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An instructional project using physical knowledge activities as a catalyst to develop children's literacy skills in a constructivist preschool classroom

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An instructional project using physical knowledge activities as a catalyst to develop children's literacy skills in a constructivist preschool classroom

Abstract

This instructional project planned and integrated literacy within physical knowledge activities for young children based on International Reading Association, National Research Council and National Association for the Education of Young Children guidelines. The project presented children with a variety of ramps and other physical knowledge activities. Children's engagement was preserved through digital pictures. The children utilized these pictures to individually construct stories orally and in script. Instruction for three dimensions of emergent literacy was provided: concepts about print, phonemic awareness, and reproduction of the child's correctly printed signature. As the project progressed, the activities and the stories grew in complexity. Three types of books were constructed; each book featured a unique literacy component. Examples of children's work and the insights they constructed about literacy knowledge are included as well as pre- and post-assessment results. This data was analyzed quantitatively and qualitatively. Child-adult contact time proved to be the most important variable affecting children's acquisition of these skills. Children's tasks appeared to be interesting and appropriate. The children engaged in the tasks purposefully and demonstrated increased knowledge of literacy skills.

This project by: Patricia A. Wehr

Titled: AN INSTRUCTIONAL PROJECT USING PHYSICAL KNOWLEDGE
ACTIVITIES AS A CATALYST TO DEVELOP CHILDREN'S LITERACY
SKILLS IN A CONSTRUCTIVIST PRESCHOOL CLASSROOM

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*Constructivism Education,
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AN INSTRUCTIONAL PROJECT USING PHYSICAL KNOWLEDGE ACTIVITIES
AS A CATALYST TO DEVELOP CHILDREN'S LITERACY SKILLS IN A
CONSTRUCTIVIST PRESCHOOL CLASSROOM

A Graduate Project
Submitted to the
Division of Reading
Department of Curriculum and Instruction
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Master of Arts in Education
UNIVERSITY OF NORTHERN IOWA

by
Patricia A. Wehr
August 2001

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This instructional project planned and integrated literacy within physical knowledge activities for young children based on International Reading Association, National Research Council and National Association for the Education of Young Children guidelines. The project presented children with a variety of ramps and other physical knowledge activities. Children's engagement was preserved through digital pictures. The children utilized these pictures to individually construct stories orally and in script. Instruction for three dimensions of emergent literacy was provided: concepts about print, phonemic awareness, and reproduction of the child's correctly printed signature. As the project progressed, the activities and the stories grew in complexity. Three types of books were constructed; each book featured a unique literacy component.

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INTRODUCTION

The importance of cultivating emergent literacy is gaining national attention. Researchers have proven the importance of facilitating literacy development at the preschool age. Realizing that not all homes provide the experiences necessary to foster literacy, I devised an instructional project to attempt to compensate the disparity for children whose homes lack these opportunities.

Description and Rationale

I designed my instructional project to facilitate preschool children's emergent literacy skills through children's dictation and writing of personal narratives about physical knowledge science activities they engaged in during daily activity time. By basing text on actual or authentic experiences, I endeavored to provide transitional stages from wordless books where the pictures are used to improvise a story, to books with Rebus captions where text appears in combination with pictures and actually tells the story, to stories with text only captions as a culmination. I believed the experience of creating these three types of books would enhance children's concepts about print, especially, that pictures *show* the story and text *tells* the story. Other benefits of authoring books would be the opportunity to expand vocabulary, to increase phonemic awareness, and to improve their printed signatures.

I designed my project on the belief that the key to developing word awareness may lie in understanding concepts about print. In addition, phonemic awareness and vocabulary development have shown to be strongly related to reading achievement.

Purpose

The purpose of this project was to actively engage children in literacy activities to develop a better understanding of concepts about print, to enhance letter identification, and to develop the proficiency to consistently reproduce the child's correctly printed signature. By creating their own story and group stories based on personal physical knowledge activities, children had an authentic reason to write and read. These literacy experiences were intended to open an additional door for the children, which would generate a fresh way to express themselves and embark on the road to become motivated, life-long learners with more opportunity to achieve reading success.

LITERATURE REVIEW

Research findings guided the development of this literacy project. Foremost, I endeavored to create opportunities for young children whose homes do not appear to foster literacy, then I closely monitored areas of difficulty, and finally I attempted to effectively remediate these difficulties. This section will include a brief review of literature relating to:

1. optimal teaching environments and lessons.
2. children's acquisition of emergent literacy skills.
3. predictors of reading success.
4. complementary relationship between writing and reading.
5. integration of literacy within science activities.

First, a theoretical orientation of constructivist education, the basis for the overall framework for the instructional practices in the Head Start classroom, will be provided.

Constructivist Education

Piaget's work provides the theoretical orientation of constructivist education. According to Piaget, knowledge is built through physical and mental interactions by acting on objects and interacting with others. He reminds us that children's learning progresses in developmental stages, and that children think differently than older children and adults (Piaget, 1969/1970, 1977).

Constructivist educators support his conclusion that knowledge is not merely a collection of facts but an organized network of thoughts. Thus, constructivist educators provide activities and experiences for children to construct hypotheses, to identify questions, and to explore and experiment with materials which confirm or contradict their ideas. Devries & Zan (1994) clarify the following three characteristics of constructivist education: (a) It provides activities that appeal to children's interest. (b) It inspires experimentation. (c) It involves cooperation.

Kamii & DeVreis (1993) recognize three types of knowledge: physical, logico-mathematical, and conventional in developing curricula in constructivist classrooms. Physical knowledge is constructed from experience; the child learns about an object by acting on the object and observing the immediate results. Logico-mathematical knowledge is constructed when connections are achieved by placing one event or object into relationship with another. Conventional knowledge, such as the names of the days of the week, is determined by society and must be directly shared.

Physical knowledge activities help children construct learning through assimilation (understanding) and accommodation (adaptation). Constructivist educators promote assimilation and accommodation in three basic ways by: (a) helping the child with practical problems to facilitate experimentation, (b) offering materials to facilitate experimentation, and (c) modeling new possibilities (Kamii & DeVries, 1993). The ramp activities meet the requirements of physical knowledge by appealing to children's interest, inspiring experimentation, and involving cooperation to create the text to preserve the event. Like all physical knowledge activities, the ramp activities provided an authentic avenue of discourse and discovery.

Optimal Teaching Environments and Lessons

Optimal learning requires a classroom environment that provides engagement for children in learning experiences, takes developmental considerations into account, and provides positive peer and child-adult interaction. Cambourne (1995) points out that lessons must include eight conditions for learning: immersion, demonstration, engagement, expectations, responsibility, approximations, employment/application and response. He believes the key condition is *engagement*. Barrentine (1996) reminds us that engagement cannot be forced but it can be enticed. Actions to actively engage children in reading and writing include identifying children's interests, working at the point of difficulty, taking some initiative, and making some links.

