THE EFFECT OF

ENVIRONMENTAL PRINT READING

ON THE LITERACY DEVELOPMENT OF KINDERGARTEN CHILDREN

by

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ABSTRACT

This study examined the use of environmental print in the literacy programs of kindergarten children. The purpose of the study was to investigate whether a treatment using environmental logos would effect a transfer of learning between the reading of environmental print and conventional print.

The sample of 68 kindergarten children was drawn from two elementary schools in Vancouver, British Columbia, each enrolling two morning kindergarten classes. The classes in each school were randomly assigned to control or experimental groups.

A 20 item logo inventory and Clay's Word Test (1979) were administered to all subjects in order to generate pretest and posttest scores. The logo inventory was comprised of three different presentations of each logo, full context, partial context, and context free. Each context varied in the amount of supporting, environmental cues included in the presentation.

Treatment for the experimental group consisted of the presentation of two logos, a pocket chart activity, and a journal activity for each of the eight sessions. The control group participated in story telling and related journal activities for the same number of sessions as the experimental group.

Analysis of variance and subsequent t-tests resulted in significantly different mean gain scores for the experimental group over the control. This treatment effect provided evidence in support of the use of environmental print reading in the literacy programs of young children.

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CHAPTER ONE

INTRODUCTION

Recently there has been a dramatic shift in the understanding of how literacy develops and how, in fact, children learn to read. For many years, it was believed that formal reading instruction should not begin until a child had reached the mental age of 6 1/2 (Morphett & Washburne, 1931). Because of this age requirement the notion of "reading readiness" flourished. In most kindergarten and beginning Grade One classrooms, children were taught a series of sequential readiness skills that were thought to be essential prerequisites of reading instruction. Children were involved in a variety of skill building activities that focused mainly on auditory and visual discrimination, letter naming, and fine motor development. Once these building blocks were in place, formal reading instruction could begin.

. The belief in an appropriate maturational age and readiness for reading ignored the fact that children possess knowledge about literacy before they even come to school (Teale & Sulzby, 1986). Although few children are able to read conventionally without some formal school instruction, most children acquire an understanding of reading and writing through daily living and interactions with print in their environments. While shopping with parents at the grocery store, using the TV Guide to locate

favourite shows, or sharing story times, children, develop an awareness of print and its functions.

"Emergent literacy" as the latter perspective has been called, implies that "growth in writing and reading comes from within the child and as the result of environmental stimulation" (Teale and Sulzby, 1986, p.xx). Literacy learning can be initiated by the adult or by the child's independent investigations of print. The emergent literacy perspective contends that literacy develops or emerges at a very young age, as children interact with parents, siblings, friends and relatives in the world around them. For the most part, the notion that there is an ultimate time for literacy to develop has been challenged. It is now a widely held belief among educators that literacy development begins at home and is a gradual and continuing process.

Language and Literacy Development

Some theorists suggest that there are many similarities between language and literacy development. Both language and literacy have a strong social component, and as such are part of everyday life. Harste, Burke, and Woodward (1984) maintain the importance of the social aspect of both literacy and language by stating, "Language, whether oral or written, is a social event of some complexity. Language did not develop because of the existence of one language user but of two" (Harste et al., 1984,

p.28). There is no question that children use language and literacy because they are motivated to communicate; however, the extent to which language and literacy development parallel each other is not so clear.

Although not innate, language develops naturally as children interact with others and try to make sense of their world (Goodman & Goodman, 1979). From birth, children are surrounded by language. It is the vehicle for communicating meaning that enables them to participate actively in the world. Indeed, children develop language through their attempts to communicate. Language learning is not the focus of interactions but rather is embedded in the pursuit of other ends. Children do not speak, argue, or question to learn about language. They participate in oral language activities to express a need, prove a point or to find out something (Halliday, 1973).

Two schools of thought concerning the relatedness of literacy and language development exist. The first maintains that the development of reading and writing closely parallels the development of oral language (Goodman & Goodman, 1979; Bissex, 1980; Harste, Woodward, & Burke, 1984; Holdaway, 1984). In fact, Welton, 1989, states that,

> "Children grow into reading and writing the same way they
> develop oral language. When they are immersed in an
> environment that requires, uses, and demonstrates the
> usefulness of print, children explore, invent, create, and
> try out print related activities" (p.57).

In such a literate environment, written language is functional and has many uses. Children encounter written language before

developing a need to communicate beyond face-to-face situations. They see books, signs, logos, and printed containers. They read cereal boxes and STOP signs. They scribble letters and join in the reading of favourite stories. These activities and other daily encounters with print are considered to be the basis of literacy development.

The second school of thought asserts that literacy and language development are not alike insofar as some specific instruction and skill development are necessary for literacy to develop. Donaldson (1984) states that there is a difference between learning to speak and understand oral language and learning to read and write. The fact that the majority of children do not learn to read and write on their own provides evidence to this claim. Donaldson maintains that during the transmission of speech, the link between language and its source is clear. The same, however, is not true for written language. Written language is impersonal and is separated from its author by both space and time. According to Donaldson, the presence of actions that support or imply meaning is another aspect of speech that facilitates understanding and differentiates it from written language. Within the situational context that speech occurs, there exist many actions or clues that are crucial to breaking the code and developing understanding. Because speech is a very personal, useful tool, children are highly motivated to communicate. At a very young age, children play active roles in dialogues with others, especially their mothers. Although the

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speech may not be conventional, children and adults interact through personal encounters. With writing, however, its communicative function is not as obvious and it is not as easily produced by young children. In fact, even at the age of four, many children lack the motor skill to efficiently produce writing. This limits the value of writing for them and prevents them from actively participating in writing events.

Components of Emergent Literacy Development

Much of the recent research in the area of emergent literacy has focused on how young children become conventional readers. More specifically, researchers have investigated how print awareness, letter naming ability, and identification of environmental print contribute to the process of learning to read. Before children are able to read, they must develop an understanding of why people read and what they read (Kontos, 1986). To this end, children must develop an awareness of print, an ability to differentiate between written language and pictures. Studies by Lavine (1977), Hiebert (1981), and Kontos and Huba (1983) provided evidence that young children begin to develop print awareness by the age of three. Even 3-year-olds have some understanding of the purpose of print and are able to distinguish between pictures and print. There is a significant increase in print awareness prior to grade one, and this awareness is seen as "a precursor of ability to distinguish one

letter from another, which, in turn, preceded knowledge of letter/sound relationships" (Kontos, 1986, p.60).

As the development of print awareness is an important step in literacy development, so too is the acquisition of letter naming ability. It is a widely accepted that letter naming ability plays an important role in later reading success (Mason, 1980; Ehri, 1985; Nurss, 1979; Chall,1967; Tizard, 1993). Because letter names for the most part contain the sound that a letter symbolizes, children can more easily make sound/symbol associations once they know the letter names. Letter naming ability may be critical in leading children from being context-dependent readers to graphic-reliant readers (Read, 1975). In fact, knowledge of letters "may provide children with the foundation for beginning to process graphic cues in printed words" (Ehri, 1987, p.13).

