

Using Direct Instruction to Improve  
Second Grade Reading MAP Scores

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FACULTY APPROVAL

Using Direct Instruction to Improve  
Second Grade Reading MAP Scores

Approved for the Faculty

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## ABSTRACT

The author wanted to find out if the Direct Instruction teaching method used to teach reading to second grade students improved reading MAP test scores. Students were given a pre and post MAP test, once in the fall of 2009 and again in February, 2010. Students were taught reading using the Harcourt Storytown reading program, which used Direct Instruction as the main teaching method. The author gathered the data and the results were measured using a *t*-test. The results showed that students made significant improvement on the reading MAP test scores.

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## CHAPTER 1

### Introduction

#### Background for the Project

The school in which the author taught had adopted a new reading program three years ago. The Harcourt's Story town reading program that was adopted used Direction Instruction as one of the main methods of teaching reading.

The author's school had used the Measures of Academic Progress test for three years as a way to assess the students. The Measures of Academic Progress test provided valuable information for both teachers and parents. However, many of the teachers and most of the parents lacked the background to understand the information provided by the tests.

#### Statement of the Problem

The author wanted to know if the Direct Instruction teaching method improved the reading scores on the Measures of Academic Progress test. The author found that many of the teachers did not know how the results of the Measures of Academic Progress test affected what the teachers taught in the classroom. Many parents did not understand what the Measures of Academic Progress test results meant, as the author learned

after talking to parents. The author wanted to know what information parents needed in order to understand the results of the Measures of Academic Progress test.

### Purpose of the Project

The author had an interest in finding out if the instructional method of Direct Instruction used in reading instruction in the classroom helped students improve reading scores on the Measures of Academic Progress test. The author wanted to learn how the Measures of Academic Progress test results would benefit the students currently being taught and future students. The author wanted to show the teachers and parents what affects the instructional method of Direct Instruction had on the reading scores on the Measures of Academic Progress test.

### Delimitations

The author's school was a small, parochial school located in South Eastern Washington State. The school contained grades preschool through eighth grade. Student enrollment was approximately 400 students. The ethnic makeup of the school was 78 % White, 12 % Hispanic, 9 % Asian, and 1 % Black (*St. Joseph's School Student Ethnic Data*, 2010). Included on staff were one principal, two secretaries, one custodian, and thirty teachers and classroom aides.

The author taught a first/second grade combination class. The participants of the author's research were the second grade students from the author's class and the other second grade at the author's school. The author had seven second graders and the other second grade class had twenty-six students. In the author's second grade class, there were five boys and two girls. The other second grade class contained seventeen boys and nine girls. One of the author's students had an IEP and received services at a school in one of the surrounding districts.

The Measures of Academic Progress test was administered in the computer lab by the computer teacher or a substitute computer teacher. The classroom teacher was not present in the computer lab during the test. The students were tested over a three week period of time. The reading portion of the Measures of Academic Progress test was given the first week of the testing. Students were tested in the middle of the morning, right after first recess.

### Assumptions

The author assumed what was being taught in the two classrooms helped students on the Measures of Academic Progress test. The author assumed that the teachers looked at the Measures of Academic Progress test results and used the information to help the students. The author

assumed that parents knew why the school administered the Measures of Academic Progress test to the students.

### Hypothesis

Second grade students who were taught using the instructional method of Direct Instruction in reading made greater than expected growth on the reading section of the Measures of Academic Progress test from fall to winter at the .05 level of significance.

### Null Hypothesis

Second grade students who were taught using the instructional method of Direct Instruction in reading did not make greater than expected growth on the reading section of the Measures of Academic Progress test from fall to winter at the .05 level of significance.

### Significance of the Project

The school in which the author taught had always strived to keep standards high and to have students prepared for high school. Many high schools in the districts around the author's school used the Measures of Academic Progress test scores to place students into classes. A positive result from the author's project would show that Direct Instruction helped students improve reading test scores. A negative result from the author's

project would result in the staff needing to re-evaluate the instructional methods used to teach reading.

### Procedure

The author sent the students over to the computer lab to be tested at the end of September and beginning of October. The fall test determined where the student started out at the beginning of the school year. The author tested the students again in February, about halfway through the school year. The author compared the students' fall score to the winter score on the Measures of Academic Progress test to see if significant growth had been made by individual students. The author also looked to see if significant growth had been made as a class on the Measures of Academic Progress test.

### Definition of Terms

Direct Instruction. Direct Instruction was a method of teaching that was based on explicit instruction by the teacher, with large concepts broken down into small pieces.