When teaching, Au & Raphael (2000) and Dumptschin (1988) recommend that educators adhere to student zones of proximal development. There must be planned and spontaneous skill development with time for teachable moments (Morrow et al., 1999; Hicks & Villaume, 2000/2001). To be most effective, the lessons must be authentic, meaningful and personalized. Creating moments of discomfort nudges students to try new assimilations (Villaume & Brandt, 1999/2000). Constructivists refer to this discomfort as disequilibrium. Cambourne (1995) also asserts that students must: believe they can learn the task, value the task, be free from anxiety, and be taught by someone they would like to emulate. Since peers demonstrate many kinds of imitative experiences and pretend behavior (Verba, Samback & Sinclair, 1982), learning should be a social experience. The National Research Council (1999) present study after study which validate the importance of child-adult interaction and its positive impact on learning.

Optimal learning occurs as children engage in reading and writing for real purposes rather than *teaching* reading and writing (Askew & Foutas 1998). The goal of this project was to link literacy to children's interests and actions as they engaged in physical knowledge activities.

Children's Acquisition of Emergent Literacy Skills

In response to the reading readiness debate, the International Reading Association (IRA) and National Association for the Education of Young Children (NAEYC) published a joint position statement "Continuum of Children's Development in Early Reading and Writing" (1998). In it they maintain, "a maturationist view of young children's development persists despite much evidence to the contrary," (p.197). The associations support their disbelief in reading readiness by stating, "Failing to give children literacy experiences until they are school-age can severely limit the reading and writing levels they ultimately attain," (p.197). The joint statement affirms that preschool children can enjoy listening to and discussing storybooks, understand that print carries a message, engage in reading and writing attempts, identify some letters and make letter-sound matches, and use known letters or approximations of letters to represent written language. To foster the development of those skills teachers can: share books with children and model reading behaviors, talk about letters by names and sounds, and encourage children to experiment with writing. Cunningham (1990) reminds us of the importance of talking about print. In a quantitative research synthesis of the optimal way

to teach beginning reading, Stahl and Miller (1989) examined five projects and 46 additional studies. Their conclusion supports using whole language/language experience approaches as an initial introduction to literacy, one of the most powerful achievements in life. Their finding supports the view that “children are active learners, drawing on direct social and physical experience as well as culturally transmitted knowledge to construct their own understandings of the world around them” (Bredekamp & Copple, 1997, p.13).

Children’s acquisition of literacy skills encompasses many unique considerations. IRA and NAEYC (1998) point out that learning to read and write requires careful planning and instruction; therefore, literacy experiences are critical for children who do not come into contact with these experiences at home. Heath’s 1982 seminal study of three communities demonstrates that culture may also affect early childhood literacy. She unveiled that not all ethnic groups teach their children how to take meaning from books in the same manner emphasized in schools. In addition, these groups may not extend children’s learning through discussion of the ideas in the text. After reviewing five effective remediation programs, Pikulski, (1994), discovered that few of these remediation programs are successful beyond second grade. Combined with Warner’s reminder (1998) that the process of education cannot be hurried, it is critical that we take action to disintegrate any possible stumbling blocks for children as we enhance their literacy exposure during their early preschool years.

Predictors of Reading Success

Two important predictors of reading success are phonemic awareness and vocabulary. The IRA and NAEYC Joint Position Statement (1998); National Research Council, (1999); Bloodgood (1999); Snow and Tabors (1993) conclude that phonemic awareness, the insight that every spoken word can be conceived as a sequence of sounds, is probably the most influential predictor of later reading achievement. Additionally, the National Research Council (1999) maintains that a strong correlation exists between the size of a child's vocabulary and early reading ability. Accordingly, these are the two areas I targeted for my project.

Phonemic Awareness

The National Research Council (1999) maintains that few children acquire phonemic awareness naturally. Additionally, it is key to understanding the alphabetic principle. The Council contends that "word recognition can flourish only when children displace the belief that print is like pictures with the insight that written words are comprised of letters that, in turn, map to speech sounds" (p. 45). It cites that phonemic awareness is prompted through writing.

As fundamental to phonemic awareness, the IRA and NAEYC Joint Position Statement (1998) maintains a central goal during preschool years is to enhance children's exposure to concepts about print. They believe the key to developing word awareness may lie in demonstrations of how print works. Children who just pretend to read are more likely to become successful readers (National Council of Reading, 1999). Concepts

about print that children must understand include:

1. print (rather than pictures) carries the meaning of the story.
2. print corresponds to an oral version.
3. strings of letters between spaces are words.
4. reading progresses from left to right and top to bottom.

Vocabulary

A second predictor of reading success is vocabulary. Stahl and Fairbanks (1986) contend that vocabulary assists word discrimination by allowing the child to access prior knowledge when an unfamiliar word appears in text. These same authors maintain that a mnemonic key word, an image linking the key word to its definition, as well as creating the greatest number of connections to already known information, have both had favorable results.

Complementary Relationship Between Writing and Reading

Stahl and Miller (1989) consider writing to be a virtue that should be a part of any reading program. In a recent publication, Purcell-Gates (2001) stresses that young children learn the underlying concepts of the reading and writing process as they experience written language in use in their lives. Sulzby and Teale, (1985) and Morris (1993) agree that as children write, they are constantly reading and rereading their writing, matching talk and text. In addition, Morris adds that children need to be attentive to the purposes of written language and the distinctive features of the alphabet in order to read. The IRA and NAEYC Joint Position Statement (1998) reminds us that children

acquire a working knowledge of the alphabetic system not only through reading, but also through writing which requires understanding the relation between oral and written language and the relation between letters, sounds and words. Instruction that provides children with opportunities to express themselves without feeling too constrained for correct spelling and proper handwriting helps children understand that writing has real purpose (Dyson, 1988; Graves, 1994; Sulzby, 1985).

By encouraging children to “write their own way” and “read their own way,” we encourage developmental patterns (Sulzby, 1985, p. 12). In the mechanical act of writing, young children use spatial features to distinguish one letter from another. Warner (1998) states that dictation of a story strengthens the child’s concepts of a story, the sound-print connection, and the organized thought processes. Transposing children’s spoken word into written symbols through dictation provides a concrete demonstration that strings of letters between spaces are words. Bloodgood (1999) reminds us of the difficulty children encounter understanding these spaces since they do not seem to match the flow of spoken language for children. The meta-analysis of the aforementioned information in this section guided the children’s writing component of my project.

Integration of Literacy Within Science Activities

Graves (1994), Dyson (1988), and Sulzby (1985) all agree that authentic experiences (personal narration) are the best sources of writing for maximal literacy benefit. Like reading, writing activities must make sense to the child (IRA and NAEYC Joint Position Statement, 1998). Hart-Hewins (1999) echoes the importance of authentic writing by maintaining if children want to read and write, they must see the point of it;

they expect language to be meaningful. Science activities, in particular, and physical knowledge activities that engage children's interest provide context for authentic writing in preschool classrooms. Physical knowledge activities provide concrete demonstrations of children's actions on objects. In designing this project I kept in mind the three fundamental differences between science and physical knowledge activities as presented by Kamii & DeVries (1993): (a) Science uses observation; physical knowledge relies on the actions on objects. (b) Science offers descriptions of observations; physical knowledge provides feedback of the observation. (c) Science provides explanation; physical knowledge provides organization.