Because much of children's early literacy learning occurs through interactions with people in their environments, the awareness and identification of environmental print is considered to be one component of literacy development. Environmental print, as it has come to be known, refers to "print found in the natural environment of the child" (Kirkland, Aldridge, & Kuby, 1991, p.219). This includes traffic signs, logos, labels and other print items that children would encounter in their daily lives. At a very young age, many children are aware of and can identify popular signs and logos in their environments. In fact, environmental print could be a valuable facilitator of literacy

development in that "logos used to advertise products with bold and colorful symbols featuring printed words in design formats, make an indelible impression upon children's memories starting at a very young age" (Wepner, 1985, p.633). There is also some claim that environmental print has a far reaching effect and could be used effectively in reading programs for high-risk children. Even children from lower socioeconomic homes that do not contain a variety of reading materials have considerable experience with print and are exposed to it in their environments through television, billboards and stores (Aldridge & Rust, 1987; Anderson & Stokes, 1984). Regardless of their backgrounds, whenever children see the McDonald's logo and say "hamburger", they are participating in literacy learning.

Given that interaction with print that is meaningful to a child appears to facilitate beginning reading and writing (Goodman & Altwerger, 1981; Wepner, 1985; Strickland, 1990) it seems possible that environmental print could be used to foster literacy development and lead to conventional reading. Use of familiar environmental print could provide the link from home to school and would build upon what children already know about literacy.

The Role of Environmental Print

Because the beginning of school might be an anxiety producing situation for some children, inclusion of something

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familiar, something that has already been a part of their lives, might ease the adjustment and facilitate learning. According to Briggs and Richardson, 1993, "the greater the correspondence between environmental learnings and school activities, the more likely that transfer will take place" (p.224). They maintain that children's environmental outings are rich sources of print and as such, should be used to enhance instruction. In their own environments, children are exposed to some form of written language and are taught that reading is meaningful. Briggs and Richardson also maintain that some children enter school with a sight word vocabulary consisting of words that they have encountered during daily activities. It should be possible to capitalize and build on this initial knowledge of literacy when formal instruction begins at school.

Recent studies in the area of environmental print have provided a divergent body of evidence concerning the effectiveness of environmental print reading as a precursor to conventional reading. There are two main issues that have arisen. The first issue deals with whether, and to what extent, children are attending to graphics when identifying environmental print. Are children reading the words or are they simply reading the environment? The second issue refers to the process of how children come to identify print. Is there a sequence in learning how to use visual and graphic cues and is this sequence contingent on the acquisition of a set of prerequisite skills?

Purpose of the Study

The purpose of this study is to determine whether environmental print reading facilitates literacy development in young children. That is to say, is there a transfer of learning between the reading of environmental print and conventional print? If children are able to identify environmental print items in full context, will they be able to identify these same items in a partial context or print only context after working with the items in a pocket chart and a journal activity?

Definition of Terms

For the purpose of this study, the following terms and definitions were used:

1. environmental print: print that occurs naturally in the environment (i.e. billboards, store and traffic signs, package labels).

2. logos: bold, colourful symbols featuring printed words in design formats that are used to advertise products.

3. emergent literacy: the development of reading and writing in young children. This perspective, as described by Teale and Sulzby (1986), maintains that:

    a. literacy development begins prior to formal instruction

b. reading and writing develop concurrently and interrelatedly

c. literacy develops through functional, real-life activities

d. children learn about written language through social interactions with adults, especially their parents

e. children vary in terms of how they pass through the different stages of literacy development

4. full context: environmental print items were photographed within the natural setting (i.e. the McDonald's sign and the restaurant were photographed together).

5. partial context: the print was cut out of a duplicate set of full context photographs. The environmental context was eliminated, while the colour and stylized print of the logos were retained.

6. context free: the print that was embedded in the full and partial context situations was presented without any contextual, symbolic, or colour cues. Black upper-case letters were printed on white cards.

7. sight word: a word memorized or recognized as a whole, rather than by its parts blended together to form the whole (Goodman, 1973, p.650).

CHAPTER TWO

REVIEW OF THE LITERATURE

Graphic Awareness in Environmental Print Reading

Being aware of and reading print in the environment is an important step in learning to read. Although not yet reading conventionally, children develop knowledge about literacy through exposure to and interaction with print in their environments (Hiebert, 1978; Mason, 1980; Goodman & Altwerger; 1981; Harste, Burke, & Woodward, 1982; McGee, Lomax, & Head, 1988). This knowledge of written language "could be considered part of the reading process and precursors to reading skills" (Hiebert, 1978, p.1233). Mason (1980) identified the value of sign and label reading when she stated, "It is entirely possible that children entering school who are able to read words from cereal boxes, restroom doors, store fronts, and traffic signs have an important advantage over other children in learning words and reading stories" (p. 206). She maintained that sign and label reading was not totally unlike sight word learning and that similarities between the two should be examined.

Many environmental print studies have focused on how accurately children could identify words in the environment and to what extent those responses changed as the context was reduced. Goodman and Altwerger (1981) carried out an extensive study consisting of six print awareness tasks with a small number

of preschool children. Because of the small sample size, the external validity of the study was affected and findings could not be generalized to larger populations. The procedures and scoring guides for each of the tasks were clearly defined, and as such, could be replicated. Because the study examined children's awareness of print based on six different components, it did provide an in depth anlysis of some children's knowledge of print.

One component of this study examined preschooler's responses to environmental print items. The children were shown labels from household items and street signs in full context, partial context, and context free. Goodman and Altwerger found that as the context decreased, so did the number of appropriate responses (37%, 19%, 1.5%). They also found that in the third task, context free item presentation, children, especially the 5-year-olds, began letter naming, counting and sounding out in an effort to identify something that they knew. In addition to a marked change in the number of appropriate responses, there was an observable change in behavior. As the context decreased, children became fidgety, and lost interest in the task. They appeared to have a much shorter attention span when asked to identify words that had no meaning for them. Interestingly, the preschoolers consistently pointed to print when asked "where does it say that" even though their responses were inappropriate. According to Goodman and Altwerger, this indicated that the children had an awareness "that the print communicates the

message, whether or not they know what the print says" (p. 10).

Mindful of the ubiquity of print in the environment, Hiebert (1978) felt that, "Although most young children do not know how to read in a formal sense, they may have acquired knowledge about what written languaguage represents as a result of exposure to it in their environments" (p.1231). In a study similar to that of Goodman and Altwerger (1981), Hiebert investigated the changes that occurred in preschooler's knowledge of written language. For this study, 40 children were selected from three separate day-care centers. The sample size of 40 with 20 children in each of the two groups, was large enough to ensure statistical power. Three different day-care centers were used in an effort to find a representative sample. There was, however, no mention of whether or not subjects were randomly selected, thereby somewhat limiting the generalizability of results.

Hiebert examined the childrens' responses to ten words in environment and isolation contexts. Three of the words were sets of initials. Slides were shown that displayed the words in their environment or written in large lowercase letters as a traditional reading task. The presentation of the logo items was done in two separate sessions, several days apart, in an attempt to prevent association between the two contexts. Based on the use of reading miscues to analyze children's reading, Hiebert examined and coded incorrect rather than correct responses. Response errors were coded in terms of whether or not they made sense given the stimulus, if they consisted of strings of words,

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or if there was no response. An interrater agreement of 98% was established for the classification of errors.

Hiebert found that the 4-year-olds identified more words than the 3-year-olds, but that both groups made the same types of errors. In context, most of the errors were meaning related, whereas out of context the majority of errors were either no response or meaningless given the stimuli. The fact that there was a greater number of meaningful errors and correct responses in context provided evidence that young children knew how to rely on and use the environment to give meaning to written language. Because many of the errors were single words, rather than strings of words, both in context and out, Hiebert concluded that the children were beginning to develp word-to-word correspondence between spoken and written language. It was somewhat surprising that the words composed of letter names were not identified more frequently than the other words, given the belief that letter name knowledge is an important prerequisite to learning to read.

