is no predictive power between students’ reading lexile levels and performance on the MAP state assessment.
Anticipated Benefits of the Study

The anticipated benefits of this study are to help form instructional strategies tailored to each of the proficiency levels of the SRI to help move students up in proficiency. Another anticipated benefit would be to help group students throughout the year based on their needs as provided by their lexile level. This study could also benefit how much emphasis is put on assessments throughout the school year, and to minimize the amounts of assessment.

Definition of Terms

Lexile- value given to a student’s reading ability through assessment procedures.

SRI- Scholastic Reading Inventory. This is a computerized reading assessment that gives a student’s reading lexile level based on answering inferential questions.

MAP- Missouri Assessment Program. This is a norm-referenced test given to students in grades 3-8 each spring.

Summary

Many teachers are using various instructional strategies and assessments to predict and improve reading achievement on state assessments. One of the reading assessments used in the school district is the SRI. This gives a lexile level that indicates a child’s reading ability. The lexile is given a proficiency indicator such as, Below Basic, Basic, Proficient and Advanced. This assessment is used at the elementary in grades 3-6. These students also are assessed at the end of the year on the MAP test. The MAP test provides a scale score and a proficiency level. The proficiency levels are, Below Basic, Basic, Proficient,
and Advanced. Teachers and administrators use a variety of assessments throughout the year to hopefully predict the students’ performance on the MAP test.
Review of Literature

With the No Child Left Behind Law of 2001 (NCLB), more schools were finding more ways to formally assess and monitor students prior to the high-stakes standards tests. According to Johnston and Costello (2005), “‘What gets assessed is what gets taught’ is a common assertion whose meaning is often underestimated. It is not just what gets assessed, but how it is assessed that has implications for what is learned.” (p. 256) These authors are claiming that the type of assessment is driving the instruction in the classroom. With the passage of NCLB, many schools and teachers are focusing on the types of assessments in order to form instruction and formative assessments. The basis of some of these formative assessments was originally to help match students with leveled texts. Glasswell and Ford (2010) state, “Although popular leveling systems- Reading Recovery, Benchmark tests, Lexiles- may vary in terms of the number of levels and discrimination among them, at the core they all attempt to classify texts in terms of their perceived difficulties for specific readers.” (p. 57) However, many have used these assessments as a predictor for how a student will perform on standardized tests. Like the Missouri Academic Program (MAP), Dennis (2010) states, “TCAP scores are reported across three levels” advanced, proficient, or below proficient.” (p. 283) TCAP, which stands for Tennessee Comprehensive Assessment Program is the assessment program in Tennessee. The lexiles for tests such as the Scholastic Reading Inventory (SRI) are also given proficiency indicators of advanced, proficient, basic, and below basic. Many view the SRI as a predictor for MAP testing.

Allington and Gabriel (2012) claim that the best way to prepare for high-stakes testing is
in high-quality instruction. “High quality instruction involves teacher modeling, an opportunity to read and talk about appropriately leveled texts, and a teacher (not a computer) who can perceive a range of information from observing reading behavior and design instructional interventions accordingly” (p. 1) This high-quality instruction is the key to improving students’ reading abilities according to the authors. DeVries (2012) discusses another important factor to improving reading and comprehension abilities of students. DeVries (2012) states, “I have found often times students do not comprehend text because they lack the vocabulary to understand the passage.” (p. 4) She urges teachers to include vocabulary instruction into their reading lessons. DeVries (2012) also gives a variety of suggestions to teach new words in order to maintain student interest. These authors all believe in teaching strategies to improve reading ability and to predict outcomes on standardized testing. While discussing the new Common Core State Standards (CCSS), Hiebert and Grisham (2012) claim, “These, in turn, are aligned with college and work expectations, to include rigorous content and application of knowledge through high-order skills.” (p. 5) The instruction in the classroom will need to be more rigorous in order to meet these standards. The instruction will play a key role in how well students perform on state assessments and in their reading ability.