Drs. Abdi, Taylor and Freilich (1998) note that children prefer to learn, and learn best when they experience events for themselves. They include two ingredients which promote science learning: children's natural curiosity of the world and the hands-on nature of science. Kvasz (1997) states that misunderstanding often exists between the child and the teacher because of the difference of organization and representation of the physical knowledge in their respective minds. To compensate, teachers offer "parachuted formulas" (p. 268) to try to simplify ideas that the students are not ready to grasp; unfortunately these attempts are like trying to frame a picture before it is painted. We need to appropriately assist young children by carefully determining what information and skills should be taught. I used the preceding information to assist with the scientific learning that became an enriching element for the foundation of my project.

METHODOLOGY

Purpose and Research Questions

My purpose in this project was to construct a context for authentic writing and reading in a constructivist preschool classroom. I utilized physical knowledge activities as a catalyst for reading and writing activities by creating books based on children's experimentation and exploration during their daily activity time. Ramps (inclined planes) provided the fundamental physical knowledge activity.

In order for young children to develop proficiency to write their name, to enhance letter identification, and to acquire concepts about print, my inquiry was guided by the following questions: "Will my intervention help children:

- 1) improve the correct printing of their name?
- 2) identify alphabet letters?
- 3) enhance understanding of concepts about print?

These three areas address literacy components that are necessary but not necessarily sufficient for children to become successful readers.

Site and Participants

This instructional project was carried out with three and four-year-old children in a Head Start class in Waterloo, Iowa. The class met five hours daily, was instructed by an African-American constructivist teacher, and consisted of 16 students. All but two of the youngest three-year-olds were included in this study. During the study, 2 of the students moved to another school. The ethnicity of the 12 students who participated throughout

the project was 2 Caucasian and 10 African-American. Two came from two-parent homes and 10 lived in single parent homes. Five were girls, and 7 were boys; 2 three-year-olds, and 10 were four-year-olds. The three-month study began at the end of September and culminated at the end of December. The project was conducted during the classroom's daily activity time over a two-month period.

Data

Pre-assessments were conducted at the beginning of the project, in a single session, one student at a time. Each child identified letters, demonstrated understanding of concepts about print, and printed his or her name. This format was consistently followed for each child and duplicated for the post-assessments.

Pre-assessments

Individual baseline literacy abilities were measured on two visits by using two sections, Letter Identification (see Appendix A) and Concepts about Print (see Appendix B), from the *Observation Survey of Early Literacy Achievement* (Clay, 2000). Each child's assessment followed a consistent order: (a) Letter Identification in which the child was asked to tell the name of each of 54 letters - 26 capital letters and 28 small letters (book "g" and "a" account for the additional two letters). These letters could be identified by name, sound, or a word that starts with the letter.

(b) Concepts about Print included Marie Clay's specially printed book with 24 items. It did not seem appropriate or necessary to include literacy items that were intended for first graders and surpassed these children's skills. Consequently, I used the

14 items that addressed the purpose of my project. These questions examined children's knowledge of directionality (where to start reading, which direction the text is read, etc.), understanding that text carries the message, identification of single letter versus a word and capital or small letters, as well as other general questions of this type.

(c) The final assessment was the printing of the child's name. Children wrote their name with marker on unlined paper.

Post-assessments

The post-assessments consisted of the identical pre-assessment components, specifically: (a) Letter Identification, (b) Concepts about Print from the *Observation Survey of Early Literacy Achievement* (Clay, 2000), and (c) the writing of the child's name. These assessments were individually administered on two consecutive days at the conclusion of the project.

Most of the sessions were videotaped for later reflection. As I viewed the tapes, I transcribed children's responses and recorded their behavior into a log. I paid close attention to literacy connections as well as misunderstandings. These data, in addition to the pre- and post-assessments and book artifacts, provided insight into their literacy learning.

Design

All of the children's writing and physical knowledge activities occurred over a span of two months during the children's activity time. I visited the classroom two to three days a week and always spent over one and one-half hours interacting with the

children. I facilitated the literacy activities but provided minimal guidance during the physical knowledge activities. The majority of my time was spent working with an individual child, usually surrounded by a group of peer “authors.” I made this as purposeful yet interesting by monitoring the child’s attention to the activity. Each child decided if they wanted to do the writing or if they wanted me to do the writing. They also determined when to substitute pictures for text. I tried to continually nudge each child to apply new concepts and to be as independent as possible.

Three books were assembled. The first book centered on children’s creations of inclined planes and assorted materials to create a single ramp or a ramp system. Book two’s theme included children’s experimentations with a variety of objects that could travel down the ramp or children tested a hypothesis based on observations from the original ramp. The physical knowledge activity for book three focused on children’s inclusion of a variety of plastic tubes that were used as tunnels.

The format of each book followed the same basic pattern. The children were photographed with a digital camera as they engaged in constructing ramps or other physical knowledge activities. On my next visit these pictures were shared with the children and used to involve students in various oral and written literacy activities. After each child had contributed at least one page, a book was constructed. The first two books were class books with contributions from each child. As a culminating literacy activity, the third book was an individual book comprised of each child’s entries from the previous class books plus the new writing.

Each book demonstrated increasing complexity of written language. The first, a wordless book composed of contributions from each child, was meant to point out the

weakness of a book with no script. To “write” this book, each child simply signed the authors’ page after verbalizing the story about how the child constructed the ramp and the results.

The second, photographs with Rebus captions from each child’s dictated words, focused on how words and illustrations preserve the author’s message. This writing activity was meant to help the child make the transition from telling stories to actually reading them.

The final book was an individual book that included each student’s contributions from the first two books in addition to a fresh page. This time the captions consisted primarily of children’s dictated words. Each of the three books contained a title and author page; they were all laminated and bound using plastic binders.

THE PROJECT

Prior to the commencement of this project, I visited the Head Start classroom on two separate occasions so that the students and I could become acquainted and a comfortable ambiance could be established. The pre-assessments were carried out over a two-week period, the project activity encompassed a two-month time span, and the post-assessments were accomplished in two days.

Intervention Technique Strategies

The overall goal was to have each child increase literacy skills as each child authored three books based on physical knowledge activities. The first book, a wordless book, would be equivalent in complexity for all of the children. The two subsequent books would vary in complexity and be determined by the literacy development of each child.

Book One

The project was launched during the class's morning opening. To draw on prior knowledge, a blank "book" was presented to the children. Amidst giggles, they reached agreement that a book needed pictures and words; I explained that they would all be authors as we wrote books together. I shared that digital photographs would be taken of each of them during activity time as they engaged in physical knowledge activities. These pictures would be the pictures in their books, and the children would provide and write the words to tell the story.

During activity time, as in all constructivist classrooms, children were free to choose activities. Prior to my study, ramps had been introduced as a physical knowledge activity. Not only did ramps capitalize on the children's natural curiosity of the world and provide opportunities to act on objects, it also proved to be a great catalyst for storytelling and the writing of our books. The children were eager to have their pictures taken as they constructed a wide variety of ramp systems or engaged in other physical knowledge activities.