MAP Testing. Measures of Academic Progress test was a computerized, adaptive test which was aligned to the state standards that accurately reflected the students' abilities.

RIT Scale. The RIT scale was short for Rasch Unit. The RIT scale was a measured scale to measure a student's growth over time.

### Acronyms

DI. Direct Instruction.

MAP. Measures of Academic Progress.

NCLB. No Child Left Behind.

NWEA. Northwest Evaluation Association

RIT. Rasch Unit

## CHAPTER 2

### Review of Selected Literature

#### Introduction

Three years ago, the author's school adopted a new reading program for grades kindergarten through sixth grade. The program adopted by the school was Harcourt's Story town. The program used Direct Instruction as a main method for teaching the program's content. The author wanted to know if the use of Harcourt's Story town reading program with the Direct Instruction teaching method improved student reading MAP scores.

When the author's school found out the company of the standardized test, which the school gave annually, would no longer score the test because the test was out of date, the staff decided to implement the MAP test. The MAP test was given by the districts surrounding the school. The school adopted the MAP test because the staff felt the test would benefit the students, as most of the students went on to the public high schools, which used the test scores for class placement.

#### MAP Testing

The author's school administered the Measures of Academic Progress (MAP) test to the students in the fall and in the spring. The MAP test was created and sold by the Northwest Evaluation Association

(NWEA). The MAP test was created as a computerized adaptive test. The MAP test had a pool of items of various difficulties, which helped find the exact placement of each individual student (Kingsbury & Hauser, 2004). "Measures of Academic Progress (MAP) assessments are administered via computer and item difficulties adapt in difficulty depending on student's performance" (Cronin, Kingsbury, McCall, & Bowe, 2005, p.17). The MAP test adjusted the question difficulty based on the student's answers. "The advantage of this type of assessment is that each child is given a custom test better suited to the student and much more accurate than a traditional test" (Cronin et al., 2005, p.17). NWEA aligned the MAP test with each state's standards. There were three main subjects that MAP tested. The subjects included reading, mathematics and language arts. There were MAP tests for science as well.

The MAP test was administered to grades kindergarten through high school. Students did not start to receive RIT scores until second grade. RIT scale was short for Rasch Unit. The RIT scale was a measured scale that measured a student's growth and performance over time. "All scores for the NWEA assessments in a subject area reference a single, cross-grade, equal-interval scale developed using Item Response Theory

methodology” (Cronin et al., 2005, p. 16). The RIT scores helped teachers to evaluate where a student was and how much a student had grown. NWEA established a RIT scale for the subjects that were tested. All subject areas had a unique alignment to the RIT scale, so scores between subjects were not equivalent. The RIT scale was used to monitor student growth over time. NWEA created RIT Block Growth Norms that helped identify a student’s expected growth.

The RIT Block Norms were created by selecting a large sample of students, and then dividing them into 10 point blocks based on their initial test score. The average growth for all of the students in a particular block is expected growth for students in that block. (Cronin et al., 2005, p. 17)

The information gained from the RIT Block Norms allowed teachers to find what reasonable growth for each individual student was. “A ‘reasonable’ growth target can be thought as the proximity between the observed growth and the expected growth; the closer the observed growth is to the expected growth, the more reasonable the growth target” (Hauser, 2003, p. 2).

## Direct Instruction

The author had chosen to use the Direct Instruction approach to teaching reading as that was how the author's reading program was set up. During Direct Instruction (DI), students were taught individual pieces of the larger picture. The teacher modeled what was expected of the students and gave the students chances to practice what was taught to them (Ryder, Burton, & Silberg, 2006).

Direct Instruction (DI) was created by Siegfried Engelmann and his colleagues at the University of Illinois at Champagne-Urbana in the 1960s, under Project Follow Through grant. DI was first known as Direct Instruction System for Teaching and Remediation (DISTAR), which focused on reading, language, and mathematics (Magliaro, Lockee, & Burton, 2005). "Direct Instruction is an instructional model that focuses on the interaction between students and teachers" (Magliaro et al., 2005, p. 1). According to the National Institute for Direct Instruction, some of the basic philosophy of DI and assumption of DI were that "all children can be taught and all details of instruction must be controlled to minimize the chance of students misinterpreting the information being taught and to maximize the reinforcing effect of instruction" (*Basic Philosophy of DI and Assumptions of DI*, n.d., p. 1).

