

8-14-2012

The use of direct instruction to improve reading comprehension for students with Autism Spectrum Disorder

Emily Sierra

Let us know how access to this document benefits you - share your thoughts on our feedback form.

Follow this and additional works at: <https://rdw.rowan.edu/etd>

 Part of the [Special Education and Teaching Commons](#)

Recommended Citation

Sierra, Emily, "The use of direct instruction to improve reading comprehension for students with Autism Spectrum Disorder" (2012). *Theses and Dissertations*. 138.
<https://rdw.rowan.edu/etd/138>

This Thesis is brought to you for free and open access by Rowan Digital Works. It has been accepted for inclusion in Theses and Dissertations by an authorized administrator of Rowan Digital Works. For more information, please contact LibraryTheses@rowan.edu.

**THE USE OF DIRECT INSTRUCTION TO
IMPROVE READING COMPREHENSION FOR
STUDENTS WITH AUTISM SPECTRUM
DISORDER**

by
Emily K. Sierra

A Thesis

Submitted to the
Department of Special Educational Services/Instruction
College of Education

In partial fulfillment of the requirement

For the degree of
Master of Arts at
Rowan University

May 2012

Thesis Chair: Joy Xin, Ph.D.

Dedication

I would like to dedicate this to my husband, Dr. Robert Sierra, DPT., without his support and love this would not have been possible.

Acknowledgements

I would like to express my appreciation to Dr. Xin for her endless patience and guidance throughout this research process.

Abstract

Emily K. Sierra

**THE USE OF DIRECT INSTRUCTION TO
IMPROVE READING COMPREHENSION FOR
STUDENTS WITH AUTISM SPECTRUM
DISORDER**

2011/2012

Joy Xin, Ph.D.

Master of Arts in Special Education

The purpose of this study was to examine the effects of Direct Instruction (DI) for teaching oral comprehension to students with Autism Spectrum Disorder (ASD). A total of eight students, ages six through eight in a special education classroom participated in the study. They were taught lessons from a scripted DI program 10-15 minutes daily for 10 weeks. Students completed daily oral lessons followed by a worksheet to check for their understanding. A single subject design with AB phases was used and student performance was evaluated by completing a daily worksheet and oral responses to questions. The results showed students' comprehension scores increased from 25% to 50% over the course of intervention. The DI program has proved to improve these students' reading comprehension skills.

Table of Contents

Abstract	iv
List of Figures	vi
List of Tables	vii
Chapter 1: Introduction	8
1.1 Statement of the Problem	8-10
1.2 Significance of the Study	11
1.3 Purpose of the Study	12
Chapter 2: Literature Review	13
Chapter 3: Methodology	24
3.1 Context of the Study	24-27
3.2 Instrumentation	28-31
Chapter 4: Findings	32
Chapter 5: Summary, Conclusions, and Recommendation	42
5.1 Summary	42-43
5.2 Conclusions	44
List of References	45
Appendix A Placement Test	
Appendix B Daily Lesson Worksheet	
Appendix C Unit Assessment	

List of Figures

Figure	Page
Figure 1	32
Figure 2	33
Figure 3	34
Figure 4	35
Figure 5	36
Figure 6	37
Figure 8	39
Figure 9	40
Figure 10	41

List of Tables

Table	Page
Table 1 General Information of Participating Students	24
Table 2 Instructional Procedures (Group 1-1 Student)	28-31
Table 3 Student Scores	32

Chapter 1

Introduction

Statement of Problems

Reading comprehension is a very important skill for children and their success in learning across all academic areas. Comprehension skills require students to relate to their life experiences and their reading text. It also requires students to incorporate decoding skills to understand the text they are reading. Students with Autism Spectrum Disorder (ASD) and Developmental Disabilities (DD) have difficulty drawing on their background knowledge to be able to comprehend the written text. Often times they are able to read the words but are not able to retell the story in their own words or answer questions about the text.

Reading comprehension can be separated into two categories, inside-out components and outside-in components. Inside-out components include phonemic awareness, phonics, and reading fluency. Outside-in components relate to comprehending text once it has been decoded (Coyne, Zipoli, Chard, Faggella-Luby, Ruby & Santoro-Baker, 2009). Both inside-out and outside-in components draw on the student's ability of his or her understanding of language, word meaning, and prior knowledge to use strategies to construct meaning.

With all of the state mandated testing implemented in the state of New Jersey, students are really pushed to achieve higher levels of learning. Guided reading lessons take place on a daily basis with the focus on making inferences, answering questions in both oral and written formats, making connections to what they read, and accessing their individual prior knowledge. With No Child Left Behind enacted in 2002, rigorous requirements have been mandated for students with disabilities to be included in the state-wide assessment system. They are required to achieve high levels of academic success as their non-disabled peers.

Students experiencing learning difficulties often have difficulties synthesizing new concepts and strategies. Thus, direct and explicit instruction is needed to assist students with disabilities to integrate new knowledge and strategies (Coyne et. al, pg. 231, 2009).

According to recent research (Coyne, et. al, 2009) students with ASD and developmental disabilities respond well to a more direct approach to teaching reading skills. The current model of reading instruction in the public school is guided reading. Guided reading consists of students being grouped by their reading level. Stories are presented to the students to review the pictures and discuss what the story might be about. The lesson continues with reading the story, leading in a discussion with teacher's questions regarding the text read. Students with ASD and developmental disabilities struggle when compared to their non-disabled peers in reading comprehension.

This guided reading program has been implemented prior to my employment in the district. In my experience the current guided reading program, *Literacy By Design*, being used by the teachers in my public school district does not reach the needs of all learners. The program is open-ended to teach students a large variety of reading skills. Some students, especially those with ASD, need a direct and explicit approach of instruction. Current research shows that students range from elementary through high school; have been successful in improving their comprehension skills when they are being taught with a Direct Instruction program.

Direct Instruction (DI) is an intensive and explicit instructional method. It started over fifty years ago in the areas of reading and writing as an intervention method for children with language delays. The program teaches critical skills for students; starting with basic skills and building up to the sophisticated, and develops learning strategies that can be applied to different situations.

Direct Instruction shares characteristics with other behavioral approaches in the following ways; a.) through task analysis, program skills and tasks are broken into components parts and taught to mastery; b.) there are sets of teacher behaviors and procedures such as the provisions of instruction (model, lead, test), and immediate corrective feedback (model, correct response, lead, test); c.) students engage in repeated practice with the correct response; and d.) program procedures are designed so that the learning environment and teacher behaviors set the stage for effective learning (Ganz & Flores, 2009).

Direct Instruction is based on two basic principles; 1.) all students can learn when taught correctly, regardless of past history and background and 2.) all teachers can be successful if given effective teaching materials and presentation techniques. There have been many studies on DI showing that the two principles are achievable in any classroom when implemented correctly. Currently there is a lack of research using DI programs for students with ASD. More research is needed in the areas of both reading and oral comprehension.