After I cropped and printed the pictures, I mounted copies of each child's picture(s) on separate pages and individually presented the artifact to each child. The child was asked to tell a story while viewing the picture(s). As this transpired, each child verbalized the scientific knowledge gained from the ramp experience. This was followed by a discussion of new experiments that could be attempted and hypotheses of what the results might be. If no experiment could be developed, I encouraged the child to try different objects that could be rolled down the ramp system.

I carefully observed each child to take advantage of teachable moments; in addition, each child was nudged into disequilibrium to encourage extended learning. I constantly enticed the children to expand their engagement. As the child signed the authors' page we discussed the letters and sounds in their names to enrich phonemic unit understanding, one of the predictors of reading achievement. In addition, the name signing, like the text, was meant to promote the idea that writing has a purpose.

Once I had met with each child, I bound the children's pictures into the first class book, a wordless book, and presented it to the class. Each page was "read" by the

contributing author to promote effective storytelling and valuable vocabulary practice, both predictors of reading achievement.

I mounted and placed duplicate copies of each picture in children's folders for future viewing. These pictures eventually became the first page of each child's individual book, the third book in the series.

Book Two

The second book followed the same procedure as the first with preplanned literacy additions. We composed the books as part of activity time to promote the social aspect of imitative experiences and pretend behavior of young children. Although it wasn't necessarily conducive to handwriting, we wrote sitting on the floor. This removed physical barriers as to the number of participants that could be included and still easily allowed videotaping. When writing on paper, students used colorful markers. For variety, the chalkboard was sometimes utilized.

Rebus captions, script including some words represented with pictures, were the essential literacy extension for the second book. I purposely employed an abundance of concepts about print and letter identification conversation within children's zone of proximal development. This conversation was meant to directly enhance each student's network of literacy ideas as they assimilated and accommodated new components of reading and writing.

I initiated each conference by having the child attempt to recall the "story" from the first book after perusing the first book's pictures. I focused on discrepancies from the original story and/or difficulties the child had remembering the original story as avenues

to demonstrate how pictures *show* the story. Next, the child viewed the new photographs and then dictated the story to me. The child preserved the story by fashioning Rebus captions as demonstrated in Figure 1. As the child dictated the story, the pictures allowed children with minimal handwriting and spelling skills to help write part of the text.



The  pushed the  down.

Figure 1. A child's sample of a Rebus story: "The marble pushed the block down."

The dialogue centered around talk about print to develop word awareness as well as the fact that letters make words and words *tell* the story. Each child did as much of the writing his/her writing skills allowed. Expression rather than perfection of text was promoted as viewed in Figure 2.


I M R I T e  I

Figure 2. A sample of a child's expressive text: "I write jello."

As before, the conference concluded after the child's name was written on the authors' page and appropriate literacy issues were addressed. Generally, children continued to write even after the conference ended.

This book was physically prepared in the same manner as the first, but with the addition of the captions. Several of the student-produced captions included periphery writing such as random letters. (See Figure 3.) Before the writings were laminated and bound, this fringe writing was eliminated to preserve the child's originally dictated story.


K O + I O n A Q
A L I C I A e r
A T H e K + make a 

Figure 3. A sample of a child's periphery writing. "Katia and Alicia make a house."

This second book was also presented to the class. The second book's stories included a variety of physical knowledge activities in addition to ramps since some children's interest in ramps had dissipated.

Book 3

The third book was meant to be a personal culminating product. The target was to exhibit a visual representation of the developmental stages of each child's individual writing process through the compilation of the three literary contributions and printed signatures. To advance name identification, the sessions commenced by having children select their folder from a group of children's folders. As in the past, each child read the previous stories. Special attention was given to the Rebus caption to instill the idea that writing complements reading. I tried to establish word connection at this time by tracking or pointing to match the child's talk to the text. This also modeled that words are written from left to right and that lines follow down the page. The ramp challenge presented to the children for the third book was the addition of a variety of plastic tubes. These tubes provided tunnels that children incorporated into their ramp systems.

After viewing the new photographs, each child was encouraged to use only words for the final caption; once again, each child completed as much of the writing of the dictated story as the child's skills allowed. The conversation focused on more complex letter identification skills, the connection between letters and words, and once again, how words *tell* the story. Again, many children lingered to practice writing after the title page was signed and a cover for their book was created.

I prepared the final book in the same manner as the first two with the exception that there were twelve individual books constructed rather than one class book. Presenting individual books brought the project to a close. The entire book was read with the child and, as with the Rebus caption, my tracking of the recent page was meant to link concepts of print. Each child took the finished artifact home.

Data Analysis

The collected measurable data is displayed and discussed in six separate tables in the quantitative section. The observable data is presented in the qualitative section.

Quantitative

Analysis centered on children's developmental progress in writing their name, escalation of letter identification, and acquisition of concepts about print. The results are conveyed in this identical order and with information presented in tables. Each of the three sections has two tables: one that compares scores by children's mean contact time per session, and a second that compares scores by children's ages. Contact time was accrued from the videotapes. The number of minutes the child was individually instructed in literacy skills plus the number of minutes the child continued to practice these skills independently immediately following the lesson construed contact time. This information was obtained by using the display mode of the video cassette recorder. The time the child began the instruction was noted, the tape was fast-forwarded until the child disengaged from the activity, and the elapsed time minus the beginning moment furnished the amount of contact minutes in real time. There was an abundant amount of "periphery

time,” time the children initiated practice independently while I worked with another child, but I did not include this time in the study. Age was reported in months and calculated at the onset of the project.

The pivotal measurement in this study is the mean gain for each group. This was calculated by determining the groups’ mean scores for the pre- and post-assessments and then dividing the post-assessment mean by the pre-assessment mean.

Name Writing. To explore indications of developmental progress in name writing, correlations were obtained from the pre- and post-assessments. After calculating the correct letters in the child’s name that were written by the child, this number was divided by the number of letters in the child’s name. The results are presented in Tables 1 and 2.

Five students mastered their printed signature. They are the five students who accumulated the most contact time. For this reason, and additional reasons that will be mentioned at the beginning of the qualitative section, I selected my two comparison groups in each of the six tables to consist of the top five students contrasted to the other seven. When evaluated in this manner, the mean gain for the group of five with more contact time is 36%, which shows 1.6 times more improvement (see Table 1). The second group, with nearly half or less contact time when compared to the first group, had a mean gain of 29%, which shows a mean gain of 1.7 times improvement. Although these two groups’ results appear to be the same, the ceiling effect for the first group must be taken into consideration.

Table 2 details the children’s percentage systematized with the oldest chronological age foremost. When scores are compared in this manner, the younger children’s mean gain improved 37% and the older children’s mean gain improved 23%.

When compared to the pre-assessments, the younger children became 2.7 times more proficient in writing their name, and the older children improved 1.4 times in the same skill. Once again, the ceiling effect interferes with an accurate comparison.