Direct Instruction was shown to be an effective teaching model when DI was used during Project Follow Through in the late 1960s. Project Follow Through was the largest educational experiment and was part of President Johnson's War on Poverty (Grossen, n.d.). Project Follow Through was to determine the best way to teach at-risk children in grades kindergarten through grade three. Project Follow Through was set up by:

Proponents of various models of teaching and development were asked to submit proposals as to how they would structure the educational experiences of elementary school children. Parents of children in each identified community were asked to select from available models, and the selected proponents were funded to provide teacher training and curriculum. (Engelmann, 2000, p. 3)

Direct Instruction was only one of several teaching models that were used during Project Follow Through.

When Project Follow Through was completed, the results showed that Direct Instruction had a consistent beneficial outcome for all students. However, even with the information gained from the results of Project Follow Through, people did not support the adoption of Direct Instruction.

Direct Instruction had unique features such as the level of involvement of teachers and the learners. An observer would have seen and heard lots of activity. “The children, grouped together for the lesson on the basis of ability, are seated in a semi-circle with one or two rows, without desks, close to and facing the teacher” (Engelmann, 2000, p. 1). Direct Instruction consisted of a carefully scripted presentation that the teacher referred to often.

These scripts have been field tested with other learners and have been designed to maximize learning and minimize confusion. Having prepared lessons that are optimized for teaching and learning frees the teacher to focus on motivational and extra-instructional features of the learning environment. (Engelmann, 2000, p.1)

To an observer, the class would actively respond as a group and on an individual basis. The teacher used a cue to signal the students to respond. The teacher provided feedback and correction as needed by the students. Direct Instruction was done in a high-paced environment (Engelmann, 2000).

In Project Follow Through, the various teaching models selected and used fell into three categories. These categories were affective models, cognitive models and basic skills models.

The Basic Skills models (including Engelmann's Direct Instruction) focused on the children's acquisition of basic knowledge and skills-- a bottom-up approach that targeted basic knowledge and foundational language and numeracy skills. The basic skills models made the assumption that higher-order thinking and problem-solving composite skills, and self-esteem, would arise from mastery of component skills. (Engelmann, 2000, p. 1)

#### Harcourt's Story town

Harcourt's Story town reading program was published in 2008. "Story town is a research-based, developmental reading and language arts program for prekindergarten through sixth grade" (*Professional Development*, n.d., p. 2). The Story town reading program was set up in an explicit, systematic way of instruction. Direct Instruction, modeling, guided practice and application were the four steps in explicit, systematic instruction of Story town. Story town used the National Reading Panel's five essential components of reading as a base for the reading portion of the Story town program. The five essential components of reading

included phonemic awareness, phonics, fluency, comprehension and vocabulary (*Professional Development*, n.d.). Several principles guided the development of Story town. One of the principles was the use of “quality literature and direct instruction will help develop fluent, lifelong readers” (*Professional Development*, n.d., p. 2).

Harcourt’s Story town had thirty weekly lessons divided into six themes. Each week’s lesson had a focus on one or two phonics skills. The phonic skill was seen in all readings for the week, spelling words, and practice workbook pages. The program had been set up to help the teacher deliver the information in an explicit and systematic way. Each lesson had key skills that were taught and later reviewed. A spiraled review of key terms happened during each year and in subsequent years (Beck, Farr, & Strickland, 2008).

### Summary

The instructional method of Direct Instruction had been used in teaching children for nearly forty years. Direct Instruction had proven that Direct Instruction was a successful way to teach. The adoption of Harcourt’s Story town allowed the teachers at the author’s school to use the Direct Instruction method in the teaching of reading.

The Measures of Academic Progress test was designed to help teachers know where students were excelling or failing. The information gained from the MAP test allowed teachers to help students in areas where students struggled.

## CHAPTER 3

### Methodology and Treatment of Data

#### Introduction

The author's school adopted Harcourt's Story town reading program, which used Direct Instruction as the main instructional method. At the same time the school decided to assess students with the Measures of Academic Progress test. The author wanted to find out if the method of Direct Instruction in reading helped improve reading MAP scores.

#### Methodology

The study the author conducted was a quantitative study. "Quantitative research is the collection and analysis of numerical data in order to explain, predict, and/or control phenomena of interest" (Gay, Mills, & Airasian, 2006, p. 9). The author used the MAP test scores to find out if using Direct Instruction in the reading program led to improvements on the reading MAP test.

#### Participants

The participants for the author's research were the author's second grade class and the other second grade class in the school. The author had seven second graders and the other second grade contained twenty-six second grade students. In the author's second grade class there were

five boys and 2 girls. The other second grade had seventeen boys and nine girls. All students ranged from age seven to eight years old. One of the author's students had an IEP and received services at a school in one of the surrounding districts.