Significance of the Study

Many different methods for teaching reading comprehension exist from guided reading to direct instruction to genre study. With such a large variety of instructional approaches, it is difficult for educators to select the most effective method for their students. Reviewing all available instructional methods, it is difficult for teachers to choose the one that will be the most successful for their students. Most studies are focused on upper grade levels of students. Limited research has been found for lower grades of elementary students, especially those with ASD. More research is needed for students in the lower elementary grades with Autism Spectrum Disorder and developmental disabilities. The present study is designed to enhance the

impact of Direct Instruction to increase reading comprehension skills of students with ASD. It attempts to investigate if Direct Instruction is an effective approach to improve reading comprehension skills of students with ASD. In this study, Direct Instruction program, *Language for Learning* (McGraw-Hill, 2008), a specific series of scripted books for comprehension instruction will be used as the DI program and implemented in an elementary school to examine its effects on teaching students with ASD.

Research Questions

- Does using a DI program increase oral comprehension of students with ASD?
- Does using a DI program increase listening skills of students with ASD?
- Does a DI program help students with ASD to increase their correct responses to teacher's questions?

Definition of Terms

Autism Spectrum Disorder (ASD). a spectrum of psychological conditions characterized by widespread abnormalities of social interactions and communication as well as restricted interests and repetitive behavior.

Direct Instruction (DI). An explicit, intensive instructional teaching method that allows students of all abilities to become confident and capable learners

Chapter 2

Review of the Literature

Reading comprehension is a very important skill for students to learn and requires understanding of vocabulary words, listening skills and students with ASD struggle with these skills. The direct and explicit instruction, such as DI programs have evidenced to be implemented in school to students with reading difficulties improve their comprehension skills. Currently, DI programs have been provided to students with ASD to increase their reading skills. This chapter reviews current research of the use of DI programs for students with ASD to increase reading comprehension skills.

Direct Instruction

Direct Instruction (DI) is an approach with skills-oriented and teacher-centered teaching practices. It emphasizes the use of small-group, face to face instruction by teachers using carefully articulated lessons in which cognitive skills are broken down into smaller units, sequenced deliberately and taught explicitly (Carnine, 2004).

DI programs includes three basic components including delivery, design and documentation. Delivery is applying purposeful instructional planning to give students intense and extensive support as they learn new concepts, with repetitive practice and teacher's correction when needed. New concepts are taught in manageable steps to help students increase prior knowledge. The language in the program is clear and concise so that students are able to quickly learn the skills being taught. The teacher ensures each student's understanding of the teacher's modeling the skills being taught. The follow up is practice guided by the teacher to

support the student's learning with many chances for practice. Skills being taught build on prior skills to ensure continuous progress. The student's progress is continuously monitored through on-going assessment.

The delivery of the program is scripted to ensure consistency. The program's pace is quick to keep all learners engaged in the lessons. When working on a skill there are many chances for positive reinforcement to keep students motivated and build confidence. Student progress is documented through a placement test and assessments that are part of the program. It has been found that DI is an effective method for teaching reading all to learners (McGrall-Hill, 2008).

DI program shares characteristics with other behavioral approaches. It includes task analysis, step-by-step focusing, thus skills are taught in components until they are mastered. There are sets of behaviors and procedures for both the teacher and students. Each lesson consists of teaching, modeling, leading the students and testing. Students receive feedback from the teacher immediately for each response. The students engage in repeated practice with the correct response.

The length of the DI program varied according to how long the authors ran their experiments for. In some cases, the experimenters only conducted for a short amount of time, four to six weeks, where others continued for the majority of the school year. The length of each lesson depended upon where in the program that student was and if any corrective practices were needed.

To ensure all students received the same instruction the DI programs are divided into strands to develop skills, each lesson consists of several strands of skills. DI programs are scripted so each student is receiving the same language through the program. The teacher will

teach a skill, the students are required to respond chorally as well as individually. Clear hand signals to elicit student response and immediate correction for incorrect responses are provided as well as modeling and guided practice. The teacher models skills to guide the students. The repetitious practice allows students to practice skills to reach mastery level. DI started in the 60's to provide basic skills instruction to disadvantaged elementary students (Engelmann & Becker, 1960). In the past decades DI has been proven to be effective in teaching reading and basic skills in children with learning difficulties.

Direct Instruction for Students with Reading Difficulties

Research has shown a positive correlation between the use of DI and performance of students with reading difficulties. DI has a set of directions for implementing instruction so that students can acquire, maintain, and generalize skills, ideas and concepts in an effective and efficient manner. It is a useful tool for students who do not easily learn language skills incidentally. DI is well suited for students with reading difficulties who lack a large amount of common language concepts and require intensive, explicit intervention to learn those skills.

Researchers have found that when students have a deficit with oral language, it can negatively impact the individual's comprehension. DI has been used for teaching a large variety of students in reading. It has been used to improve reading comprehension in general education classrooms, for students with learning disabilities, mental retardation, English Language Learners, and students at risk for failing out of school. DI comprehension programs have been used effectively for students with reading difficulties across a range of ages including preschool to high school.

Current research has shown that students who struggle with reading concepts are more

likely to learn essential reading skills and strategies if the model of instruction is direct or explicit (Flores & Ganz, 2007). In a recent study conducted by Flores and Ganz, the effects of a DI reading comprehension program were examined. Four students with reading delays and developmental disabilities participated in the study. They were Chris, a 14-year old boy in sixth grade with; Hali, a 13-years old in the fifth grade with; Jean, diagnosed as mentally retarded, IQ 57, also a 13-year old girl in the fifth grade; Sara a 10-year old girl in the fifth grade and diagnosed as mentally retarded with an IQ of 75. The DI program *Corrective Reading Thinking Basics: Comprehension Level* was provided to teach these participating students 20 minutes per day three to four times a week for one semester. A scripted teacher presentation book divided into strands of developing skills was used.

Each lesson contained several strands focusing on making inferences, using facts, and analogies. Procedures followed the scripted lesson, having the students respond chorally, using a signal to elicit student responses, feedback for correction when students made incorrect responses, and asking students to respond independently. The reading comprehension probes consisted of 8-inch by 11-inch paper sheets with instructor scripts for the given skill. When giving the probes for inference the instructor would read a statement then have the students repeat the statement back, then the instructor would ask a series of questions that were related to the passage the students had read. Daily instruction continued until the students reached a criterion of three consecutive probes at 100%. Due to the students not being able to remember what was read orally, the program was modified with information being presented in written form with pictures.

The results showed that the four participating students increased their reading

comprehension scores at the end of the intervention. They also maintained their performance when instruction faded to one lesson per month after the study concluded. It seems that DI is effective for teaching reading to students with reading difficulties. The purpose of the study was to see if a DI program is an effective method of instruction for students with reading difficulties as well as developmental disabilities. A functional relationship between DI and reading comprehension skills was demonstrated. All four students met criterion across the statement inference, using facts, and analogies conditions. Using DI teaches new information through meaningful teacher-student interactions and teacher guidance of the students learning. With a DI approach the teacher clearly leads the student and models the expected outcome prior to student practice. Both direct and explicit instruction allows for the student's to receive immediate feedback, both corrective and positive.