Letter Identification. To determine escalation of letter identification the data from the pre- and post-assessment were compared. There were 54 letters, 26 capital and 28 small letters identified. One point was scored for each letter correctly identified by name, sound, or word beginning with the letter that was designated. Table 3 displays results for pre- and post-assessment letter identification results according to contact time. Table 4 reports matching results organized by age.

The group with more contact time had a mean gain of 26.8 letters ($SD=13.68$); this equates to an improvement of 6.8 times better than the original assessment. The group with less contact had a mean gain of 5.2 letters; this converts to an expansion of 3.4 times better after the intervention. Therefore, when aligned by contact time, the children with the most contact exhibited twice as much gain over the duration of the study.

When comparing the children by age, the older children's mean score of 2.6 ($SD=4.18$) on the pre-assessment was actually behind the younger children's mean score of 3.6. The final tally kept the same relationship (older $M=15.2$; younger $M=18.9$), but when calculating actual gain, the results barely favored the older children with a mean gain of 0.5 times greater than the younger children.

Concepts about Print. To evaluate Concepts about Print acquisition, pre- and post-assessment scores were once again employed. There were 14 items presented and each

question had a value of one. Tables 5 and 6 reveal the results. The Standard Deviation is 1.44 for the pre-assessment and 2.09 for the post-assessment.

Considering the contact group, the group with more contact time had a mean gain of 2.8 concepts, which was close to the other group's gain of 3.0. When the starting point of each group was compared, the first group increased their knowledge 1.8 times and was outperformed by the second group's increase of 2.9 times.

Analysis comparing children's ages showed that the younger children enhanced their learning above the older students in all areas. The younger children's mean scores increased three concepts while the older children's scores increased by two. This computed to an improvement 2.9 times better for the younger children and 1.6 times better for the older children.

Qualitative

My analysis of the videotapes revealed many patterns these young children displayed when engaging in literacy skills. After close reflection I would like to present the following summations regarding contact time, physical knowledge activities, social setting, modeling, names, observation, and concepts about print.

Contact time. It positively affected learning in phonemic awareness and letter identification. Children who mastered writing their name had more child-adult contact time. In addition, their engagement was visibly much more intense. These children remained on task with no reminders and were rarely distracted by the activities around them. They initiated their own literacy questions as they participated in each activity and generally extended their literacy time by continuing to write after they prepared the

captions for their pictures and signed the author page. These were the other reasons I referred to earlier for the division of the two groups in the quantitative section.

Physical knowledge activities. Apparently knowledge is built through interaction. Nearly always, once the children viewed the pictures of themselves participating in a physical knowledge activity they eagerly told the story about this pursuit. The more we visited, the more detail they added. As we wrote captions for the pictures we were able to match talk to text. Having a story to tell gave them an authentic purpose to engage in writing and then in reading as they reviewed their caption.

Social setting. Learning seemed to be enhanced in a social setting. This was especially demonstrated when I utilized the chalkboard to help someone practice writing. Every time this occurred, I had to section off the board so that I could accommodate as many as the board space allowed. The fact that children voluntarily joined the activity as I worked individually with a student is another example of the importance of learning in a social setting. Additionally, on numerous occasions after the children viewed the picture with their writing and we read the caption together, they generally would bring the page to someone else and read it to them. This illustration also exhibits the symbiotic relationship between reading and writing.

Modeling. As I wrote on my paper and the children wrote on theirs, I used oral language to draw children's attention to the formation of letters. They responded by repeating or laughing as I used terms like "long legs" or "fat bellies" or "monkey tails." Modeling letter formation as well as using vocabulary that appealed to the children appeared to capture their interest. A popular activity for these emergent writers was when

I used dots to form letters so that they could correctly reproduce letters by connecting the dots. This secured the interest of many of the children.

Names. Children's names appeared to be a pivotal component when addressing phonemic awareness. The first letters children identified and mastered in script were nearly always the ones in their name, friend's names or the teacher's name. As children signed the author page, they usually were visibly more intent in reproducing their name than they were when composing the text in their captions.

Observation. The more carefully I observed children's difference of organization and representation of physical knowledge, the more the children appeared to benefit from my instruction. When a child referred to the letters in his name as "my other names," it was important to understand his message (that he meant "letters") to enable him to continue learning. On several occasions when I asked children, "What do you want to write about?" after viewing the picture(s), children dictated something totally unrelated to the picture(s). As an example, one child wanted to dictate a story about church; her picture was about ramps. This reminded me to be very specific with my questions. Children displayed different preferences; some added scribbles and/or random letters to their text and some completed only the minimum necessary; some preferred to write on the chalkboard but most preferred paper; all enjoyed writing with markers.

Concepts about Print. It seemed quite evident that some skills need to be addressed before children are ready for formal instruction, specifically, concepts about print. These scores deviated from printed signature and letter identification results. The children who spent less engagement time as well as the children who were younger actually showed a bit more improvement. This causes me to consider that the younger

children were more engaged in storybook reading. Even though I consistently tried to make it unambiguous that the words *told* the story and the pictures *showed* the story as each child and I read the text they had composed, and I consistently pointed to the words as we read, the older children appeared to be focused on letter recognition and writing.

INSIGHTS

I will report my insights by reflecting generally and then specifically on my original questions: “Will my intervention help children:

- 1) improve the correct printing of their names?
- 2) recognize individual letters?
- 3) enhance understanding of concepts about print?

Generally, children’s pre- and post-assessments demonstrated that gains were achieved in all of these three areas. The most noteworthy gain appears to be in recognizing individual letters, especially by the group with the most contact time. In addition, all of the children in the group with the highest contact time mastered the printing of their first name. The fact that the group with the most contact time excelled in these two areas validates the importance of child-adult contact time in a classroom setting.

Although all groups made gains in enhancing their understanding of concepts about print, the results appeared to have little correlation with either contact time or age. In regard to age, the opposite happened: the younger children outperformed the older children. The implications of these general results will be discussed as each question is specifically addressed in the following paragraphs.

Improve the Correct Printing of Their Names

Contact time seemed to be the pivotal component in this area. Each of the five children who contributed extensive time working with me mastered the printing of his or

her name. Two of these children attempted to learn their last name and, as has been noted before, one of them actually achieved mastery of her last name. These accomplishments could be attributed to ability, but, if that were the case, there should have been others with less contact time who exhibited this same mastery. It appeared to me that time on task had a positive effect. The fact that the younger children improved almost two times more than the older children in this area provides additional support for this assumption.

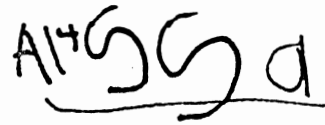
Overall, the “author page” of each book seemed to naturally inspire most of the children to exude extra effort as they printed their names. It provided children with an authentic purpose to acquire this skill. Tyla, a young three-year-old, defined exuberance the day he learned to write the first letter of his name. After filling a paper with “T’s,” he announced to everyone, “I can write my name! I can write my name!” He proudly displayed his paper filled with “T’s.” For weeks the “T” was his name. On a subsequent visit he showed his developing literacy skills when he told me he wanted to write, “My other name.” Watching for misunderstandings caused by child-adult differences in representation, I assumed he meant the other letters in his name. I considered the possibilities. Since “y” is a tough letter, I taught him the *letter* “l.” He learned this quickly since his prior knowledge allowed him to identify the letter with the first stroke in “T.” Soon Tyla was ready to practice more *letters* in his name. As pointed out in the qualitative section, watching for opportunities and bringing the learning to their proximal zone of development affords many victories as children acquire literacy learning.