Harste, Burke, and Woodward (1981) conducted a comprehensive study to examine what 3, 4, 5, and 6-year-old children knew about print. In order to create a sample that was representative of the larger population and to test several existing ideas as to how reading develops, Caucasian and Negro children from a wide variety of socio-economic groups who lived in suburban and urban settings were included. The study consisted of seven components, each designed to provide information about a different aspect of children's awareness of print.

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One component, the environmental print task, examined children's responses to print in environment, logo, and isolation settings. Twenty environmental logos were selected and presented to students individually. Because all 20 logo items in each context were presented on subsequent days, there is a chance that testing was somewhat of a threat to the internal validity of the study. There may have been a carry over of learning between the testing sessions.

In order to score the responses, a taxonomy was developed based on the semantic, syntactic, graphic and temporal characteristics of the response. An interrater reliability of no less than 96% was established across all categories of analysis. In the environment and logo settings, over 60% of children's responses were considered as being attempts to read. In the isolation setting, however, the frequency of appropriate responses dropped to 29%. Harste et al. also found that single words comprised the majority of attempts to read in all three settings. Because over 60% of children's attempts to read graphemically in the environment setting approximated, to some degree, the printed word, they concluded that children were sensitive to graphic cues when responding to environmental print.

In a longitudinal study which investigated the literacy experiences of kindergarten children, Brailsford (1985) conducted an in-depth examination of the literacy development of six children. Using an environmental print task adapted from Goodman (1981) and a shared book task adapted from Clay (1979) and Doake

(1981), she identified three high print aware children and three low print aware children who became the focus of her study. These six children were observed extensively as they functioned on an everyday basis in the kindergarten class.

The environmental print task was conducted on two separate occasions, September and February, and consisted of the identification of 20 environmental logos that were found in the community. As in the previously cited study by Harste, Burke and Woodward, the environmental logos were presented in three settings, with varying degrees of context in each. Responses were then scored according to how accurately they replicated the exact print on the logo. Based on the results of the entire class, Brailsford found that children offered more responses to the full context condition than to the partial context, and in turn, more responses to the partial context condition than to print only. There was, however, a slight drop in the number of exact responses in the full context condition on the posttest. This indicated that as children developed more literacy awareness, they relied more on the symbols and print than on the pictures. Upon closer examination of the results of the six "focus" children, Brailsford discovered that there was a significant difference between the responses of the high and low print aware children. Primarily, the high print aware children produced more responses to the print only context than the low print aware children. The high print aware children were able to successfully use graphics in order to reconstruct meaning. In

fact many of their responses, although not exact, indicated an attention to graphics (i.e. Woodwards for Woolco and Canada Post Office for Canada Post). It was evident that the low print aware children had considerable difficulty with the print only context and were unable to provide an exact response to any of the items. They relied mainly on visual cues and were unable to interpret graphic information once it was decontextualized. These results clearly indicate that children do attend to graphics in environmental print items, however, this attention to graphics appears to be constrained by the children's own level of literacy development.

The extent to which the findings of the environmental print task could be generalized to a larger population was affected mainly by the small sample size. Although this task was administered to the entire class of 20 children, and mention was made of how their results compared to, or differed from, those of the six focus children, the discussion focused mainly on the responses of the six focus children. As well, the data for the whole class was analyzed only in terms of raw scores and percentages. There was no further statistical analysis done to determine significance. The study was, however, rich in description and provided considerable information about the literacy development of six chidren.

Based on the findings of these studies, there is a growing body of evidence in support of the view that young children do attend to graphics when reading environmental print. The issue

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still remains, however, as to how environmental print reading leads to conventional reading.

Environmental Print Reading, a Link to Conventional Reading

In an effort to link environmental print reading to conventional reading, Mason, 1980, determined the existence of "a natural hierarchy of knowledge development in learning to read words" (p.203). She felt that parents were important contributors to their children's literacy development and that "children who are guided by parents to attend to letters, signs, and labels and are given opportunities to read, spell, and print words, learn some of the essential rudiments of reading even before going to kindergarten" (Mason, 1980, p. 203). It would seem, therefore, that children could learn some of the conventions of reading through sign and label reading.

Forty children from traditional, middle-class homes and their parents were involved in Mason's study. Based on parents' questionnaires at the beginning and end of the school year and on observations and a series of tasks that occurred throughout the school year at a university operated preschool, Mason established a developmental framework of how children came to acquire word knowledge. In the first level of word knowledge, context dependency, children were only able to read labels or signs. They recognized words in context and attended to visual rather than letter cues. Although these children could recognize upper

and lower case letters, they could not identify previously learned words once the letter case was changed. The next level, visual recognition, included children who could read signs, labels, and a few short words out of context. These children could often identify the initial consonant of words even if they could not read the entire word correctly (they would say top for tip). Letter-sound analysis was the third level in the development of word knowledge. Children who were at this level were able to sound out multisyllabic words whether in or out of context. They were acquiring rules and effective strategies for deciphering letter-sound patterns. These children were reading by themselves and learning to read new words at a rapid rate.

Before children reached the context dependent level and were able to identify environmental print, there seemed to exist a natural hierarchy of letter reading activities. Within this developmental framework, reciting letters, saying letter names, printing letters, and recognizing one's own name were behaviors common to most children before reading environmental print. Based on this ordering of activities, it would seem that label and sign reading could contribute to the development of conventional reading, provided that children had prior experience with letters and letter sounds.

Mason's findings suggested that reading labels and signs in the environment was an essential component of children's literacy development. Reading environmental print was one of the observable skills that characterized young children's literacy

development just prior to being able to identify words out of context. As did Briggs and Richardson (1993), Mason drew a parallel between the conventional learning of sight words and identifying print in the environment. She contended that in both cases, the words were introduced in context, as a whole and that there could be a transfer of learning between sign and label reading and the learning of sight words. Mason did not dispute the fact that reading environmental print was not "real" reading; however she felt that "letter knowledge, printing and sign reading serve as precursors to more skilled reading" (Mason, 1980, p.221). According to Mason, letter knowledge and sign reading provided children with guidelines for experimenting with simple reading and spelling tasks.

Because of the homogeneity of the sample, the findings of Mason's study cannot be extended to other populations. They were, however, supported by appropriate statistical analyses. A Chi Square analysis was carried out based on the frequency of responses to the multiple choice questionnaire items and correlations between children's word reading level and parent's responses were calculated. In terms of the design of the study, some threat to its internal validity exists. A practice effect based on repeated testing throughout the year may have positively affected the scores on the final tasks.

In a developmental model similar to that of Mason (1980), Lomax and McGee (1987) postulated a five component model comprised of the print-related concepts leading to word-reading

acquisition. The fact that the model is developmental and has five components implied that print concepts may have a number of dimensions and may develop in some sequence. The first component of this model, concepts about print, involved an awareness that print was different than pictures and was meaningful. At this stage a child would have some knowledge of the conventions of reading and would be able to identify print embedded in environmental context. The next two components, graphic and phonemic awareness, included attention to the distinctive features of letters and words and the ability to segment words into phonemic segments. Grapheme-phoneme correspondence knowledge was the fourth component, consisting of how children used their knowledge of letter names and sounds to blend and decode words. The fifth component, word reading ability, involved a child's ability to read words in a more traditional sense, in isolation.