Direct instruction allows students to repeat and repetitive skills. Students are better able to relate new information to their previous learning and apply new skills in a new context through step-by-step explanations, modeling and guided practice. Through the repetition students are able to practice each skill multiple times as well as transfer skills learned to new situations and academic areas.

Direct instruction is an essential method for teaching reading to struggling reader. It is an active and reflective method of teaching where the teacher is able to interact with the students to effectively teach them to become better readers. The DI method of instruction can be used based on the student's capabilities, what text is being read, the purpose of the passage, the context in which the reading is occurring and how the teacher can provide direct and explicit instruction. When DI programs are used for children with reading difficulties, there has been found to be an immediate and marked change in student performance regarding their comprehension skills.

A functional relationship between DI and comprehension skills has been demonstrated across behavioral conditions for a variety of different students. DI has been used across a significant amount of students from grades pre-kindergarten through high school. The current research shows improved comprehension, reading and oral, for students with reading difficulties through the use of DI programs.

DI programs have been used in both private schools for children with special needs as well as public schools (Flores & Ganz, 2007). The four students who took part in the research studies were taught using DI as an intervention strategy during their regular scheduled instruction times. The students were placed in small groups based upon their scores on the programs placement test. The direct instruction intervention lessons took place daily in the rooms where the students were normally instructed in reading.

Some of the current research mentioned any modifications, if any were needed to the DI program the experimenter was using. Most of the modifications that were made were very minor. Some examples of modifications were, repeating the instructions multiple times, the use of pictures to go along with new vocabulary and using concrete objects when appropriate. The modifications that were made did not change the program but added to it. The experimenters did not skip or take any parts of the scripted program out.

Much of the current research is geared towards increasing reading comprehension for students with reading difficulties through the use of a Direct Instruction program. Reading comprehension requires the students to use various components of comprehension to be successful. The goal for students is to be able to make connections to what they are reading, make inferences and predictions, retell the stories they are reading in sequential order, and answer questions correctly regarding the text. Many skills are necessary to be successful at

comprehending text the student is reading.

Direct Instruction for Students with ASD

Ganz and Flores (2009) examined the effectiveness of a Direct Instruction language program for elementary students with ASD. The study focused on oral language skills. Three elementary students diagnosed with ASD in a private school participated in the study. They were Kyle, a 10-year old boy, with concrete speech and difficulties with abstract concepts; Aidan, a 10-year old boy, had difficulty answering abstract questions; Nico, an 11-year old boy who imitated conversation and had difficulty with articulation.

The materials used were a Direct Instruction program called *Language for Learning*. The materials included a teacher presentation book with scripts. Each lesson consisted of several strands for 20 minutes of instruction per day. The strand they focused on was identification of common materials. The common materials the students would be learning about were: shirt, pants, robe, book, tissue, pen etc. Language probes were modeled from the tasks in the program. The probes were given during baseline and on days prior to instruction three times a week. The probe consisted of eight statements where the participants had to name two items made from cloth, paper, plastic, leather, glass, wood, metal and concrete. Each statement was read orally to students and requested their oral responses. The probes were given two to three times a week consisting of eight-possible correct responses. One author instructed students three to four days per week and the other author for one or two days.

All three participating students met the performance criteria. All three student's correct

responses increased from of 0% during the placement test to 60%-90% of correct responses on the post-test. The percentage of high correct responses continued during maintenance after the initial probes had concluded. The results demonstrated the effectiveness of DI for oral language improvement of students with ASD. It is found that DI increased oral responses of these students and DI is helpful to support the students generalize the skills learned and transfer them beyond the classroom setting.

The effects of a DI reading program was to further examine a Flores and Ganz's study (2007). This study attempts to extend prior research by studying the extension of more complex instruction for students with ASD and the effect on their reading comprehension. Four students participated attended a private school for children with autism spectrum disorder and intellectual disabilities. These include Hildi, a 13-year old girl in 5th grade, diagnosed with ASD; Sally, an 11-year old girl in 5th grade, diagnosed with Attention Deficit Hyperactivity disorder, which is considered a developmental disability; Chad, a 14-year old boy in 6th grade, diagnosed with ASD; and Jane, a 13-year old girls in the 5th grade, diagnosed with mental retardation.

The Direct Instruction program *SRA: Corrective Reading Thinking Basics: Comprehension Level A* was provided to students with ASD in Flores and Ganz's study (2009). The scripted teacher presentation book was provided for the teachers to use. The program was divided into strands that develop skills with specified instruction, focusing on three strands including picture analogies, induction and deductions. The instruction focused the lesson scripts teacher modeled, students responded chorally, teacher gave a clear hand signal to elicit the student responses, correcting mistakes and testing individual understanding by individual responses. A placement test was used to determine where to start students were then grouped according to their scores on

the placement test. Students participated in twenty-minute lessons each day, and the teachers rotated to teach the lessons. The results show that all four students met the criteria across the three categories: picture analogies, deductions, and inductions. During the study, the students followed directions, stayed on task, responded to questions, without deviating from the management techniques of the DI program. A positive relationship between direct instruction and the increase of reading comprehension skills of students with ASD and students remained on task, responded appropriately and made academic gains in reading.

Viel-Ruma et al conducted an experiment to investigate the effect of DI in teaching written expression of high school students with writing and reading deficits as well as classified with ASD. The researchers looked at the use of a DI program to increase written expression for students with learning disabilities and students who were English Language Learners.

The participants of the study were six high school students, in 9th through 11th grades. All of the students were classified special education students who attended the resource room for one period a day. All of the students were classified as Learning Disabled. Three of the students, Allen, Adam and Andrea were students with learning disabilities who only spoke English and whose disabilities fell into the area of written expression. The other three students, Jorge, Jose and Julia all qualified for special education services under the LD classification for written expression as well as ELL (English Language Learner) services.

Each student was given a placement test in the direct instruction program *Expressive Writing I*. The students were given a prompt and instructed to write for a total of twenty minutes. The prompts focused on spontaneous writing quotient, syntax, contextual spelling, theme maturity, context style, and vocabulary. The materials used for the intervention was the *SRA: Expressive*

Writing program. The program consisted of student textbooks and workbooks, a teacher's presentation book and guide with an answer key.

DI was implemented for five weeks with maintenance checks two and four weeks after the intervention ended. The teachers followed the script for each odd numbered lesson on a daily basis. Only 26 out of the 50 lessons were taught to the students to see if the program was still effective in an abbreviated version. The lessons were 30 to 45 minutes long depending on the script for that particular lesson. At the end of each lesson the students were asked to write a paragraph based on a picture prompt in a three-minute time limit. Maintenance probes were conducted at two and four weeks after intervention ended.

The researchers found that the *Expressive Writing* program helped to increase the students, both LD and ELL, use correct use of syntax during writing. The students also wrote more during the three minute timed paragraph as the program was used in the resource room. The student made gain in all areas of written expression while using the direct instruction program.