The author page also motivated Alyssa, the child who mastered her printed signature. Figure 4 shows her written “name” at the on-set of the project. By the end of

the project she was glowing with pride once she mastered writing her first as well as her last name (see Figure 5).


 A handwritten name 'Alyssa' in a cursive script, written on a light background. The letters are somewhat shaky and uneven, typical of a young child's early writing.

Figure 4. Alyssa's "name" in October.


 A handwritten name 'Alyssa' in a cursive script, written on a light background. The letters are more fluid and connected than in Figure 4, showing improvement in the child's writing skills.

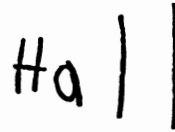

 A handwritten name 'Alyssa' in a cursive script, written on a light background. The letters are more fluid and connected than in Figure 4, showing improvement in the child's writing skills.

Figure 5. Alyssa's name in December.

She first accomplished this feat while practicing on the chalkboard. When she tried to repeat the process on paper, she drew a blank. Even when I reproduced her name on paper, she seemed mystified about its reproduction. It wasn't until she brought her paper near the board where her achievement had originally been accomplished that she was able to duplicate her feat. This small incident speaks volumes for making accommodations for a difference of organization.

Recognize Individual Letters

The children's significant gains in this area may be accounted for in various ways. Interest seemed to be the prime factor. Children may view this as a mark of achievement, intelligence, or maturity. Whatever the reason, it is the skill the children seemed most intent on accomplishing as we worked together. Just being able to sing the ABC's, appeared to give the younger children in this classroom a sense of pride.

In the qualitative section it was stated that letters in each child's name were usually the first letters that were mastered for reproduction in script and visual identification. Jamal extended this concept by utilizing his classmates' names as his

primary source to identify letters; he used this strategy to identify eight of the ten letters he named.

For children disinterested in script, this project directly enhanced children's hypothesizing in relation to ramp experiments, which enriched their vocabulary. After receiving a large marble and a small marble, A.J. began to wonder which one would roll down the ramp faster. He carefully watched my reaction as he tentatively made his hypothesis. Once he proved his hypothesis was correct, he excitedly experimented with a "bigger" (actually wider) ramp. All children were continually nudged to utilize more descriptive words as they verbalized each hypothesis. Some students extended their learning by applying these words to their captions. Increasing children's vocabulary, a predictor of reading success, was a beneficial extension of this project as well as letter identification.

Since the key to developing word awareness may lie in demonstrations of how print works, I consistently reinforced print awareness as stories were inscribed. Following is a transcription of a portion of a child who is composing the sentence "I can *write* my name."

Me: "W-r," now you need a little "i." Little "i" (I'm modeling the writing of "i" on my own paper as she watches.) has a dot on it.

A: (She writes in on her own paper.)

Me: Which one is the big I?

A: (She points to the first word, I, in her sentence. I affirmatively nod my head.)

Me: Which one's little "i"?

- A: (The child points to the “i” she has just written.)
- Me: Right! Now we need a “t,” and for “t” you make an “l” (a letter she knows).
- A: (She writes an “l.”)
- Me: and then go across. (I use my finger to trace the line she should make on her “l”.)
- A: She crosses her “l.” (She shows her enthusiasm by crouching and rocking on her feet.)
- Me: That is good. Now we’re going to make a tough letter, o.k.?
- A: Yah.
- Me: First you make another “c.” (I modeled it on my own paper.)
- A: (She writes a “c” at the top of her paper by the word “can.”)
- Me: Except we’re writing on this line. (I point.)

As you can see from the transcript above, a variety of literacy learning was accomplished. During our encounter she was able to build on her literacy skills which included the formation of letters and letter identification. In addition she was exposed to the concepts that written words are written in a group on one line and from left to right.

Enhance Understanding of Concepts about Print

Children’s progress in their understanding of concepts about print were less than expected. The primary gain in this area was the differentiation between letters and words rather than understanding that text carries the message.

These preschoolers' pre- and post-assessments demonstrated their belief that pictures tell the story. Even though I constantly used prompts such as, "You wrote words to tell your story," or "You just wrote like in a book," or "Books have pictures to show what it will be about," or "Words tell the story," etc., there appeared to be less transfer than I expected. On the final Concepts about Print assessment, all but one of the children still pointed to the picture when they were asked, "Where do I start reading?" However, when I asked the children, "Where are the words?" all except one were able to point to them. This leads me to believe that: (a) I did make an in-road into their print knowledge, but the total picture is not yet in focus. (b) Vocabulary is an integral component of understanding.

It appears that once children start school, their print immersion dictates an overwhelming desire to understand these symbols. To avoid skipping past the essential element that text carries the message, it would be extremely advantageous for young children to have concepts about print knowledge before they begin formal schooling.

RECOMMENDATIONS

Careful review of my project allows me to make the following nine recommendations for more effective educational literacy practices:

1. *Early educators should consistently address reading success predictors: phonemic awareness and vocabulary.* Current research validates the importance of including phonemic awareness and vocabulary extension in preschool programs. We cannot expect children to comprehend and compose stories if they are missing these essential components.

2. *Early educators should offer as much productive contact time as possible.* The National Research Council (1999) has presented study after study which all emphasize the positive impact child-adult interaction has on learning. Emphasizing this interaction and training adult volunteers or peer tutors would increase contact time and enhance learning.

3. *Early educators should facilitate children's construction of knowledge through authentic reading and writing.* It makes sense to teach reading and writing as children engage in these language experiences in meaningful and purposeful ways rather than *teaching* reading and writing in isolation. By encouraging developmental patterns of how children best learn, they steadily move from accommodation to assimilation in their reading and writing skills.

4. *Early educators should capitalize on the fact that learning is a social experience.* Students demonstrate many kinds of imitative experiences. While conducting my research where others could observe children practicing literacy activities, these children became a sort of magnet which drew other children to participate.

5. *Early educators should interweave reading and writing.* The key to developing word awareness may lie in demonstrations of how print works. It is important to remember that writing complements reading. Once text is composed, children's reading skills are expanded as they read and reread their stories.

6. *Early educators should model what they teach to encourage participation and healthy imitation.* By exhibiting reading and writing in specific activities, students are encouraged to learn and value the task. Once children monitor your participation, they seem to be enticed into trying it themselves.

7. *Early educators should utilize children's names as a valuable starting point for teaching phonemic awareness.* Children's names are something each child holds dear and is of significant value to them. The letters in a child's name provide an authentic reason to learn about phonemic awareness.