Risko and Walker-Dalhouse (2010) claim, “Assessing students’ performance while teaching to guide instruction is a longstanding practice of classroom teachers and reading specialists.” (p. 420) The purpose of these assessments is used to monitor growth and instruction in the classroom. The authors also discuss that these assessments are “typically aligned with more global standards and goals and don’t assess performance on
the particular skills and strategies that are taught day to day” (Risko and Walker-Dalhouse 2010, p. 421) These authors urge for the use of formative assessments to assess the strategies that are taught day to day. Roskos and Neuman (2012) claim, “In the complex and sometimes cantankerous world of reading assessment, formative assessment is often taken for granted. It has been around for a long time, and is part and parcel of good teaching.” (p. 534) Roskos and Newman (2012) refer to Vygotsky’s 1978 theoretical zone of proximal development when discussing how teachers should scaffold learning from a lower level of performance to a higher level of performance when using formative assessments in a proper way. Formative assessment, according to most, is the best way to monitor student progress throughout the year. Teale (2008) agrees with using assessment to form instruction and monitor progress. Teale (2008) states, “…another factor that can add significantly to the success of literacy instruction in urban settings: assessment.” (p. 358) She thinks literacy assessment should include for aspects: screening, diagnosing, progress monitoring, and outcomes (2008). Assessment should not be used just to assess students, but to monitor progress and change instruction.

One of the main purposes of reading assessments like the SRI is to help students find texts to match their reading ability. Kontovourki (2012) writes, “Teachers employ sophisticated methods to attach levels to texts that students encounter in everyday reading practices, schools expand their repertoires of instructional reading material with leveled texts, and the market is continually stoked with sets and lists of leveled books…” (p. 153) These authors claim that almost all reading material given to students is tailored and leveled to their ability. Glasswell and Ford (2010) claim, “Although popular leveling
systems—Reading Recovery, Benchmark tests, Lexiles—may vary in terms of the number of levels and discrimination among them, at the core they all attempt to classify texts in terms of their perceived difficulties for specific readers.” (p. 57) The purpose behind these systems is to match readers with their reading needs and strengths.
Research Methods

Research Design

The performed study was to find out if there is predictability between SRI lexile scores and MAP test scores. The research for this study is done through data collection of test scores. The independent variable was the SRI lexile level. The dependent variable is the MAP Communication Arts scores. The null will be accepted if the p-value is greater than the alpha of 0.25.

Study Group Description

The free and reduced lunch rate at the elementary school is 73%. The school population is 85.4% Caucasian, 8.6% black, 3.6% Hispanic, 0.2% Asian, and 0.2% Indian. The data will be collected from the 2012-2013 third grade cohort’s testing scores and lexile levels.

Data Collection and Instrumentation

The data will be collected by comparing the students’ SRI lexile and MAP Communication Arts test scores. The data was collected during the 2012-2013 school year. The SRI data collected is from December 2012. The MAP data is collected from the April 2013.

Statistical Analysis Methods

A Descriptive Analysis will be performed, along with a Regression Analysis.
Findings

A regression analysis was performed to find the predictability of SRI scores for MAP scale scores using third grade students’ scores for both assessments from the 2012-2013 school year. The tables and graphs presented show the data for MAP and SRI data, along with the results of the regression analysis tests.
The data presented in the Descriptive Analysis shows students represented by a number followed by their SRI score and MAP scale score. The mean for the MAP is 630.5. The mean for the SRI is 490.61. The median score for the MAP is 636.5, while the median for the SRI is 510.5. The standard deviation for the MAP is 37.19. Standard deviation for the SRI is 252.57. The maximum score for the MAP is 721, and the minimum score is 525. The maximum score for the SRI is 1065, and the minimum is 0. Student number 54 had the highest MAP and SRI scores. Student number 31 had the lowest MAP and SRI scores. However, a score of 0 on the SRI occurs six times. Students 19, 35, 36, 42, and 44 also received a score of 0. Student 19 received a MAP score of 569. Student 35’s MAP score was 598. Student 36 received a MAP score of 603. Student 42’s MAP score was 545, and Student 44’s was 567.
There are other students who have either a MAP or SRI score close to the mean or median, yet the other score is not as close to the median. For instance, student 37 has a MAP score of 651. This score is 14.5 points higher than the median. However, student 37 has an SRI score of 407. This score is 103.5 points lower than the median. Student 38 scored a 666 on the MAP test. This score is 36 points higher than the mean. However, student 38’s SRI score is 314. This score is 176.61 points lower than the mean. Student 33 received a score of 669 on the MAP, which is 132.5 points higher than the median. Student 33’s SRI score is 774, which is 263.5 points higher than the median.