There was a positive trend in the student's writing performance in regards to correct word sequence, length of text, and vocabulary. The SRA *Expressive Writing* program proved to be an effective intervention method for students with learning disabilities as well as students who were English Language Learners. The current research implements one DI program focused on oral language comprehension. Oral language is studied in the areas of thinking operations like analogies, using evidence to support conclusions and ideas, classifying objects into categories, making deductions, describing objects using specific details, understanding the meaning of the same and opposite and true and false statements. More research is needed in the area of comprehension, specifically for students with ASD. Further replication under varied conditions

are needed to draw the specific conclusions about DI is an effective language intervention for individuals with ASD.

The current research shows that students with special needs that had DI curriculum showed greater gains than their non-disabled peers. A large majority of the current research consists of upper elementary school from grades 3rd through 5th grade. Few research is found in the areas of lower elementary and preschoolers. Replicated research is needed with a larger number of participating students with ASD in various age groups.

Summary

Oral reading comprehension requires a large amount of skills, both prerequisite and extension skills, the way in which comprehension is taught to students with ASD need to be examined. Much research has been found in the area of managing behaviors of individuals with ASD. The methods researched were teaching desired behaviors of these individuals. DI was effective in teaching students with reading difficulties

Direct Instruction programs allow teachers to instruct, model, student to practice immediate correction and reinforcement of student behavior. Students with ASD have shown gains in the area of desired behavior with modeling and reinforcement.

DI is an effective method for teaching comprehension to students with ASD. A review of the research has shown that a large majority of the studies has focused on students in the upper elementary grades and into high school there are not many studies that have been conducted in the early elementary grades. This study will focus on the use of DI on students with ASD in the primary elementary school grades.

Chapter 3

Method

Setting

The study was conducted in a self-contained classroom for students with Communication Disabilities in a public school. The students ranged from kindergarten to first or second grade. A total of ten students, one teacher, and three educational assistants are in the classroom. The Direct Instruction lessons were taught every morning between 10 and 11 o'clock during the student's academic time in their self-contained classroom. The students remained in the classroom for all academic areas, except lunch, recess and specials when they would be together with their non-disabled peers.

Participants

Eight students from ages six through eight participated in the study. Their classifications range from Autism, Communication Impairments to Multiply Disabilities, which mean that they have a Communication Impairment as well as a Specific Learning Disability in reading, writing or mathematics. All of the students have Autism Spectrum Disorder, some with comorbid disabilities allowing them to be classified under different New Jersey Special Education Codes (See Table 1).

Table 1

General Information of Participating Students

Student	Gender	Age & Grade	Classification
Student 1	M	7, 2 nd	CI

Student 2	M	7, 1 st	SLD
Student 3	M	8, 2 nd	A
Student 4	F	7, 1 st	A
Student 5	M	7, 1 st	A
Student 6	M	6 Kindergarten	A
Student 7	F	7, 1 st	CI
Student 8	M	7, 2 nd	A

CI: Communication Impaired SLD: Specific Learning Disability A: Autistic

The participating students were volunteered and permitted by their parents at Back-to-School night when the Direct Instruction (DI) intervention was discussed. Parents could then decide whether their child would participate or not, with the understanding that their child would not be penalized for not taking part in the study. All of the parents allowed their children to be involved in the study.

Student 1 was a Mexican boy in 2nd grade classified as Communication Impaired (CI) with extremely low reading fluency and comprehension skills. Student 2 was an African American boy in 1st grade classified as Specific Learning Disability (SLD) who was at the average level in reading fluency, with difficulty in comprehension. Student 3 was an Indian boy in 2nd grade classified CI with excellent fluency with extremely low comprehension. Student 4 was a Caucasian girl in 1st grade classified as Autistic with slightly below average fluency and low comprehension. Student 5 was an Asian boy in 1st grade classified as Autistic as well as ELL with low average fluency and comprehension. Student 6 was a Caucasian boy in Kindergarten classified as Autistic with average fluency and very low comprehension. Student 7 was an African American girl in 1st grade classified as CI with low fluency and comprehension.

Student 8 was a Caucasian boy in 2nd grade classified as Autistic with very low reading fluency and average comprehension skills.

One teacher, who teaches the students core subjects such as reading, math and writing each day, would be the only instructor to deliver the DI during this study.

Materials

The instructional materials included a teacher presentation book with scripted lessons and individual student worksheets from Direct Instruction Intervention program SRA: *Language for Learning*.

The DI program *Language for Learning*, published by McGraw-Hill (2008) included a placement test, daily scripted lessons, daily worksheets and unit assessments that are conducted after 10 lessons were completed, an example can be found in the Appendix A, B, C, D.

Placement Test

The placement test measures the receptive and expressive oral language of the students beginning the program. The placement test is broken into three parts. Part 1 includes having the children locate and identify parts of their body, look at pictures and tell about them. Part 2 includes having the students tell about the location of the ball, talk about the different parts of a pencil using complete sentences. Part 3 includes using words like big, small, empty, full, telling the days of the week, and identifying parts of the body and classroom. This test is given one-on-one, when the teacher asks a series of questions for the student to answer. The student must score 6 or more points on each part for the teacher to determine where the instruction should begin. This helps the instructor to determine if the program is appropriate for the student. Each

student is given the placement test individually. The number of correct responses determines where instruction will begin.

Daily Scripted Lessons and Worksheets

The measurement materials in this study were the student's current level of oral comprehension according to the placement test from the Scientific Research Approach (SRA) program. I specifically focused on listening comprehension, using the oral question and answer format. Each scripted lesson takes 15 to 20 minutes each day, the lessons are sequential in that each day they build on the skills learned the prior day. Each lesson is indicated by a number and each step in the lesson by a letter. The lessons are repetitive following a pattern that the students can learn quickly. At the end of each oral lesson the students complete a worksheet that corresponds with the oral lesson completed (See appendix B for an example of a daily scripted lesson and worksheet).

Unit Assessment

A program assessment is in the presentation book after every tenth lesson. The assessments are to be given at the ten-lesson intervals, beginning when the children complete lesson 10 and ending when they complete lesson 160. The assessments are to be given one-on-one to provide the teacher with information to help monitor student progress as they move through the program and identify the children who need extra help (See Appendix C for an example).

Research Design

Multiple baselines with A B phases were used in this study. During Phase A, each student was given a placement test that consisted of 3 subgroups, and their test scores were recorded. During Phase B, the instruction was provided for 10 days, student performance was evaluated by a daily worksheet, and their scores were recorded.

Procedures

Instructional Procedures. After the placement test was administered, the students were organized into four groups based on their test score; Group 1 began at Lesson 1, Group 2 began at lesson 11 and Groups 3 and 4 began at lesson 31. The students were taught in their group daily for 10 to 15 minutes every day depending on how long the individual lesson was. At the end of each lesson the students were given a worksheet to practice that was used for the teacher check for their understanding and to evaluate their performance on a daily basis. At the end of the 10 day's cycle a post-test assessment was given. The two students who began the SRA program at Lesson 11 took Assessment 2. The students who began at Lesson 31 took Assessment 4. A binder with the student's placement test, daily work, and post-tests have been kept to document student progress. After the oral portion of the lesson is complete, the students are given a worksheet to reinforce the skills being taught in that day's lesson. The worksheets are graded daily to check for student understanding (See Table 2 for an example).