### Instruments

The author used the Measures of Academic Progress (MAP) test to gather data. The school had purchased the MAP test from the Northwest Evaluation Association (NWEA). NWEA had aligned the MAP tests with the state standards. The MAP test was a computerized adaptive test that reflected the instructional level of each student and measured student growth over time. The school was able to obtain all test results within twenty-four hours of students finishing the test.

MAP test scores may have been affected by student maturation and previous testing experience. Many students grew intellectually and emotionally which may have allowed them to do better on the test. The more experience that the students had with the MAP test allowed students to do better as the students knew what to expect.

### Design

The author used a one-group pretest-posttest design. "The on-group pretest-posttest design involves a single group that is pretested (o),

exposed to a treatment (x), and posttested (o). The success of the treatment is determined by comparing pretest and posttest scores” (Gay et al., 2006, p. 251). The author sent the students to the computer lab in September 2009 for the pretest. The students were taught reading from the Harcourt Story town program, using Direct Instruction for the rest of the school year. The students were sent back to the computer lab in February 2010 to take the posttest. The scores from the pretest and posttest were put in a chart so the author was able to compare the results.

#### Procedure

The author started by asking the principal for permission as the school did not normally do MAP testing in the winter. After permission was granted the author chose which students were to be tested. The students were sent to the computer lab where the computer teacher administered the test. The pretest was given in September and the posttest was given in February. When the scores had been received the author put the scores in a chart.

#### Treatment of the Data

After the students’ scores were received the author put the scores in a chart. This allowed the author to see which scores were to be counted in

the statistics. Four of the students did not receive scores for one of the tests. The author used a non-independent *t*-test with Statpak software.

### Summary

The author decided to find out if Direct Instruction in reading improved reading MAP test scores. Second grade students were assessed in September and February using the MAP test. During the time between the two tests, the author taught using Direct Instruction in reading. The results were analyzed to see if growth was made on the reading section of the MAP test.



## CHAPTER 4

### Analysis of the Data

#### Introduction

The author wanted to find out if the Direct Instruction teaching method improved student reading MAP scores. The author found that many teachers did not know how the results of the MAP test affected what the teachers taught in the classroom.

#### Description of the Environment

The author's project took place in a small private school in Southeastern Washington. The participants of the project were the author's second grade students and the other second grade class in the school. All Direct Instruction took place in the author's classroom or the other second grade classroom. Both second grade teachers used the same reading curriculum and generally were in the same spot in the reading curriculum at the same time.

The Measures of Academic Progress test was given to the students in the computer lab. The computer teacher administered the MAP test to the students. The classroom teacher was not present in the computer lab during testing. The MAP test was given in September and in February. In September students were tested over a three week period of time. The

reading portion of the MAP test was given in the first week. In February students only took the reading MAP test. Students were mainly tested in the middle of the morning, right after first recess, though some students were tested at other times of the day. The school's computer lab was connected to the school's library so there were periodic interruptions from other classes that came to the library. The printer located in the back of the room, ran every time a student finished the test to print off preliminary test results.

### Hypothesis

Second grade students who were taught using the instructional method of Direct Instruction in reading made greater than expected growth on the reading section of the Measures of Academic Progress test from fall to winter at the .05 level of significance.

### Null Hypothesis

Second grade students who were taught using the instructional method of Direct Instruction in reading did not make greater than expected growth on the reading section of the Measures of Academic Progress test from fall to winter at the .05 level of significance.



was expected and gave students chances to practice what was taught to them (Ryder, Burton, & Silberg, 2006). The Harcourt's Story town followed the Direct Instruction teaching method which allowed students to master individual pieces of reading.

### Summary

The second grade students at the author's school were taught using the Direct Instruction teaching method in reading. The author's hypothesis, which stated student reading MAP scores improved with the Direct Instruction teaching method, was supported.



## CHAPTER 5

### Summary, Conclusions and Recommendations

#### Introduction

The school in which the author taught had always strived to keep high standards and to have students prepared for high school. One thing the school had done to prepare students was to adopt the Measures of Academic Progress test to assess students. The school had also adopted a new reading program. The author wanted to know if the Direct Instruction teaching method used in the reading program helped the students improve the reading MAP test scores.

#### Summary

The author wanted to find out if the Direct Instruction teaching method improved the reading scores on the MAP test. The author used the second grade students from the author's class and the other second grade class in the school for the study. Students were tested in reading in the fall and in the winter using the Measures of Academic Progress test. Direct Instruction was used to teach reading in both second grade classrooms.

The author used a pre-post test to determine if students had made significant growth on the reading section of the MAP test. Once the author

had received the reading MAP scores, the author put the scores in a chart and ran a non-independent *t*-test. The results from the *t*-test showed the author that students had made greater than expected growth on the reading MAP test.

