CAN DRA SCORES BE PREDICTED FROM BEGINNING OF KINDERGARTEN LETTER ASSESSMENT SCORES?

By

KATHERINE HOY

Submitted to

The Educational Leadership Faculty
Northwest Missouri State University
Department of Educational Leadership
College of Education and Human Services
Maryville, MO 64468

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

Fall 2013

Submitted

July 8, 2014
Abstract

Early intervention is important to educators. It is always best to help the students before they get too far behind their peers. The purpose of this study was to determine if Kindergarten beginning of the year letter assessments are good predictors of end of year DRA scores. Scores were taken from two different Kindergarten classes from two different school years (2012-2013 and 2013-2014). The scores were put into A Statistical Package using simple linear regression and it was discovered that the beginning of the year letter assessment scores were good indicators of end of the year DRA scores. Teachers can use them to determine which students may need more help in order to help them to become better readers.
Introduction

*Background, Issues and Concerns*

This study was conducted in a school district north of Kansas City. The school is located in a suburban community consisting of one high school, one junior high, one middle school and four elementary schools. According to more recent demographic data found on the Missouri Department of Elementary Secondary Education website, the district serves 3,589 students in grades Kindergarten through 12th grade.

There is a need to determine early students in Kindergarten that may struggle with reading. Teachers can get them extra help sooner if they know what students may need help. Teachers do not want to wait until the end of the year DRA scores and realize they have students that are not performing as well as expected. A good literacy predictor is needed.

*Practice under Investigation*

The practice under investigation will be looking at entering Kindergarteners letter naming and sound knowledge. There will be an investigation to see if these scores are a valid and reliable indicators of end of Kindergarten DRA levels.

*School Policy to be Informed by Study*

The school district requires all Kindergarten teachers to use the same assessments to assess students. In this study, some of these assessments will be studied to see if they are good indicators of end of the year DRA scores and may help determine where early intervention may be needed.
Conceptual Underpinning

Students that go to preschool before Kindergarten have a head start to what is taught in Kindergarten. Some teachers find that these students are often the average and the higher achieving students throughout the year. Those students who did not go to preschool have lower incoming scores and have trouble catching up with the rest of the class. There are several reasons as to why these students may have trouble catching up. Some of the reasons include; early intervention may not be available, lack of parent help at home, etc. Students who attend preschool have the advantage to most students who do not attend, because they have more exposure to letters and sounds in preschool. The process of learning letters has already begun for them and they are more ready to move on to the next step in reading. In theory, the students’ incoming letter naming and sounds assessments should accurately reflect their end of year DRA scores in reading.

Statement of the Problem

There is a question about whether the beginning of Kindergarten assessments on letters and sounds that is given by all Kindergarten teachers in the district, is effective in indicating the students’ end of year DRA score.

Purpose of the Study

The purpose of this research is to see if beginning of the year letter recognition scores (Kindergarten) have any indication of what the students’ DRA scores will be at the end of the year. This would help teachers pinpoint which students to really push and give extra help to in order to help them succeed.
Research Question

Does beginning of the year letter assessment scores predict end of year or end of year DRA scores?

Null Hypothesis

Beginning of the year letter assessment scores do not predict end of year DRA scores.

Anticipated Benefits of the Study

By examining the results of this study, teachers can be better prepared to help struggling readers. Teachers can know at the beginning of the year that they are going to need extra help in order to be successful readers at the end of Kindergarten.

Definition of Terms

DRA-Development Reading Assessment, an assessment used to determine the reading levels of students.
Letter Recognition/Alphabet knowledge-the ability for students to name letters and tell their sounds.