In order to test this model 18 measures of written language knowledge and word reading ability were administered to 81 children, ranging in age from three to six. Lomax and McGee found that all of the children had a great deal of knowledge about print. In fact, children as early as three years of age, were expert environmental print readers and were beginning to recognize what could be read. They could also discriminate between letters and could name over one third of the alphabet letters. As the age of the children increased, so too did their understanding of the five print components. It was not the case,

however, that one component was mastered before children moved on to the next. At all age levels, there was evidence of increasing awareness and understanding of even the early developing abilities.

Thus, although Lomax and McGee's model of word-reading acquisition describes the growth of literacy knowledge somewhat differently than Mason, core similarities do exist. Both analyses postulated that children initially recognized words only in context. Children then developed a greater awareness of graphics and an ability to identify some phoneme-grapheme correspondences. Finally, they became competent at deciphering multisyllabic words in isolation.

As with many of the afore mentioned studies, the results of the Lomax and McGee study cannot be widely generalized, given that the sample was drawn from a single school. In this case, it was a private school and all the parents had consented to their children participating in the study. A comprehensive battery of formal and informal instruments were used to assess each of the five components of children's knowledge of written language. Intercorrelations between measures were then calculated and the data were determined to fit best a five component model. Although the study appears to examine thoroughly children's word knowledge based on a number of measures, there is no mention of the time frame or method of administering the tasks. This could pose some threat to the external validity of the study.

The abilities that have been identified by Mason and Lomax and McGee as exemplifying children's awareness and understanding of reading and writing at various stages in their development, indicate that environmental print reading is important to the development of literacy. There is, however, some controversy, as to the value of environmental print reading and the extent to which it contributes to conventional reading.

Environmental Print Reading, Ineffective as a Link to Conventional Reading

The role of environmental print reading, believed by many researchers to be the forerunner of conventional reading, is being challenged. According to some researchers, identification of print frequently seen in the environment does not necessarily lead to context free reading (Ehri, 1987; Masonheimer, Drum, & Ehri, 1984; Goodall, 1984; Richgels, McGee, Hernandez, & Williams, 1987). While the natural view of literacy development contends that children learn to read through repeated exposure to familiar print in its environmental context, and that children gradually learn to recognize print that is decontextualized, an alternative view suggests that certain prerequisite skills are necessary for children to develop into conventional readers. Proponents of this alternative view maintain that children attend to graphics only after they have acquired some letter and word knowledge skills.

Goodall (1984) emphatically expressed the view that environmental print reading did not contribute to conventional reading when she stated that, "skills used in reading environmental print are not necessarily part of a hierarchy of word knowledge skills" (p.482). In a study of twenty 4 and 5-year-olds she examined whether their responses to environmental print items were based on context or graphic cues. The children were shown slides of 15 of the most commonly identified environmental print items in two contexts. The first context, full environment, was a photograph of the print item taken as it occured naturally in the environment. The second context, reduced environment, contained only print and maintained the same colour and style of letters. In the second context the surrounding environment was masked, thereby creating a black border around the print. In the first condition, almost 70% of the responses were considered to be correct and indicated that even very young children were able to identify words in the environment. In condition two, the number of correct responses dropped considerably to only 30%, with almost 50% of responses consisting of no response or "I don't know". As well as observing a substantial change in the number of correct responses, Goodall also noted a change in response types for condition two. She found that children tended to list previously correct responses and tried to relate colour and letter forms to products. They also often made reference to "night", when presented with the masked backgrounds of condition two stimuli.

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These obviously meaningless responses led Goodall to conclude that the children were not making any attempt to examine the stimulus when faced with environmental print items in reduced context. She also postulated that the 4-year-olds used different strategies than the 5-year-olds when presented with the various stimuli.

In spite of the fact that Goodall argued quite strongly against the value of environmental print reading, some considerations must be made before accepting her findings. There were two factors, scoring and analysis of data that could pose threats to the internal validity of the study. In terms of the scoring of the data, responses were considered to be either right or wrong. Given the sample responses that Goodall provided, there is some question as to the consistency and criteria used to rate responses. For example, when "for sale" was presented and the child responded "auction", the response was considered to be correct. In the case of "LEGO", however, the child responded with "toys" and the response was considered to be incorrect. Because there did not appear to be a clear distinction between right and wrong answers, the reliability of the results is questionnable. As for the analysis of the data, Goodall used only raw scores that had been converted to percentages. There appeared to be no statistical analysis done to determine significance.

Perhaps the strongest demonstration of children's inattention to graphic cues when identifying environmental print

appears in a study by Masonheimer, Drum, and Ehri (1984). They cited a number of studies indicating that children's performance on environmental print identification dropped considerably when the context was removed (Goodman & Altwerger, 1981; Harste, Burke, & Woodward, 1982; Hiebert, 1978; Ylisto, 1967). In each of these studies, preschool children were presented with familiar environmental logos, within varying contexts. The fact that the children were apparently reading the environment and not the print, led these researchers to question whether or not environmental print reading would successfully lead children into context free reading. Masonheimer, et al. contended that there may be skills that children must acquire before they could be free of their reliance on environmental cues.

To test this hypothesis, Masonheimer, et al. examined 194 preschool children's ability to read environmental print, both in and out of context, and identify letter alterations in these same words. The subjects for this study came from diverse ethnic and socio-economic backgrounds and were all considered to be "environmental print experts". That is to say, they all recognized eight of the ten logos most frequently identified by the entire group. The children were then identified as being expert, novice, and prereaders based on their identification of primer words. The findings indicated that the performance of the readers differed from that of the prereaders for each of the environmental print-reading tasks. In the first task, the identification of environmental print items, prereaders

identified words only in full environmental context. Readers, on the other hand, were able to identify the print items both in and out of context. In an effort to determine to what extent children would attend to or ignore letters in familiar labels, the subjects were then asked to identify any altered letters. Prereaders were unable to do so even when asked if there was something wrong with the label or if there was a mistake. Prereaders' responses were based primarily on context, not the altered graphics. On the same task, readers pointed to the altered letters and detected changes when the labels were placed side by side. It would seem, therefore, that readers and prereaders used different strategies when identifying environmental print. Prereaders focused on the environment, whereas readers focused on the graphics. Masonheimer et al. suggested that the identification of environmental print alone does not move children into traditional reading. They maintained that because children did not have to look past the most obvious cue, the environment, they would not "naturally" attend to the graphics. They also maintained that there were certain skills, such as letter mastery, that children needed to possess before developing a greater awareness of graphics. According to Masonheimer et al., "if youngsters are not familiar with alphabet letter patterns within words, printed words will not be distinguished as separate optic features and will not enter memory as symbols for meanings" (p.269).

For many reasons, this study is hard to challenge. The survey sampling procedure produced a sample that was, by and large, representative of the population of preschoolers. Race, income level, and family structure were all considered when choosing the subjects. The fact that the children attended different preschools reduced the chance of error based on a specific instructional program. For both tasks, Masonheimer, et al. chose children who could identify eight out of ten labels. This was done to produce a homogeneous sample that was was most likely to be able to identify labels out of context. The internal validity of this study was most adequate with diffusion of treatment and testing being the only possible threats. Diffusion of treatment, or sharing what they had just done, and testing, attending to letters because of the letter identification task, were possible, but weak threats, based upon the poor performances by all the prereaders. Appropriate data analyses, ANOVAS, were used and results for each independent and dependent variable were presented and discussed. The sample sizes for each of the two tasks were large enough to give the study statistical power. The only weakness occurred in a small cell size, six, for the group of readers.