Table 1: Regression Analysis for SRI Scores vs. MAP Scores

Model:  \( \text{MAP} = 0.118721 \times \text{SRI} + 572.254 \times \text{CNST} \)

<table>
<thead>
<tr>
<th>Source</th>
<th>Beta Coef.</th>
<th>( R^2 )</th>
<th>SEE</th>
<th>F</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>572.25</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SRI</td>
<td>0.12</td>
<td>0.65</td>
<td>22.19</td>
<td>100.51</td>
<td>6.25061E-14</td>
</tr>
</tbody>
</table>

Alpha = 0.25

Table 2: SIMPLE REGRESSION

MODEL:  \( \text{MAP} = 0.118721 \times \text{SRI} + 572.254 \times \text{CNST} \)
FORECAST OF MAP WHERE:
\( \text{SRI} = 500 \)
\( \text{CNST} = 1 \)
95% CONFIDENCE LIMITS FOR A SINGLE FORECAST:

<table>
<thead>
<tr>
<th></th>
<th>SD. ER.</th>
<th>t(54)</th>
<th>T*SD.ER.</th>
<th>LOWER</th>
<th>FORECAST</th>
<th>UPPER</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forecast</td>
<td>22.3876</td>
<td>2.00488</td>
<td>44.8844</td>
<td>586.731</td>
<td>631.615</td>
<td>676.5</td>
</tr>
<tr>
<td>E(Forecast)</td>
<td>2.96736</td>
<td>2.00488</td>
<td>5.94919</td>
<td>625.666</td>
<td>631.615</td>
<td>637.564</td>
</tr>
</tbody>
</table>
A regression analysis was performed for SRI scores versus MAP scores. The constant beta coefficient is 0.119. The SRI beta coefficient is 572.25. The SLR power and accuracy scores 22.19 for the Standard Error of Estimate and the $R^2$ is 0.64. The Model Significance values are 100.51 for the F-value and 6.25061E-14 for the p-value. The alpha is set at 0.25. The null is rejected. The SRI can predict MAP scores.

The conditions are as follows:

Confidence Limits=95

Value for SRI= 500

Forecast= 631.62

Lower=586.73

Upper=676.5
Conclusions and Recommendations

Many schools are currently using the students’ SRI scores during the school year to predict the individual students’ performance on the Communication Arts MAP test at the end of the year. The data was collected and analyzed through the Regression Analysis. The p-value of the Simple Regression was 6.25061E-14, which is significantly lower than the alpha of 0.25. Therefore, the null hypothesis is not rejected. It is concluded that the SRI can predict MAP scale scores.

The conceptual underpinning supports using formative assessments to form instruction, which is supported by the study and statistical analyses. The SRI is based on reading passages and answering comprehension questions. The MAP test has reading passages with comprehension questions as well. Answering comprehension questions is important for readers, because it shows them and the teachers how well they understand concepts taught in class. It also shows us how well students are able to focus and understand what they are reading. The purpose of many assessments is to see what has been taught well, and what needs to be taught differently. Being able to look at an assessment as a way to form instruction is a better use of time to form later instruction. The assessments, such as the SRI, are also beneficial in showing students the growth they have made during the year. It is crucial for the students, parents, and teachers to see how much, if at all, students have grown. The lack of growth on the SRI can be used as evidence for tutoring, skills grouping, and even special education testing. Using the SRI to only target students who are below basic or basic can help teachers form instruction for these students based on their needs. It is recommended if schools use SRI lexiles to predict how well their
students will do on the MAP test, then they also use this data to form instruction and interventions. The SRI should also be used to monitor student progress prior to the MAP test. The MAP test scale score and proficiency level can be used as a final assessment to monitor the students’ progress.
References


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