Table 2

Instructional Procedures (Group 1- 1 Student)

Days	Lesson Activities-
Day 1	1-actions by students, following directions, personal information: names school; object identification. Workbook: touching, cross-out marks,

	coloring
Day 2	2- actions by students, following directions, personal information names school; object identification. Workbook: touching, cross-out marks, coloring
Day 3	3- actions by students, following directions, personal information names school; object identification, identity statements. Workbook: touching, cross-out marks, coloring
Day 4	4- actions by students, following directions, body parts, information: names school; object identification, identity statements. Workbook: touching, cross-out marks, coloring
Day 5	5- actions by students, following directions, body parts, information: names school; object identification, identity statements. Workbook: touching, cross-out marks, coloring
Day 6	6- actions by students, following directions, information: names school; object identification, identity statements. Workbook: touching, cross-out marks, matching
Day 7	7- actions by students, statements, following directions, information: names school; object identification, identity statements, and common objects. Workbook: touching, cross-out marks, matching
Day 8	8- actions by students, following directions, information: names school; object identification, identity statements. Workbook: touching, crossing-out objects, matching
Day 9	9- actions by students, following directions, information: names school; object identification, identity statements. Workbook: touching, crossing-out objects, matching
Day 10	10- actions by students, following directions, information: names school; object identification, identity statements. Workbook: touching, crossing-out objects, matching
Day 11	Assessment 1- students are asked their name, name of their school, teacher's name, then they are asked to stand up, to say in a complete sentence "I am standing up", touch nose, "I am touching my nose", then they are asked to identify pictures when they are pointed to. The student must score 90% or higher on the assessment.

Group 2- Two Students

Days	Lesson Activities
Day 1	11- actions by students, statements; information: names school; common objects; identify statements. Workbook: cross-out marks; crossing out objects and matching.
Day 2	12 actions by students, statements; information: names school; common objects; identify statements. Workbook: cross-out marks; crossing out objects and matching.
Day 3	13 actions by students, statements; information: names school; common

	objects; identify statements. Workbook: cross-out marks; crossing out objects and matching.
Day 4	14 actions by students, statements; information: names school; common objects; identify statements. Workbook: cross-out marks; using yellow & matching.
Day 5	15 actions by students, statements; information: names school; common objects; identify statements. Workbook: cross-out marks; using yellow & matching.
Day 6	16 actions by students; statements yes/no questions; information: names school; common objects; identify statements. Workbook: cross-out marks; coloring & matching.
Day 7	17 actions by students, statements yes/no, first, next and pictures; questions; information: names school; common objects; identify statements. Workbook: cross-out marks; coloring red & matching.
Day 8	18 actions by students, statements yes/no, first, next and pictures; questions; information: names school; common objects; identify statements. Workbook: cross-out marks; coloring red & matching.
Day 9	19 actions by students, statements yes/no, first, next and pictures; questions; information: names school; common objects; identify statements. Workbook: cross-out marks; coloring red & matching.
Day 10	20 actions by students, statements yes/no & not, first, next and pictures; questions; information: names school; common objects; identify statements. Workbook: cross-out marks; coloring red & matching.
Day 11	Assessment 2- first name, whole name, touch leg, say in whole sentence “I am touching my leg”, ask questions, student responds with no, show objects, pencil-“This is a pencil” etc. Show pictures, student identifies them and tells about them in a sentence. Students must score 90% or higher.

Group 3 and 4- 5 Students

Days	Lesson Activities
Day 1	31- actions by students; body parts; prepositions; over (demonstrating); missing objects; information: school, place; part/whole of a table; prepositions: on/over; opposites: wet/dry. Workbook: matching, coloring, cross-out/circle.
Day 2	32- actions by students; body parts; prepositions; over (demonstrating); missing objects; information: school, place; part/whole of a table & pencil; prepositions: on/over; opposites: wet/not wet. Workbook: matching, coloring, cross-out/circle.
Day 3	33- actions by students; body parts; prepositions; over (demonstrating); missing objects; information: school, place; part/whole of a table & pencil; prepositions: on/over; opposites: wet/not wet. Workbook: matching, coloring, cross-out/circle.

Day 4	34 actions by students; pronouns/body parts; part/whole; prepositions: on/over statements; information: school; part/whole: pencil; opposites: full/not full; wet/not wet. Workbook: matching, coloring, cross-out/circle.
Day 5	35 actions by students; pronouns/body parts; part/whole; prepositions: in front of statements; information: school; part/whole: pencil; opposites: full/not full; wet/not wet. Workbook: matching, coloring, cross-out/circle.
Day 6	36- actions by students; pronouns/body parts; prepositions: in front of; information: days of the week; prepositions: in front of; part/whole: table, toothbrush; identity statements. Workbook: pair relations, coloring, cross-out/circle, and matching.
Day 7	37 actions by students; pronouns/body parts; prepositions: in front of; information: days of the week; prepositions: in front of; opposites: big/not big part/whole: table, toothbrush; identity statements. Workbook: pair relations, coloring, cross-out/circle, and matching.
Day 8	38 actions by students; pronouns/body parts; first, next, last; information: days of the week; prepositions: in front of; opposites: big/not big part/whole: table, toothbrush; identity statements. Workbook: pair relations, coloring, cross-out/circle, and matching.
Day 9	38- actions by students; pronouns/body parts; prepositions: in front of; information: days of the week; prepositions: in front of; opposites: big/not big part/whole: table, toothbrush; identity statements. Workbook: pair relations, coloring: black, cross-out/circle, matching and temporal first, next.
Day 10	49- actions by students; pronouns/body parts; prepositions: in front of; information: days of the week; prepositions: in front of; opposites: big/not big part/whole: table, toothbrush; identity statements. Workbook: pair relations, coloring: black, cross-out/circle, matching and temporal first.
Day 11	Assessment- name of school, name of town, days in a week, touch your knees, put in a sentence, parts of a head, prepositions, opposites. Students must score 90% or higher.

Measurement Procedures

A program assessment is in the presentation book after every tenth lesson. The assessments are to be given at the ten-lesson intervals, beginning when the children complete lesson 10 and ending when they complete lesson 160. They are to be given one-on-one to provide the teacher with information to help monitor student progress as they move through the program and identify the children who may need extra help. (See Appendix E for an example).

Chapter 4

Results

Figure 1 presents the students' average test scores in reading comprehension during the baseline and intervention. All eight students showed an increase in their comprehension while incorporating the Direct Instruction program for intervention. During the baseline the students' scores on the placement test varied from 50% to 75%. The participants post assessment scores ranged from 92% to 100%; all showing an increase in comprehension.