Based on this rather impressive body of evidence, the use of logos or environmental print in emergent literacy classrooms could not be supported. Even after having selected the children most likely to succeed, from a large group of subjects, there was no indication whatsoever that the expert logo readers would soon

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be able to make the transition to context free reading. Other
researchers (McGee, Lomax, & Head, 1988), however, contended that
the degree of difficulty between logo recognition in and out of
context was too great for children to move easily from one task
to the other. Because of this, they felt that Masonheimer, Ehri,
and Drum's lack of support for environmental print reading could
be challenged.

There are a number of studies that lend support to
Masonheimer, Ehri, and Drum's view that children do not become
skilled at processing graphic cues through exposure to
environmental print alone (Ehri, 1987; McGee, Lomax, & Head,
1988; Richgels, McGee, Hernandez, & Williams, 1987). Although
the research does not conclusively indicate how or what skills
enable children to move from using visual or contextual cues to
graphic cues, there is evidence that certain skills or knowledge
are required before children can make this transition. Based on
the findings of a number of original studies, Ehri concluded that
children needed to have a mastery of letters before being able to
successfully process graphic cues. In fact, she stated that, "a
knowledge of letters provides children with the foundation for
beginning to process graphic cues in printed words" (Ehri, 1987,
p. 13). This suggestion of the seemingly crucial role of
alphabet knowledge in literacy development reinforced the belief
that letter naming ability at the beginning of first grade is one
of the best predictors of reading success (Chall, 1967). Ehri
also maintained that not only did children need to know the

alphabet, they also required some formal instruction of its distinctive letter forms and sounds, in order to make the shift from environment to print reliance.

In a study using mainly functional print items rather than environmental print items, McGee, Lomax and Head (1988) determined that "knowledge of letter names alone does not explain children's shift to attending to print as a strategy for reading" (p. 116). Functional print items such as a grocery list, a newspaper and a telephone book were used because the written language which appeared on those items was not as predictable as that of environmental print items. McGee, Lomax, and Head also felt that children's responses to functional print items would display a greater range of knowledge of written language.

For this study, the sample was composed of 81 middle-class children, aged three to six, who attended a private preschool/elementary school. The parents of these children agreed to their participation in the study. Literacy instruction for all children was based on a traditional phonics approach that used commercial reading readiness programs and basal reading series. The children were tested on three measures, letter name knowledge, environmental and functional print reading and word recognition. Responses from the environmental and functional print reading task were coded into four categories based on criteria that had been developed in previous research (Harste, Burke, & Woodward, 1981). Scores from the word reading ability task then determined whether the children were nonword readers,

novice word readers or expert word readers. McGee, Lomax, and Head found that novice word reader's attention to graphic detail was significantly lower than that of the expert word readers, despite the fact that the novice word readers had nearly perfect letter name knowledge. Limitations of this study related mainly to the internal validity and included selection, maturation and testing. Correct procedures of analysis of variance and Tukey post hoc were used in analyzing the data. The threat of selection existed because the sample group was composed of volunteers from one private school with one particular method of instruction. As a group, they might have differed from the population in terms of motivation, socioeconomic background, and level of literacy development. The threat of maturation was based on the findings that all the expert readers were the oldest, whereas all the nonword readers were the youngest. Differences between these two groups may have been due to age, rather than reader differences. Because a letter naming task was given prior to the print reading task, children's attention to print and letters may have been influenced. Responses may have resulted from the letter naming task, thus implicating testing as a threat to internal validity.

A study by Richgels, McGee, Hernandez and Williams (1987) corroborated the findings of McGee, Lomax, and Head that novice and expert word readers had very different responses to stimuli while at the same time having comparable letter name knowledge. The sample for this study was composed of 59 kindergarten

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children who were randomly selected from all the kindergarten children in two schools. The children were tested individually in two sessions. Each session involved naming letters, spelling words from pictures, reading preprimer and primer word lists and identifying environmental and fuctional print items. The children were categorized as nonreaders, novice readers, or expert readers depending on their score from the word reading task. Although the sample size was large enough to ensure statistical power and the children were randomly selected, the actual design of the task may have influenced the results. Because the questions used to elicit responses on the environmental and functional print reading task indicated that the children should attend to the graphics there is some question as to the reliability of results. It appears, however, that not all children were aware of the implication that something could be read. Based on a comparison of results between this study and McGee, Lomax, and Head (1988), a greater percentage of grapheme-cued responses occurred only for the novice and expert readers.

Richgels, McGee, Hernandez and Williams found that although there was no significant difference between the scores of the novice and expert readers for the letter naming task, there was a significant difference between the two groups on the invented spelling task. This led them to believe that perhaps it was the knowledge of letter-sound correspondences, rather than simple letter naming, that influenced the shift to graphics. They stated:

> if the chief difference is that Experts do and Novices do not know how to use letter/sound correspondences, then it could be argued that sound/letter knowledge - and not merely letter-name knowledge - is a crucial factor in children's paying greater attention to graphic details (p.83)

In short, these findings may be seen as evidence that minimizes, to a great extent, the role of environmental print reading in literacy development. However, since environmental print occurs naturally in the environments of all children and can be identified in context by children as young as three years of age, it is possible that instruction using environmental print could help children make the leap from being context readers, to graphic readers. While environmental print reading might not "naturally" lead to conventional reading, it could provide educators with a valuable tool for learning.

The Use of Environmental Print in Instruction

Very few studies have actually investigated the use of environmental print items in reading/writing instruction. Wepner (1985) conducted a study with 20 preschool children that involved using environmental print items in a journal-like activity. The children were given identical pretests and posttests, eight weeks apart, in which they were asked to identify 20 environmental logos, as well as words and sentences in isolation. During the intervening time period, the children were divided into two groups, control and experimental. The experimental group

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participated in a language experience type activity, in which they each made a logo book. They were given logos of various environmental print items to glue into their books, and were then asked to talk about the logos. The children either wrote their own logo sentences, or had the sentences scribed for them, depending on ability. The control group received no instruction.

As expected, instruction with logos led the experimental group to identify a significantly greater number of logos on the posttest than on the pretest. An increase in the number of items recognized was also noted for the word/sentence identification component of the posttest. Whereas word and sentence recognition was very limited for all children on the pretest, on the posttest, some of the 3-year-olds could read four to six of the words and all of the 4-year-olds could read four of the five sentences, made up of words that were used in the logo books. The control group children were not able to recognize any of the words or sentences.

The study was a true pretest-posttest control group design with random assignment of children to either the control or experimental group. A sample size of 20 and group sizes of 5 however were too small to give the treatment any power. Because the preschoolers all came from middle-class, two parent families, the sample was probably not representative of the population of preschoolers and as such the results could not be generalized. Another limitation is that a practice effect based on treatment

and pretest/posttest administration may have affected the results.

Based on her findings, Wepner concluded that linking familiar environmental logos with personally rewarding print facilitated children's literacy development. Through the use of logos, children were able to experience success at reading and were able to link the real world with the printed page. She also felt that with repeated exposure "children should be able to recognize the unadorned words from the logo book in varied contexts" (Wepner, 1985, p.238).

This belief in a gradual decontextualization of print, is deeply rooted in a "naturalistic" view of literacy development. Herein lies the dilemma, with direct implications for further study. Whereas literacy development may not occur naturally, it is possible that familiar, highly motivating environmental logos could be used successfully to facilitate beginning reading development.