Summary

A study was conducted to see if the beginning of the year letter naming and sounds assessments that are done in Kindergarten, are good indicators of students end of year DRA scores. This study could be used by teachers to give students with low scores at the beginning of year extra help to ensure that they become successful readers.
Review of Literature

Bloodgood, Morris & Perney (2003) reported that the four kindergarten skills that effectively predicted success in first grade reading were alphabet recognition, concept of word in text, spelling with beginning and ending consonants and word recognition. All of these are important skills for Kindergartners to grasp. According to Clark, Jones & Reutzel (2013), alphabet knowledge is recognized as the strongest predictor of later literacy achievement. Alphabet knowledge can be a predictor of decoding, comprehension and spelling achievement. Students that struggle with identifying the letters of the alphabet or make connections between the letter and the sound will often have trouble reading words in isolation or in context, which then causes difficulties in comprehension.

Alphabet knowledge can be broken into four different parts (Bradley & Jones 2007). The four parts or components are letter recognition, letter-name knowledge, letter-sound knowledge and letter writing ability. Letter recognition is understanding the key visual features of the letter, such as letter shape, orientation and directionality. Letter-name knowledge is being able to identify the name of the letter. Letter-sound knowledge is being able to identify the sound of the letter. Letter-sound knowledge is accounts for variance in reading achievement and the delays in early literacy skills. Often the primary difference between good readers and poor readers is their letter-sound knowledge (Brady, Bucholz, Dilorenzo & Rody 2011). Letter writing is not often assessed in young children, but it is the ability to write the letter.

If students do not grasp alphabet knowledge problems can arise in the area of reading for them. “Many young children struggle to consistently and automatically
identify letters of the alphabet by sight or make the connection between a letter, its name and its sound” (Brady, Bucholz, Dilorenzo & Rody 2011 p. 1). Students who cannot do that struggle to read words in isolation or in context. Once a student gets behind and can be difficult to catch them back up. Students who finish third grade 1 or more years behind in reading will most likely be behind the rest of their schooling years (Bloodgood, Morris & Perney 2003).

Alphabet knowledge is important to students’ reading foundation. It can be used to determine if early intervention is necessary in order to keep students from falling too far behind. Bloodgood, Morris & Pierney (2003) state in their article that intervention programs in first grade have helped many at-risk students catch up in their reading skills. Many agree that intervention could start earlier, in Kindergarten or before. Dice & Schwanenflugel (2012) believe that there are factors in preschool that lead to poor reading achievement. Intervention can be costly in time, effort and money. It is important to find reliable ways to identify students who are at-risk. Alphabet knowledge can be that predictor to help students be identified early and get the help sooner.

A lot of the literature read offered several different ways to teach alphabet knowledge. If one way does not work, than intervention can be given using other methods of teaching alphabet knowledge. The classes studied used Animated Literacy after beginning letter assessments were given. Animated Literacy uses rhyme, rhythm, melody and movement to teach each letter and sound (Stone, 2008). Stone (2008) offers a specific routine that teachers use and students quickly get the hang of it. Animated Literacy is considered a synthetic phonics program. According to Johnston, McGeown & Watson (2012) synthetic phonics is more successful than analytic phonics programs.
Students who learned through synthetic phonics had better word reading, spelling and comprehension. Other ways to teach alphabet knowledge include mnemonics, sharing alphabet books, and many others.

Mnemonics is building a familiar picture using the letter’s shape. For example, b could be represented with a bat and a baseball. The pictures also begin with the chosen letter. This helps reinforce letter-sound knowledge. Programs such as AlphaFriends and Itchy’s Alphabet teach alphabet knowledge using mnemonics (Brady, Bucholz, Dilorenzo & Rody 2011).

Sharing alphabet books was an idea presented by Bradley & Jones (2007). They suggest reading different alphabet books to children. This method is more analytical phonics because it focuses on whole word. This method has many chances for variances as teachers may read books different and the choice of books teachers have. This method would be more of a supplement to other methods used in the classroom.
Research Methods

Research Design

Each Kindergarten teacher at the elementary administered the beginning of the year letter recognition assessment to see what letters each student knows and does not know. At the end of the year, students are given a DRA to determine their reading levels. Beginning of the year assessments is the independent variable and DRA scores are the dependent variable.