Table 3

Student Scores

	Student 1	Student 2	Student 3	Student 4	Student 5	Student 6	Student 7	Student 8	Student Average
Baseline 1	75%	80%	78%	75%	75%	70%	72%	70%	74%
Baseline 2	70%	70%	76%	80%	80%	60%	65%	80%	73%
Baseline 3	68%	63%	63%	70%	75%	55%	70%	77%	68%
DI 1	85%	92%	100%	100%	100%	100%	100%	100%	97%
DI 2	100%	100%	100%	100%	100%	100%	100%	100%	100%
DI 3	100%	100%	100%	100%	100%	100%	100%	100%	100%

Figure 2 shows the averaged scores of all eight students during the baseline and intervention. All eight students showed an increase in their comprehension during the intervention phase.

Figure 3 shows Student 1 scores during baseline and intervention.

Figure 4 shows Student 2 scores during baseline and intervention.

Figure 5 shows Student 3 scores during baseline and intervention.

Figure 6 shows Student 4 scores during baseline and intervention.

Figure 7 shows Student 5 scores during baseline and intervention.

Figure 8 shows Student 6 scores during baseline and intervention.

Figure 9 shows Student 7 scores during baseline and intervention.

Figure 10 shows Student 8 scores during baseline and intervention.

Chapter 5

Discussion

In this study, eight students in a self-contained class for students with communication impairments participated in the study. These students struggle with reading comprehension. The experiment was to determine if DI would improve their reading comprehension skills.

Data was collected at the beginning of the study through a placement test as the baseline. Daily lessons were administered along with a worksheet to evaluate student's performance. At the end of each 10 day intervention, an assessment was given to ensure students' understanding of the reading material and their comprehension.

All students showed an increase in their comprehension while incorporating the Direct Instruction program for instruction. The student scores on the placement test ranged from 50% to 75% during the baseline, while their scores ranged from 92% to 100% during the intervention over a 10-week cycle of lessons. The students gained in listening comprehension to respond to questions. Their oral comprehension was improved by distinguishing different objects in the pictures and describing their differences. They were also able to draw conclusions and answer questions regarding a story.

The first research question indicated that using a DI program would increase oral comprehension of students with ASD. The results showed that the DI program helped increase their reading comprehension. The participating students showed gains in their scores in listening comprehension, 25% to 42%, over the course of the intervention cycle. The second research

question was if using a DI program increases listening skills of students with ASD. The results showed that the participating students have increased their listening skill to understand the story. The third research question asked if a DI program help students with ASD to increase their correct responses to teacher's questions. The results also showed that participating students have increased their correct responses to the teachers' questions.

Limitations

There are some limitations of the study. The first was that the implementation of the SRA Direct Instruction program was not compared to any other methods on reading comprehension of students with ASD. Thus, it is hard to say that this DI program is more effective than others. Also, there is no comparison group in the study, which will make the results weak. The SRA Direct Instruction program used for this study proved to be effective; however, it would have been beneficial to compare it to another DI program that focuses on teaching comprehension skills. It would have supported the use of one program over another to help students make the most gains in the area of comprehension.

The second limitation was consistency of instructional delivery due to related services as well as assemblies in the school and students being absent. Due to the scheduled related services, such as speech, occupational therapy, and physical therapy the students are often being pulled from the class. The OT, PT and speech teachers see children throughout the school, thus their schedules can be hectic and at times they can run late or have meetings or groups pulled at different times if there is an assembly in the school. This makes difficult to implement the intervention program at the same time every single day. Most days the students were pulled during the morning, however, on days when there were assemblies or related service schedule

issues the intervention program would be done in the afternoon after the students' lunch and recess.

The third would be time limitation. The 10 week duration was not long enough to involve parents to help review some strategies and language used by the SRA DI program at home. If parents reinforce the skills their children learned at home, I believe children can experience consistency of their learning at home and school.

Recommendations

The SRA DI program proved to be an effective method in teaching comprehension, specifically listening comprehension and oral responding skills for students with ASD. The program will continue to be used for the remainder of this school year and the following year. It would have been very informative to see if the students would have made even larger gains if they can continue their learning at home. Also, a designated time is allocated for instruction without pulling students out for related services; it could ensure that the students would be present for the entire DI lessons. Further studies may need to continue to examine the DI program to ensure students with ASD to gain and improve their comprehension skills.

Conclusion

It seems that the Direct Instruction for the participating students improves their progress in their listening comprehension and oral responses. The students have shown gains in the first cycle of intervention lessons in 10 weeks. If the DI program is provided continuously, it may to make these students' progress in reading comprehension and other academic areas.

References

- Allor, J. H., Mathes, P. G., Roberts, J. K., Jones, F. G., & Champlin, T. M. (2010). Teaching students with moderate intellectual disabilities to read: An experimental examination of a comprehensive reading intervention. *Education and Training in Autism and Developmental Disabilities, 45*(1), 3-22.
- Åsberg, J., Kopp, S., Berg-Kelly, K., & Gillberg, C. (2010). Research report: Reading comprehension, word decoding and spelling in girls with autism spectrum disorders (ASD) or attention-Deficit/Hyperactivity disorder (AD/HD): Performance and predictors. *International Journal of Language & Communication Disorders, 45*(1), 61-71.
doi:10.3109/13682820902745438
- Bruce, S., & Muhammad, Z. (2009). The development of object permanence in children with intellectual disability, physical disability, autism, and blindness. *International Journal of Disability, Development & Education, 56*(3), 229-246. doi:10.1080/10349120903102213
- Carlson, C. D., & Francis, D. J. (2002). Increasing the reading achievement of at-risk children through direct instruction: Evaluation of the rodeo institute for teacher excellence (RITE). *Journal of Education for Students Placed at Risk, 7*(2), 141-166.
doi:10.1207/S15327671ESPR0702_3
- Cobern, W. W., Schuster, D., Adams, B., Applegate, B., Skjold, B., Undreiu, A., et al. (2010). Experimental comparison of inquiry and direct instruction in science. *Research in Science & Technological Education, 28*(1), 81-96. doi:10.1080/02635140903513599
- Cobern, W. W., Schuster, D., Adams, B., Applegate, B., Skjold, B., Undreiu, A., et al. (2010).

Experimental comparison of inquiry and direct instruction in science. *Research in Science & Technological Education*, 28(1), 81-96. doi:10.1080/02635140903513599

Coyne, M. D., Zipoli, R. P., Jr., Chard, D. J., Faggella-Luby, M., Ruby, M., Santoro, L. E., et al. (2009). Direct instruction of comprehension: Instructional examples from intervention research on listening and reading comprehension. *Reading & Writing Quarterly: Overcoming Learning Difficulties*, 25(2-3), 221-245. doi:10.1080/10573560802683697

Flores, M. M., & Ganz, J. B. (2009). Effects of direct instruction on the reading comprehension of students with autism and developmental disabilities. *Education and Training in Developmental Disabilities*, 44(1), 39-53.

Flores, M. M., & Ganz, J. B. (2009). Effects of direct instruction on the reading comprehension of students with autism and developmental disabilities. *Education and Training in Developmental Disabilities*, 44(1), 39-53.