CHAPTER 3

DESIGN

Student Population

This study took place in two elementary schools in Vancouver, British Columbia during the fall of the 1993-94 school year. Because the design of the study necessitated having a control and an experimental group in each of two different schools, selection of schools was based on the number of kindergarten classes enrolled in each, as well as the time of day that these classes were in session. To control for any differences that might exist between children who attend kindergarten in the morning and those who attend in the afternoon, only morning kindergarten classes were considered. In the Vancouver School District, there were only three schools that had two morning kindergarten classes. Of these three schools, two volunteered to take part in the study and one declined because of the practica of preservice teachers that overlapped the time frame of the study.

The two schools that volunteered and were selected differed in terms of location, socioeconomic status and percentage of English as Second Language students in the classes. Geographically, one school was located in a high socioeconomic region of the city whereas the other was situated in a middle class area. The former was comprised mainly of Causasian

students who spoke English as their first language. The majority of students in the latter school were Asian, Japanese, and Viet Namese and spoke languages other than English as their first language.

Prior to the beginning of this study, none of the classes had been exposed to formal reading instruction. All of the classes reported doing journals and language experience stories, as well as listening to poems and stories, to foster literacy development. For the purpose of this study, one class at each school was randomly assigned as the control while the other was assigned as the treatment group. This random assignment resulted in two control groups comprised of 15 students each and two treatment groups of 19 students each. The sample was composed of 33 males and 35 females, with an age range of 4 years 10 months to 5 years 10 months.

Pilot Study

A pilot study was conducted with ten children ranging in age from 4 years 5 months to 5 years 1 month in order to determine which environmental logos were most easily recognized by young children. The children were presented with thirty logos in full context and were asked, "What does this say?". Based on their responses, the twenty most frequently recognized logos were selected to be used in the study.

Procedure

Pretests

A logo inventory comprised of the 20 most frequently identified logos was administered to experimental and control children (see Appendix 1). The inventory was given to each child individually and took approximately 15 minutes per child. Logos were presented one at a time in three different contexts: full, partial, and context free (see Appendix 2). In the full context situation, each logo was photographed in its natural environment, glued onto a 4"x 6" cardboard card and then presented. For the partial context items, a duplicate set of full context logo photographs was used. Print that was embedded in the full context photographs was cut out and then mounted onto 4"x 6" cardboard cards. In this context, the surrounding environmental clues were removed while the original colour and stylized print of the logos were retained. In the third presentation, context free, each logo was presented as black manuscript letters on a 4" x 6" cardboard card. For each context, the children were asked "What does this say?". The logos were then randomly selected to determine an order of presentation for each of the three contexts. Given the random order of presentation, the logos were all presented in order of decreasing amount of context. That is to say, all twenty full context logos were presented first,

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followed by the partial context logos and lastly the context free logos.

The scoring of each logo item in each context was based on a four point rating scale similar to that of Brailsford (1985). Ratings were assigned as follows:

3 points - exact response (ie. "Lego" for LEGO)

2 points - partial or extended response, includes some of the print from the logo (ie. "Lego blocks" for LEGO)

1 point - generic response (ie."blocks" for LEGO)

0 points - no response or "I don't know"

In addition to the logo inventory, Clay's Word Test (1979) was also administered individually to all the children in both pretest and posttest situations (see Appendix 3). This test consisted of 15 primer words commonly recognized by children in the initial stages of literacy development. Each item was scored as being right or wrong.

Method

Following the pretests, classes were randomly assigned to either the treatment or the control groups. The experimental groups received eight treatment sessions, two sessions per week over a four week period. The sessions were each 30 minutes in duration and took place in the morning between 9:00 a.m. and 11:30 a.m. Each treatment or instructional session consisted of

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culminating journal activity. At the beginning of each session, two new logos were presented to the entire group. The order of presentation was determined by the pretest results in that logos were presented in order of decreasing frequency of identification, beginning with the most frequently recognized logo.

The format of each session was whole group instruction followed by an individual activity. First, the children were presented with a riddle or a similar motivating activity in an attempt to match their experiences with the logos that were to be presented. A sample riddle would be: " You can eat here. My name starts with an M. I have golden arches outside. What am I?" Once the children had answered the riddles, they were then shown the logos. A discussion followed which led directly to the pocket chart activity. For this activity, the children created sentences related to each logo. These sentences were then scribed by the researcher, displayed in the pocket chart, and read aloud chorally and individually. The children were then asked to identify specific words through the manipulation of the pocket chart cards. It was at this point that the logo words were spelled out and the children were made aware of the individual letters that comprised each word.

The session then shifted from whole group instruction to an individual activity. Each child was given a sample of each of the logos that had been presented and a journal. The logos were to be glued into the journals accompanied by pictures, words, or

sentences depending on the child's own ability. If children were unable to write for themselves, the researcher scribed any words or sentences that the children wanted to accompany their drawing.

The treatment sessions continued in the same manner for the duration of the study. At the end of the four week period, the children had been exposed to sixteen different logos and had created journal pictures and sentences for each one.

At the same time, the control group participated in literacy activities for the same number of sessions of equal duration as the experimental group. Similar to the treatment sessions, each session for the control groups began with a whole class activity followed by an individual journal activity. The sessions began with the researcher reading a story that was then followed by a class discussion. Depending on the story, some type of written activity was undertaken with the class as a whole, in order to further develop the children's understanding of the storyline. The children were then given journals and were asked to draw or write about part of the story. As with the experimental group, the researcher scribed for the children if they were unable to write themselves. At the end of the four week period, the journals were sent home.

Posttests .

After the treatment period, all the children, control and experimental, were given posttests. The posttests replicated

the pretests in both format and administration. As in the
pretests, the posttests included three components related to logo
identification and one component related to word identification.

Design and Analysis

This study was based on a pretest-posttest control group
design. The four dependent variables included three logo
inventories and one word test (Clay, 1979). The treatment, the
use of logos, was the independent variable. Means and standard
deviations were calculated for each group. An analysis of
variance was performed to determine whether the mean pretest
scores of the four groups (control groups 1 and 2 and treatment
groups 3 and 4) differed significantly from each other. A series
of follow-up t-tests were also done to analyze the variance of
the pooled means of the control group (groups 1 and 2 combined)
and the treatment group (groups 3 and 4 combined).

Limitations

The following may be considered to be limitations of the
study:

1. Because the sample was composed of intact groups of
kindergarten children from two different schools and was not
randomly selected, it may not be representative of the

population of children who attend kindergarten in the morning. This may affect the generalizability of results.

2. Based on the design of the study, the pretest-posttest control-group design, the use of independent t-tests to analyze the pretest and posttest means of the experimental and the control groups could result in statistically significant differences that do not really exist between the two groups. The possibility of a Type 1 error should be taken into account in the discussion of the findings and conclusions.

3. Because of a pretest-posttest practice effect and the question used to elicit responses indicating that the children should attend to the graphics, testing is a possible threat to the internal validity of the study.

4. Experimenter bias and diffusion of treatment are also possible, yet weak threats to internal validity.

CHAPTER FOUR

FINDINGS

A logo inventory and Clay's Word Test (1979) were administered to 68 kindergarten children to test the hypothesis that a transfer of learning would occur between the reading of environmental print and conventional print. Both measures were utilized in order to generate pretest and posttest scores. Results of the logo inventory indicated to what extent, if any, gains existed across three contexts of logo identification. Clay's Word Test was administered to determine whether or not treatment with logos would result in significant gains on a more "traditional" reading test, the identification of primer words as presented in conventional print.