Study Group Description

The group studied consists of about 31 students from 2 different years of Kindergarten (2012/2013 and 2013/2014). The demographics for the elementary are 97% white, 2% black and 1% Hispanic. This specific group was 100% white. The school’s free and reduced lunch rate is 16%. Only three students in this group qualified (9%). These students came from middle to upper middle class families.

Data Collection and Instrumentation

Teachers administer assessments to see what letters and sounds students know at the beginning of the year. All Kindergarten students are given the same pre and post-test. The test given is a teacher made assessment that the grade level has been using for a few years. The students are assessed first on capital letters then lower case. The letters are put in random order. Students read the letters to the teacher. The teacher circles the letters that the student reads correctly on the answer sheet. If the student does not read the letter correctly, nothing is done. An answer sheet is kept for each student individually. The letter naming assessment is given within the first two weeks of school and letter sounds is
given at the end of first quarter (beginning or middle of October). The DRA will be administered at the beginning of May.

*Statistical Analysis Methods*

A single linear regression was used to find the relationship between beginning of the year assessment scores and end of the year DRA scores in Kindergarten.
Findings

Simple Linear Regression Analysis (SLR) Research Question: Can Kindergarten beginning of the year letter assessment scores predict end of Kindergarten DRA scores?

Table 1: Regression Analysis for Beginning Letter Assessments vs. DRA Scores

Model: $DRA = 0.0646 \text{ Beginning Letter Assessments} + -0.272 \text{ CNST}$

<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>-0.272</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Beginning Letter</td>
<td>0.0646</td>
<td>0.278</td>
<td>2.59</td>
<td>12.554</td>
<td>0.0013</td>
</tr>
</tbody>
</table>

Alpha = 0.25

As shown in Table 1, simple linear regression was calculated predicting students’ DRA score based on their Beginning Letter Assessments. A significant regression equation was found ($F=12.554, p=0.0013$), with an $R^2$ of 0.278. Students’ predicted DRA score is equal to $0.0646 – 0.272$ Beginning Letter Assessment. Students’ average DRA score decreases 0.272 points for an increase of one Beginning Letter Assessment score with an SEE of +/-12.554.

Can the DRA score be predicted from Beginning Letter Assessments score?

- **Model Power**
  - $R$ squared (0.278) indicates a practical model that accounts for about 27% of the variance between the two variables.
  - Standard Error of the Estimate (SEE) finding suggest that the predicted DRA score is accurate +/- 2.59 points at one standard deviation
  - It can be concluded that the model has significant power and accuracy.

- **Model Significance**
  - $F$ (12.554) has low relative value when compared to zero.
- This indicates that there is a significant chance that a Type One Error would be made if the null hypothesis was rejected.
- P Value (0.0013) indicates that we can be sure that a Type One Error will not occur. The SLR model is significant.
- The model null hypothesis is rejected.

Conditions: Confidence Limits = 95

Value for Beginning Letter Assessments = 44

Forecast = 2.572

Lower = -2.890

Upper = 8.036
Conclusions and Recommendations

This study shows that teachers can predict end of Kindergarten DRA based on beginning of the year letter assessments. This is valuable information to teachers. Using the beginning of the year letter assessments, teachers can identify those students who are mostly likely at risk for lower DRA scores. These students can be pulled into early intervention programs from the beginning. On the other side, teachers also know what students already have good alphabet knowledge and may be ready to move on.

The conceptual underpinning of this study emphasized that early intervention for students with trouble with their alphabet knowledge can be helpful for reading ability later on. This study proves that using beginning of the year letter assessments can help begin early intervention in Kindergarten in order to help ensure students are given every opportunity to read on grade level.

The recommendations for this school would be to use beginning of year letter assessments in Kindergarten to predict reading achievement for Kindergartners. Use these assessment scores to start intervention early. As the year progresses, teachers can continue to use letter assessments to determine how well students are retaining information and find any other students who may be falling behind.

The sample size for the research was small. If any future research is conducted, it is recommended to use a larger group, such as the entire Kindergarten in the district. Since the school district is the only using these specific letter assessments, it may not be plausible to widen the study group larger than the entire district’s Kindergarten classes.
References