Flores, M. M., & Ganz, J. B. (2007). Effectiveness of direct instruction for teaching statement inference, use of facts, and analogies to students with developmental disabilities and reading delays. *Focus on Autism and Other Developmental Disabilities*, 22(4), 244-251. doi:10.1177/10883576070220040601

Flores, M. M., & Ganz, J. B. (2007). Effectiveness of direct instruction for teaching statement inference, use of facts, and analogies to students with developmental disabilities and reading delays. *Focus on Autism and Other Developmental Disabilities*, 22(4), 244-251. doi:10.1177/10883576070220040601

Ganz, J. B., & Flores, M. M. (2009). The effectiveness of direct instruction for teaching language to children with autism spectrum disorders: Identifying materials. *Journal of Autism and*

Developmental Disorders, 39(1), 75-83. doi:10.1007/s10803-008-0602-6

Huemer, S. V., & Mann, V. (2010). A comprehensive profile of decoding and comprehension in autism spectrum disorders. *Journal of Autism and Developmental Disorders*, 40(4), 485-493. doi:10.1007/s10803-009-0892-3

Joseph, L. M., & Seery, M. E. (2004). Where is the phonics? A review of the literature on the use of phonetic analysis with students with mental retardation. *Remedial and Special Education*, 25(2), 88-94. doi:10.1177/07419325040250020301

Legault, A., Maloney, M., & Giroux, N. (2001). Learning rates with direct instruction, precision teaching and the corrective reading series. *Journal of Precision Teaching & Celeration*, 17(2), 89-91.

Matson, J. L. (2007). Group-delivered, direct instruction of social and play skills was more effective in teaching children with autism pro-social skills than an unstructured 'play activities' model. *Evidence-Based Communication Assessment & Intervention*, 1(4), 176-179. doi:10.1080/17489530701802977

Osborne, P. A. (2007). The effect of direct instruction in phonological awareness, orthography and phonics on the reading test scores of african american middle school students with delayed reading skills. ProQuest Information & Learning). *Dissertation Abstracts International Section A: Humanities and Social Sciences*, 68 (4-)

Park, J. H., Alber-Morgan, S., & Cannella-Malone, H. (2011). Effects of mother-implemented picture exchange communication system (PECS) training on independent communicative behaviors of young children with autism spectrum disorders. *Topics in Early Childhood Special Education*, 31(1), 37-47. doi:10.1177/0271121410393750

- Peterson, L., McLaughlin, T. f., Weber, K. P., & Anderson, H. (2008). The effects of model, lead, and test technique with visual prompts paired with a fading procedure to teach “Where” to a 13-year-old echolalic boy with autism. *Journal of Developmental & Physical Disabilities, 20*(1), 31-39. doi:10.1007/s10882-007-9077-1
- Rupley, W. H. (2009). Introduction to direct/explicit instruction in reading for the struggling reader: Phonemic awareness, phonics, fluency, vocabulary, and comprehension. *Reading & Writing Quarterly: Overcoming Learning Difficulties, 25*(2-3), 119-124.
doi:10.1080/10573560802690189
- Rupley, W. H. (2009). Introduction to direct/explicit instruction in reading for the struggling reader: Phonemic awareness, phonics, fluency, vocabulary, and comprehension. *Reading & Writing Quarterly: Overcoming Learning Difficulties, 25*(2-3), 119-124.
doi:10.1080/10573560802690189
- Rupley, W. H. (2009). Introduction to direct/explicit instruction in reading for the struggling reader: Phonemic awareness, phonics, fluency, vocabulary, and comprehension. *Reading & Writing Quarterly: Overcoming Learning Difficulties, 25*(2-3), 119-124.
doi:10.1080/10573560802690189
- Rupley, W. H., Blair, T. R., & Nichols, W. D. (2009). Effective reading instruction for struggling readers: The role of direct/explicit teaching. *Reading & Writing Quarterly: Overcoming Learning Difficulties, 25*(2-3), 125-138. doi:10.1080/10573560802683523
- Stockard, J. (2010). Promoting reading achievement and countering the “fourth-grade slump”: The impact of direct instruction on reading achievement in fifth grade. *Journal of Education for Students Placed at Risk, 15*(3), 218-240. doi:10.1080/10824669.2010.495687

- Stockard, J. (2010). Promoting reading achievement and countering the “fourth-grade slump”:
The impact of direct instruction on reading achievement in fifth grade. *Journal of Education
for Students Placed at Risk*, 15(3), 218-240. doi:10.1080/10824669.2010.495687
- Viel-Ruma, K., Houchins, D. E., Jolivette, K., Fredrick, L. D., & Gama, R. (2010). Direct
instruction in written expression: The effects on english speakers and english language
learners with disabilities. *Learning Disabilities Research & Practice*, 25(2), 97-108.
doi:10.1111/j.1540-5826.2010.00307.x
- Viel-Ruma, K., Houchins, D. E., Jolivette, K., Fredrick, L. D., & Gama, R. (2010). Direct
instruction in written expression: The effects on english speakers and english language
learners with disabilities. *Learning Disabilities Research & Practice*, 25(2), 97-108.
doi:10.1111/j.1540-5826.2010.00307.x
- Wahlberg, T., & Magliano, J. P. (2004). The ability of high function individuals with autism to
comprehend written discourse. *Discourse Processes*, 38(1), 119-144.
doi:10.1207/s15326950dp3801_5
- Wexler, J., Vaughn, S., Roberts, G., & Denton, C. A. (2010). The efficacy of repeated reading
and wide reading practice for high school students with severe reading disabilities. *Learning
Disabilities Research & Practice*, 25(1), 2-10. doi:10.1111/j.1540-5826.2009.00296.x
- Wiltz, N., & Wilson, G. P. (2005). An inquiry into children's reading in one urban school using
SRA reading mastery (direct instruction). *Journal of Literacy Research*, 37(4), 493-528.
- Zayac, R. M. (2009). Direct instruction reading: Effects of the reading mastery plus - level K
curriculum on preschool children with developmental delays. ProQuest Information &
Learning). *Dissertation Abstracts International: Section B: The Sciences and Engineering*,

69 (10-) Retrieved from

Zayac, R. M. (2009). Direct instruction reading: Effects of the reading mastery plus - level K curriculum on preschool children with developmental delays. ProQuest Information & Learning). *Dissertation Abstracts International: Section B: The Sciences and Engineering*, 69 (10-)

PLACEMENT TEST

Part 1

(You may use the Picture Book, or use the pictures in the test, for items 8 through 13.)

1. Show me your nose.
(The child must point to his/her nose.)
2. Show me your head.
(The child may point anywhere on his/her head.)
3. Show me your ear.
(The child may point to one or both ears.)
4. Show me your hand.
(The child may hold up one hand or both hands.)
5. Show me your chin.
(The child must point to his/her chin.)
6. Show me your cheek.
(The child may touch one cheek or both cheeks.)
7. Show me your shoulder.
(The child may point to one shoulder or both shoulders.)