The data from these two measures were analyzed in three ways. First, to determine whether or not there were significant differences between the mean gain scores of the control and experimental groups, analyses of variance and subsequent t-tests were conducted. This procedure was done in order to determine whether the difference in experimental and control group means was statistically significant at the .05 level. Then, the data were analyzed to examine response trends that may have emerged as the context was reduced. In order to do so, frequencies of responses by context were calculated.

Because the sample of kindergarten children was drawn from two different schools, there were originally four distinct groups of subjects. In each school there was one experimental and one control group. Given that the sample was comprised of intact classes of children and was not randomly selected, the pretest scores of the logo inventory and Clay's Word Test (1979) were compared using analyses of variance. This was done to determine whether significant differences existed between the four groups (see Table 1). Because the analysis of variance resulted in no significant differences between groups, the four groups were collapsed into two. Upon collapsing the four groups into two, one experimental and one control, there were no significant differences between the two groups on the pretest scores for each of the three contexts of logo identification (see Table 2). The existence of two groups rather than four was advantageous in that the sample size of each cell was greater.

Analysis of Logo Inventory and Word Test

The t-test results for the logo inventory indicated that there were significant differences between the mean gain scores of the experimental and control groups across all contexts of logo presentation (see Table 3). From full context to context free, children in the experimental group showed substantial gains over the control group between pretest and posttest scores. Upon further examination of the gain scores of the experimental group,

Table 1

<u>Pretest Comparison Scores by Context</u>
<u>for Experimental and Control Groups</u>

Context	Group	n	Mean Pretest Score	Standard Deviation	F Probability
Full Context	Experimental 1	19	25.52	12.45	.274
	Experimental 2	19	29.31	10.46	
	Control 1	15	23.80	9.77	
	Control 2	15	29.86	6.79	
Partial Context	Experimental 1	19	15.42	14.87	.809
	Experimental 2	19	12.10	13.12	
	Control 1	15	12.66	9.79	
	Control 2	15	15.33	12.26	
Context Free	Experimental 1	19	5.94	9.38	.875
	Experimental 2	19	4.78	11.44	
	Control 1	15	3.66	7.13	
	Control 2	15	6.60	13.69	
Word Test	Experimental 1	19	2.73	3.55	.461
	Experimental 2	19	3.00	7.48	
	Control 1	15	2.80	4.87	
	Control 2	15	6.00	9.62	

Table 2

Logo Inventory Pretest and Posttest Mean Scores

Context	Group	Mean Pretest Score	Mean Posttest Score	Difference
Full Context	Control Experimental	26.83 27.42	31.03 37.26	4.20 9.84
Partial Context	Control Experimental	14.00 13.76	17.46 27.18	3.46 13.42
Context Free	Control Experimental	5.13 5.36	7.83 12.94	2.70 7.58

Table 3

Mean Gain Scores by Context for Experimental and Control Groups

Context	Group	n	Mean Gain Score	Standard Deviation	t Value Probability*
Full Context	Experimental Control	38 30	9.84 4.20	6.74 4.85	.000
Partial Context	Experimental Control	38 30	13.42 3.46	8.73 6.09	.000
Context Free	Experimental Control	38 30	7.57 2.70	7.98 4.46	.002
Word Test	Experimental Control	38 30	1.42 1.50	2.97 4.36	.933

* Separate Variance Estimate

it is interesting to note that the highest gain score was made in the partial context situation, 13.42. The lowest gain score was made in the third logo presentation, context free. In this case the score was 7.57. The first logo presentation, full context, resulted in a gain score of 9.84.

One possible explanation for this finding is that because the children were exposed to environmental print in the world around them, they could not help but become aware of logos. As a result, on the logo inventory, it seems likely that they recognized the greatest number of logos in the context most closely resembling the logo as it appeared in the environment. Because the full context situation was already familiar to them, a ceiling effect occurred and the children did not make the greatest gains in this context.

The fact that the greatest gains occurred in the partial context situation provides support for a treatment effect. Before treatment, the children were aware of environmental logos and were able to recognize them; however, they may have been focusing mainly on the environmental cues and were not really attending to the graphic cues. Support for this inference is based upon the fact that as the context decreased, so too did the pretest scores (see Table 4). Because the treatment highlighted, both orally and visually, the letters that were embedded in each logo display, the children became increasingly aware of the role of the graphics in conveying meaning. It is possible that the treatment enabled the children to move one step further along the

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Table 4

Percentage of Pretest Response Types

Response Types	Full Context	Partial Context	Context Free
Exact	28.2%	17.5%	6.9%
Partial or Extended	12.6%	3.7%	1.9%
Generalized	26.8%	8.8%	1.7%
No Response or Incorrect Response	33.2%	70.0%	89.5%

Note. Total possible number of responses for each context is 1360

continuum of reading abilities. Although still relying on environmental clues, the children became better able to focus their attention on the graphics in the logo displays.

In the third logo presentation, context free, significant differences existed between the experimental and control groups, thereby providing further support for the effectiveness of the treatment.

Clay's Word Test (1979) was thought to be an extension of the logo inventory in that, if children in the treatment group could make significant mean score gains in the third context of logo identification, it might be possible for them to make significant gains on a traditional reading test that involved identifying primer words in isolation. Analysis of variance and a t-test for the word test resulted in no significant gains for the treatment group over the control group. Perhaps the identification of primer words as required by the word test and the identification of logo words on the logo inventory were not comparable tasks. Although both tasks involved the identification of words written in standard print without any supporting contextual cues, it is possible that the word test was too difficult for the children and was too far removed from the task of logo identification even in a context free presentation. The fact that the children were unable to bridge the gap between reading logo words in isolation and reading primer words provides

further support to the claim that conventional reading does not occur naturally, but rather requires certain prerequisite skills.

Frequency of Response Types by Context

Because the coding system of response categories adopted for this study was determined by the amount of graphic involvement present in each response, the frequency of response types provides some indication as to the extent to which children are attending to the graphics while reading environmental logos. The scoring of responses involved a four point scale adapted from Brailsford (1984). Ratings were assigned as follows:

3 points - exact response (ie. "Lego" for LEGO)

2 points - partial or extended response, includes some of the print from the logo (ie. "Lego blocks" for LEGO)

1 point - generic response (ie. "blocks" for LEGO)

0 points - no response or "I don't know"

Based on the pretest frequency of response types, there was a dramatic decrease in the percentage of exact and partial or extended responses as the context was systematically removed (see Table 4). The percentages of exact and partial or extended response types were combined because these response categories required the children to include all or some of the print from the logo displays. In the first condition, full context, 41% of the responses were exact, partial or extended, whereas in the

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third condition, context free, only 9% were of this type. In
addition to this decrease in responses containing some element of
graphic involvement, there was a substantial increase in
unacceptable responses. These included responses that made no
sense given the stimulus, "I don't know" responses, and no
answer. The percentage of this response type was 33.2% in full
context, 70% in partial context, and 89.5% in context free.
These results indicate that the children were increasingly less
successful at identifying environmental logos as the context was
removed. It would seem, therefore, that they were relying on
context cues rather than graphic cues in order to identify the
environmental print.