8. *Early educators should closely observe to accommodate children's difference of organization and representation of physical knowledge.* Take time to listen, really listen, to tap into the root of children's misconceptions. This will remove the roadblocks and enable children to succeed.

9. *Early educators cannot over-emphasize lap time.* Both the International Reading Council and the National Education for Early Children (1998) agree, "Failing to give children literacy experiences until they are school-age can severely limit the reading and writing levels they ultimately attain." (p.197). Children in the study who were developmentally prepared for phonemic awareness seemed consumed with learning this skill. They appeared to give minimal attention to concepts about print, an integral link for reading and writing.

REFERENCES

- Abdi, S.W., Taylor, S.I., and Freilich, M.B. (1998). Science activities for teachers and families to explore with young children. Dimensions of Early Childhood, 26, 31-36.
- Askew, B.J., & Fountas, I.C. (1998). Building an early reading process: Active from the start. The Reading Teacher, 52, 126-134.
- Au, K.H., & Raphael, T.E. (2000). Equity and literacy in the next millennium. Research Quarterly, 35, 170-188.
- Barrentine, S.J. (1996). Engaging with reading through interactive read-alouds. The Reading Teacher, 50, 36-43.
- Bloodgood, J.W. (1999). What's in a name? Children's name writing and literacy acquisition. Reading Research Quarterly, 34, 342-376.
- Bredenkamp, S., & Copple, C. (eds.). (1997). Developmentally appropriate practice in early childhood programs. (Rev. Ed.). Washington, D.C.: NAEYC.
- Cambourne, B. (1995). Toward an educationally relevant theory of literacy learning: Twenty years of Inquiry. The Reading Teacher, 49, 182-190.
- Christenberry, M.A., & Stevens, B.C. (1984). Can Piaget cook? Science activities. Atlanta, GA: Humanics.
- Clay, M.M. (1993). An observation survey of early literacy achievement. Portsmouth, NH: Heinemann.
- Clay, M.M. (1998). Sand. Hong Kong, China: Heinemann.
- Clay, M.M. (1998). Stones. Hong Kong, China: Heinemann.
- Cunningham, A.E. (1990). Explicit instruction in phonemic awareness. Journal of Experimental Child Psychology, 50, 429-444.
- Delpit, L.D. (1988). Language diversity and learning. Perspectives on talk and learning. Susan Hinds & Donald L. Rubin (eds.). Urbana, IL: National Council of Teachers of English.
- DeVries, R. & Zan, B. (1994). Moral classrooms, moral children. New York: Teachers College.
- Dumtschin, J.U., (March 1988). Recognizing language development and delay in early childhood. Young Children, 16-24.

- Ferreiro, E. (1990). Literacy development: Psychogenesis. Piagetian Perspectives, 29, 12-25.
- Forman, G. E. (Ed.). (1982). Action and thought: From sensorimotor schemes to symbolic operations. New York: Academic Press.
- Graves, D.H. (1994). A fresh look at writing. Concord, Ontario, Canada: Irwin Publishing.
- Hart-Hewins, L., & Wells, J. (1999). Better books! Better readers! York, ME: Pembroke.
- Heath, S.B. (1982). What no bedtime story means: Narrative skills at home and at school. Language Society, 11, 49-76.
- Hicks, C.P., & Villaume, S.K. (2000/2001). Finding our own way: Critical reflections on the literacy development of two Reading Recovery students. The Reading Teacher, 54, 398-412.
- Hiebert, E.H., & Taylor, B.M. (2000). Beginning reading instruction: Research on early interventions. Handbook of reading research, 3, 455-481.
- Hiebert, E.H., Pearson, D., Taylor, B.M., Richardson, V., & Paris, S.G. (1998). Homepage. Every child a reader – concept 2. Retrieved February 17, 2001 from the World Wide Web: <http://www.CIERA.org>.
- International Reading Association, & National Association for the Education of Young Children. (1998). Learning to read and write: Developmentally appropriate practices for young children. The Reading Teacher, 52, 193-216.
- Kamii, C. & DeVries, R. (1993). Physical knowledge in preschool education: Implications of Piaget's theory. New York: Teachers' College Press.
- Kvasz, L. (1997). Why don't they understand us? Science and Education, 6, 263-72.
- Lowery, L.F. (1992). The scientific thinking process. Berkeley, CA: University of California.
- Morris D. (1993). The relationship between children's concept of words in text and phoneme awareness in learning to read: A longitudinal study. Research in the teaching of English, 27, 133-154.
- Morrow, L.M., Tracey, D.H., Woo, D.G. & Pressley, M. (1999). Characteristics of exemplary first-grade literacy instruction. The Reading Teacher, 52, 462-476.

- Piaget, J. (Author and speaker). (1977). Piaget on Piaget. [Videotape]. New Haven, Connecticut: Yale University Press.
- Piaget, J. (1969/1970). Science of education and the psychology of the child. New York: Viking Compass.
- Pikulski, J.J. (1994). Preventing reading failure: A review of five effective programs. The Reading Teacher, 48, 30-39.
- Purcell-Gates, V. (2001). Emergent literacy is emergent knowledge of written, not oral language. New Directions for Child and adolescent Development, 92, 7-22.
- Rike, E. (1996). The playground of the mind. Play: An Intergenerational Experience. Little Rock, AK: Southern Early Childhood Education.
- Samuels, S.J. (1972). The effect of letter naming knowledge on learning to read. American Education Research Journal, 9, 65-86.
- Snow, C.E., Burns, M.S., & Griffin, P. (eds.) (1999). Preventing Reading Difficulties in Young Children. Washington, D.C.: National Academy Press.
- Snow, C.E., & Tabors, P.O. (1993). Language skills that relate to literacy development. Language and Literacy in Early Childhood Education, 19, 1-20.
- Stahl, S., & Miller, P. (1989). Whole language and language experience approaches for beginning reading: A quantitative research synthesis. Review of Educational Research, 59, 87-116.
- Stahl, S. A., & Fairbanks, M.M. (1986). The effects of vocabulary instruction: A model based meta-analysis. Review of Educational Research, 56, 72-110.
- Sulzby, E, & Teale, W.H. (Fall1985). Writing development in early childhood. Educational Horizons, 8-12.
- Sulzby, E. (2000). Homepage. Effective instruction in emergent literacy classrooms. [Slide show] presented to CIERA Institute in Ann Arbor, MI. Retrieved February 17, 2001 from the World Wide Web: <http://www.CIERA.org>.
- Taylor, B. (2000). Homepage. The early intervention in reading program. [Slide show] presented to CIERA Institute in Ann Arbor, MI . Retrieved February 17, 2001 from the World Wide Web: <http://www.CIERA.org>.
- Villaume, S.K., & Brandt, S.L. (1999/2000). Extending our beliefs about effective

learning environments: A tale of two learners. The Reading Teacher, 53, 322-330.

Warner, L. (1998). Worksheets? Are they necessary? Dimensions of Early Childhood, 26, 18-22.

White, M. (1998). Best children's picture books from abroad. Knowledge Quest, 27, 17-21.