8. (Point to the man.)
What is this man doing?
(Accept *Sleeping*, *Going to sleep*, or *Lying down*.
Don't accept *Sleep*, *Eyes shut*, or *Got to sleep*.)
9. My turn to say the whole thing.
This man is sleeping. Say that.
This (or that) man is sleeping.



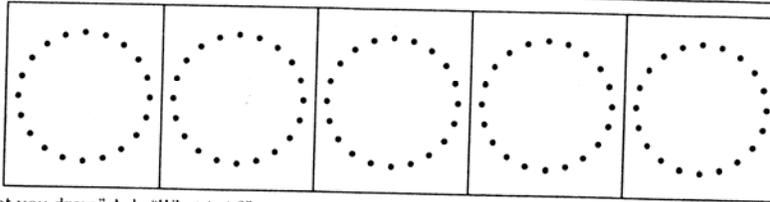
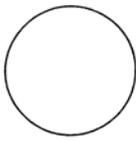
10. (Point to the girl.)
What is this girl doing?
(Accept *Eating*, *Eating a cookie*, or an entire correct sentence. Don't accept *Eat* or *Eat a cookie*.)
11. My turn to say the whole thing.
This girl is eating. Say that.
This girl is eating or
This girl is eating a cookie.



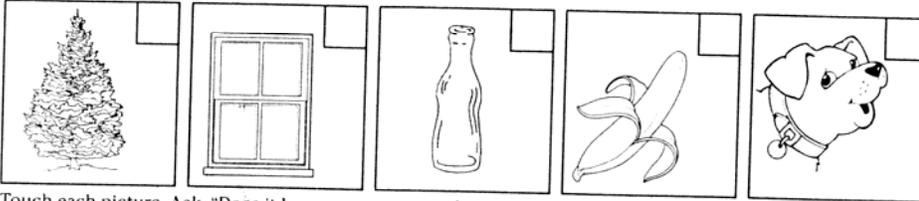
12. (Point to the cat.)
What is this cat doing?
(Accept *Climbing the tree*, *Going up the tree*,
Climbing on a tree, *Climbing up there*, or *Climbing*.)
13. My turn to say the whole thing.
This cat is climbing the tree. Say that.
This cat is climbing the tree.
14. What's your whole name?
(The child must give first and last name; middle name is optional.)
15. What's your first name?
(The child must give first name only.)

End of Part 1

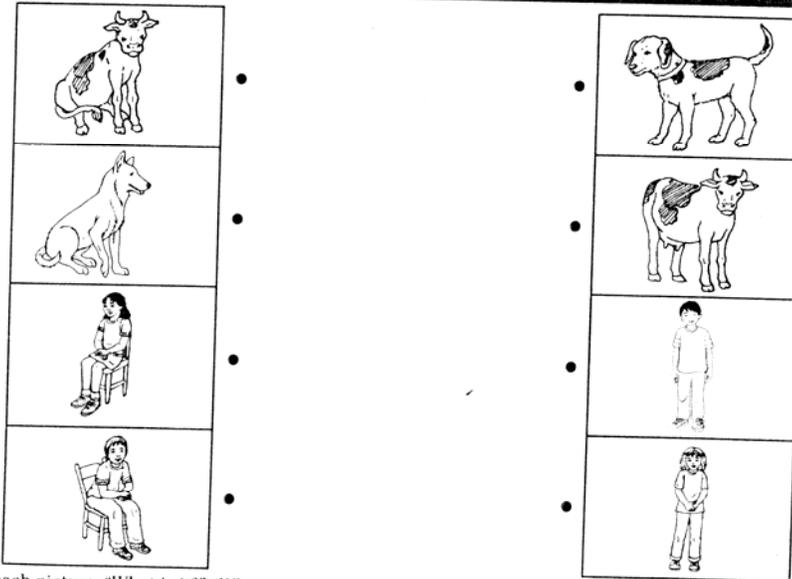
Lesson 24 Name _____



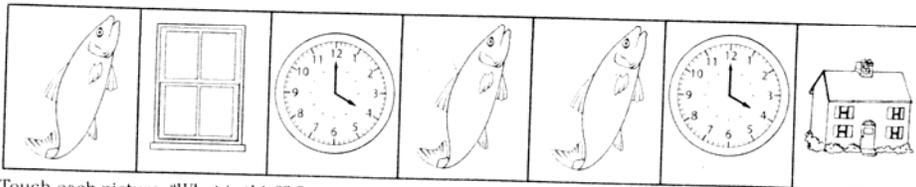
"Touch a circle that you drew." Ask, "What is it?"



Touch each picture. Ask, "Does it have a cross-out mark or a circle?"



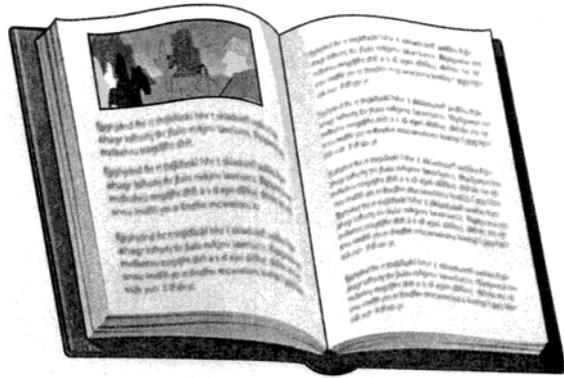
Touch each picture. "What is it?" "What is it doing?" "Show me the line for the _____."



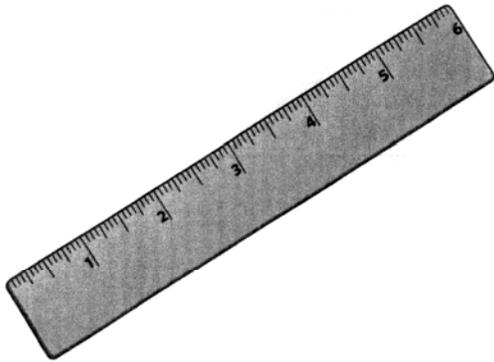
Touch each picture. "What is this?" Say "Touch a fish. What color is it?"



a



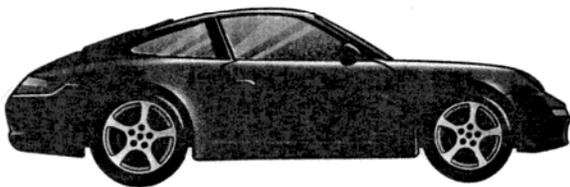
b



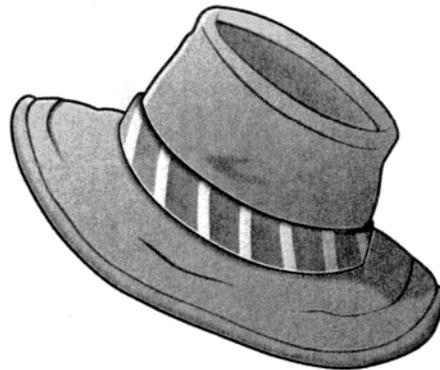
c



d



e



f