### Conclusions

The adoption of the Harcourt's Story town allowed the teachers to use the Direct Instruction teaching method in teaching reading to students. Direct Instruction proved to be a successful way to teach children. Direct Instruction allowed teachers to teach reading in small pieces to help students master each piece of reading.

The Measures of Academic Progress test gave the author a way to show that Direct Instruction helped students improve reading MAP test scores. The MAP test showed that students made significant growth on the reading MAP test.

### Recommendations

The author recommends that the staff at the school examine all grades to see where growth is being made. The MAP test measures several areas of reading, mathematics and language arts. The teachers of the school could use a staff inservice day to review students' MAP scores to

determine what areas students seem to be excelling and struggling, and discuss ways to help students improve in struggling areas.

The author was aware that many parents did not understand what the scores on the MAP test were telling them. A recommendation for the school would be to have an informational night to explain to parents the significance of the MAP test results.



## REFERENCES

- Basic Philosophy of DI & Assumptions of DI.* (n.d.). Retrieved February 10, 2010, from [http://www.nifdi.org/15/index.php?option=com\\_content&view=article&id=35&Itemid=304](http://www.nifdi.org/15/index.php?option=com_content&view=article&id=35&Itemid=304)
- Beck, I.L., Farr, R.C., & Strickland, D.S. (2008). *Storytown teacher edition.* Orlando, FL: Harcourt.
- Cronin, J., Kingsbury, G.G., McCall, M.S., & Bowe, B. (2005). *The impact of the No Child Left Behind Act on student achievement and growth: 2005 edition.* Retrieved August 8, 2009, from [http://www.nwea.org/sites/sitereview.nwea.org/files/NCLBImpact\\_2005\\_Study.pdf](http://www.nwea.org/sites/sitereview.nwea.org/files/NCLBImpact_2005_Study.pdf)
- Engelmann, S. (2000). *Engelmann Module.* Athabasca University. Retrieved February 24, 2010, from <http://psych.athabascau.ca/html/387/OpenModules/Engelmann/>
- Gay, L.G, Mills,G., & Airasian, P. (2006). *Educational research: Competencies for analysis and applications.* Upper Saddle River, NJ: Pearson.

Grossen, B. (n.d.). *Overview: The story behind Project Follow Through*.

Retrieved February 15, 2010, from

<http://www.uoregon.edu/~adiep/ft/grossen.htm>

Hauser, C. (2003). *So, what d'ya expect? Pursuing reasonable individual student growth targets to improve accountability systems*.

Retrieved August 8, 2009, from

<http://www.nwea.org/sites/sitereview.nwea.org/files/resources/Pursuing%20Reasonable%20Individual%20Student%20Growth%20Targets.pdf>

Kingsbury, G.G., & Hauser, C. (2004). *Computerized adaptive testing and No Child Left Behind*. Retrieved August 8, 2009, from

[http://www.nwea.org/sites/www.nwea.org/files/Computerized\\_Adapt](http://www.nwea.org/sites/www.nwea.org/files/Computerized_Adapt)

Magliaro, S.G., Lockee, B.B., & Burton, J.K. (2005). Direct instruction revisited: A key model for instructional technology. *Educational Technology, Research and Development*, 53(4), 41-56. Retrieved February 7, 2010, from ProQuest Education Journals. (Document ID:937781471).

*Professional Development*. (n.d.). Harcourt School Publishers.

Ryder, R.J., Burton, J.L., & Silberg, A. (2006). Longitudinal study of direct instruction effects from first through third grades. *The Journal of Educational Research*, 99(3), 179-192. Retrieved August 22, 2009, from ProQuest Education Journals. (Document ID: 976654501).

*St. Joseph's School Student Ethnic Data.* (2010).



## APPENDIX

### Second Grade Pre and Post Test Reading MAP Scores

	Pre Test	Post Test
Student 1	159	176
Student 2	140	160
Student 3	161	175
Student 4	192	205
Student 5	193	192
Student 6	163	169
Student 7	188	173
Student 8	209	205
Student 9	190	201
Student 10	193	194
Student 11	176	187
Student 12	162	159
Student 13	155	172
Student 14	206	206
Student 15	201	210
Student 16	187	189
Student 17	196	202
Student 18	171	178
Student 19	200	209
Student 20	182	178
Student 21	161	171
Student 22	184	186
Student 23	174	182
Student 24	201	203
Student 25	195	201
Student 26	209	202
Student 27	202	203
Student 28	200	212
Student 29	154	173