Table 1

Percent of Correctly Written Letters in Each Child's Name Arranged by Mean ContactMinutes per Session

Group 1	Mean minutes	Pre-assessment	Post-assessment
1	20.5	93%	100%
2	20	100%	100%
3	20	40 %	100%
4	13	0%	100%
5	12	88%	100%
Group mean		64%	100%
Group 2			
6	6.5	0%	80%
7	6	83%	83%
8	5.5	83%	83%
9	5	33%	50%
10	5	17%	50%
11	3.5	20%	50%
12	3	60%	100%
Group mean		42%	71%

Note. Student #1 learned her first and last name.

Table 2

Percent of Correctly Written Letters in Each Child's Name Arranged by Age in Months

Group1	Age	Pre-assessment	Post-assessment
1	59	40%	100%
2	58	60%	100%
3	58	100%	100 %
4	58	83%	83%
5	57	33%	50%
Group mean		63%	87%
Group 2			
6	56	88%	100 %
7	55	93%	100%
8	54	20%	50%
9	54	83%	83%
10	53	17%	50%
11	47	0	80%
12	46	0	100%
Group mean		43%	69%

Note. Student #3 learned her first and last name.

Table 3

Letter Identification Scores Arranged by Mean Contact Minutes per Session

Group 1	Pre-assessment	Post-assessment
20.5	7	40
20	0	27
20	0	26
13	14	47
12	2	17
Group mean	4.6	31.4
Group 2		
6.5	1	4
6	0	13
5.5	11	11
5	1	6
5	0	9
3.5	1	6
3	1	2
Group mean	2.1	7.3

Note. Fifty-four letters could be identified.

Table 4

Letter Identification Scores Arranged by Age in Months

Group 1	Pre-assessment	Post-assessment
59	0	27
58	1	6
58	0	26
58	11	11
57	1	6
Group mean	2.6	15.2
Group 2		
56	2	17
55	7	40
54	1	2
54	0	13
53	0	9
47	1	4
46	14	47
Group mean	3.6	18.9

Note. Fifty-four letters could be identified.

Table 5

Concepts about Print Scores Arranged by Mean Contact Minutes per Session

Group 1	Pre-assessment	Post-assessment
20.5	3	7
20	4	9
20	6	7
13	3	3
12	1	5
Group mean	3.4	6.2
Group 2		
6.5	0	4
6	1	5
5.5	0	1
5	3	4
5	2	6
3.5	4	6
3	1	2
Group mean	1.6	4.6

Note. Fourteen points were possible.

Table 6

Concepts about Print Scores Arranged by Age in Months

Group 1	Pre-assessment	Post-assessment
59	4	9
58	4	6
58	6	7
58	0	1
57	3	4
Group mean	3.4	5.4
Group 2		
56	1	5
55	3	7
54	1	2
54	1	5
53	2	6
47	0	4
46	3	3
Group mean	1.6	4.6

Note. Fourteen points were possible.

APPENDIXES

Appendix A

LETTER IDENTIFICATION SCORE SHEET

Name: _____

Age: _____

Date: _____

TEST SCORE: _____

/54

Recorder: _____

Date of Birth: _____

STANINE GROUP: _____

	A	S	Word	I.R.		A	S	Word	I.R.
A					a				
F					f				
K					k				
P					p				
W					w				
Z					z				
B					b				
H					h				
O					o				
J					j				
U					u				
					a				
C					c				
Y					y				
L					l				
Q					q				
M					m				
D					d				
N					n				
S					s				
X					x				
I					i				
E					e				
G					g				
R					r				
V					v				
T					t				
					g				

Confusions: _____

Letters Unknown: _____

Comment: _____

Recording:

A Alphabet response:
tick (check)
S Letter sound response:
tick (check)
Word Record the word the
child gives
IR Incorrect response:
Record what the child
says

TOTALS

TOTAL SCORE

A F K P W Z

B H O J U

C Y L Q M

D N S X I

E G R V T

a f k p w z

b h o j u a

c y l q m

d n s x i

e g r v t g

Appendix B

CONCEPTS ABOUT PRINT SCORE SHEET

Date: _____

Name: _____

Age: _____

TEST SCORE:

/24

Recorder: _____

Date of Birth: _____

STANINE GROUP:

PAGE	SCORE	ITEM	COMMENT
Cover		1. Front of book	
2/3		2. Print contains message	
4/5 4/5 4/5 4/5		3. Where to start 4. Which way to go 5. Return sweep to left 6. Word by word matching	
6		7. First and last concept	
7		8. Bottom of picture	
8/9		9. Begin 'The' (<i>Sand</i>) or 'I' (<i>Stones</i>) bottom line, top OR turn book	
10/11		10. Line order altered	
12/13 12/13 12/13		11. Left page before right 12. One change in word order 13. One change in letter order	
14/15 14/15		14. One change in letter order 15. Meaning of ?	
16/17 16/17 16/17 16/17		16. Meaning of full stop 17. Meaning of comma 18. Meaning of quotation marks 19. Locate M m H h (<i>Sand</i>) OR T t B b (<i>Stones</i>)	
18/19		20. Reversible words <i>was</i> , <i>no</i>	
20 20 20 20		21. One letter: two letters 22. One word: two words 23. First and last letter of word 24. Capital letter	

QUICK REFERENCE FOR SCORING STANDARDS

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|------|--|
| 1 | Front of book. |
| 2 | Print (not picture). |
| 3 | Points top left at 'I took...' (<i>Sand</i>); 'I walked...' (<i>Stones</i>). |
| 4 | Moves finger left to right on any line. |
| 5 | Moves finger from the right-hand end of a higher line to the left-hand end of the next lower line, or moves down the page. |
| 6 | Word by word matching. |
| 7 | Both concepts must be correct, but may be demonstrated on the whole text or on a line, word or letter. |
| 8 | Verbal explanation, or pointing to top of page, or turning the book around and pointing appropriately. |
| 9 - | Score for beginning with 'The' (<i>Sand</i>) or 'I' (<i>Stones</i>) and moving right to left across the lower line and then the upper line, OR, turning the book around and moving left to right in the conventional movement pattern. |
| 10 - | Any explanation which implies that line order is altered. |
| 11 - | Says or shows that a left page precedes a right page. |
| 12 - | Notices at least one change of word order. |
| 13 - | Notices at least one change in letter order. |
| 14 - | Notices at least one change in letter order. |
| 15 - | Says 'Question mark', or 'A question', or 'Asks something'. |
| 16 | Says 'Full stop', 'Period', or 'It tells you when you've said enough' or 'It's the end'. |
| 17 - | Says 'A little stop', or 'A rest', or 'A comma'. |
| 18 - | Says 'That's someone talking', 'Talking', 'Speech marks', 'Print' (from computers). |
| 19 | Locates two capital and lower case pairs. |
| 20 - | Points correctly to both <i>was</i> and <i>no</i> . |
| 21 | Locates one letter and two letters on request. |
| 22 | Locates one word and two words on request. |
| 23 | Locates both a first and a last letter. |
| 24 | Locates one capital letter. |

- = item not used in the assessment