As the context was removed, there were other responses and
behavioral trends that emerged. In the third context, context
free presentation of logo items, many of the children were unable
to use the graphics effectively once the other cues had been
removed. This resulted in responses that were not generally seen
in the other two contexts. Letter naming was a predominant
response that children made in an effort to make some sense out
of the print that was in front them. Although naming the first
letter of the logo item was evidence that children were attending
to the graphics, it was not a successful strategy for deriving
meaning from the stimulus. Another common occurrence was the
repetition of previously correct responses. For example, if
children said, "Lego" in response to the LEGO logo and were
confident that this was a correct response, they would be

inclined to offer Lego again when presented with other logo displays. Here again, children realized that print carried meaning although they were unable to successfully decode the graphics in order to correctly identify the logo items. Clearly, the third presentation of logos, context free, proved to be too challenging for some children. Whereas the children almost always tried to provide a response to the logo items in the first two contexts, the print only context seemed to present a barrier for some of them. Upon presentation of the print only context, some of the children simply refused to respond or responded by saying "I don't know how to read". Those who did respond by sounding out the logo words often came up with nonsense words that had no meaning. There were no nonsensical words given as responses in either the full or partial context of logo presentation.

Besides the emergence of different response types to the context free logo identification task, specific behaviors appeared that were not prevalent in the other contexts of logo presentation. With the systematic removal of environmental cues came an increase in frustration for some children. Unable to respond correctly to the graphic cues, these children became fidgety and quickly lost interest in the task at hand. They exhibited a much shorter attention span and appeared to be uncomfortable because of their obvious inability to interpret print.

Summary

The results of this study offer support for Wepner's contention that environmental print reading could be an important tool in early literacy programs. Of particular relevance is the fact that instruction with environmental print resulted in significant differences between the control and experimental groups across all contexts of logo presentation. The children in the experimental group identified significantly more logos than the control group as a result of the treatment.

In addition to this finding, present results are consistent with those found elsewhere in the literature. This investigation has found that children's identification of environmental print decreases dramatically as the context is removed. It has also explored the claim that readers and nonreaders differ in how they respond to environmental print. While no definite conclusions can be drawn related to this component of the study, there is some indication that readers and nonreaders differ in their responses to environmental print.

Thus, this study provides evidence of the value of environmental print reading and supports some of the previously held notions regarding print awareness in young children.

CHAPTER FIVE

CONCLUSIONS AND IMPLICATIONS

Conclusions

This study was designed to investigate whether there would be a transfer of learning between the reading of environmental print and conventional print. It was proposed that a treatment involving instruction with environmental logos could help bridge the gap between environmental print reading and standard print reading. Conclusions relate to two widely investigated issues in the area of emergent literacy: print awareness in young children and the role of environmental print. Based on present findings, the following conclusions can be drawn:

1. Children are aware of environmental print and the fact that it carries meaning.

2. Children are most successful at identifying environmental logos when they are presented in a full context situation. As the context decreases so too does the number of correct responses.

3. Instruction that involves environmental print is effective in helping children develop from context reliant readers, those who utilize mainly environmental and context

cues to decipher print, to graphic reliant readers, those who rely mainly on the letters.

4. Children may require certain prerequisite skills before being able to read conventionally. These skills might include knowledge of letter names, phoneme-grapheme relationships, and letter cluster patterns as well as an ability to combine phonemes in order to produce words that make sense.

Environmental Print Awareness

This study provides evidence that children are aware of environmental print and its potential for conveying meaning. On the pretest, all of the children, control and experimental, were able to identify some of the logos in full context. As well as being aware of environmental print, the children in this study also knew that meaning could be attributed to the logo displays across all contexts. As the amount of context present in the logo displays decreased, children had to shift from context reliance to graphic reliance in order to identify the logos. In spite of the fact that most of the children were unable to correctly identify the logos once the context was removed, they continued to offer responses. These responses were usually generic versions of the logos, previously correct responses or letter names. For example, when presented with the Safeway logo children might have responded with store, McDonalds, or S.

Although the children were not highly successful at decoding and ultimately deriving meaning from the graphics, their persistence at providing responses and the types of responses offered, indicated that they were aware that print carried meaning. Hiebert (1978), McGee, Lomax, and Head (1988), Goodman and Altwerger (1981), and Harste, Burke, and Woodward (1984) support this finding and believe that children's responses to environmental print indicate an awareness of graphics.

Sucessful Identification of Logos in Full Context

Because the highest frequency of correct responses occurred in the full context presentation, it can be said that these children, who were mainly nonreaders, were able to use context effectively to identify the logo displays. They were most successful at reading environmental print when the print itself was embedded in a display containing a variety of clues (i.e. surrounding environment, colour, and stylized print). As the context decreased, however, the children became less proficient at identifying the logo displays. Other researchers (Goodman & Altwerger, 1981; Goodall, 1984; Hiebert, 1978; Masonheimer, Ehri, & Drum, 1984; Ylisto, 1967; McGee, Lomax, & Head, 1988) corroborated these findings and found that children were able to make sense of written language when it was presented within its environmental context, but were not as successful when the surrounding clues were removed.

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Given the fact that many of the children in this and other studies were unable to identify environmental logos when they were presented as print only, the question remains as to whether repeated exposure to gradually decontextualized environmental print leads to conventional reading. Researchers are clearly divided in terms of the value of environmental print reading as a precursor to conventional reading.

Instruction with Environmental Print

By far, the most significant conclusion of this investigation is that treatment with environmental logos can effect a transfer of learning between context reliant reading and graphic reliant reading. This does not mean that children will be able to read conventionally once they can identify environmental logos; however, it is possible that instruction with environmental print can help children further develop graphic awareness. Through reading, writing and spelling familiar logo words, children can be made aware of the print embedded in the logo displays. This interaction with environmental print, may ultimately lead to a greater awareness of and ability to decode graphics in order to derive meaning from print.

To a great extext, the results of this study refute Masonheimer, Drum, and Ehri's conclusion that environmental print reading does not lead to conventional reading. Moreover, this

study has demonstrated that environmental print reading combined with mediation is an effective tool in helping children develop along the literacy continuum as outlined by Mason (1980). With mediation, children are able to learn meaningful environmental logo words in much the same way as they learn sight words.

Present findings are consistent with Mason's contention that natural stages of development exist as children learn to read words. Mason has identified three levels that children pass through on their way to developing word reading competency. These levels, defined by the type of words that the children are able to read and the strategies that they appear to be using to decode words, are context dependency, visual recognition, and letter-sound analysis. Children who are context dependent are only able to read signs and labels in the environment and perhaps their own name. At this level, "children attend to overall visual cues rather than to letter information" (Mason, 1980, p. 217). Once children are competent at identifying words in context, they then move on to the visual recognition level. At this level, they are able to identify a few three letter words out of context and often provide words that begin with the same initial consonant as the words that they were presented with. These children are beginning to attend to the graphics in a visual display and are learning to analyze words into their letters. At the letter-sound analysis level, children are able to sound out and read multisyllabic words and are able to read stories by themselves.

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While most of the children in this study were at the context dependent level and could identify environmental logos only when they were presented in full or partial contexts, there were a few children who were beginning to or who could identify the logo words out of context. The children who were considered to be at Mason's visual recognition level were able to identify a few logos (ie. STOP, 7-up, A & W), offered responses that began with the same consonant as the original logo displays (ie. the child said "Wendy's" when presented with White Spot), or named the letters contained in the logo displays. Only 3 children out of the entire sample of 68 were considered to be at the letter-sound analysis level and could successfully sound out multisyllabic logos and words.

Although the three contexts of logo presentation used in this study do not correspond exactly to Mason's three levels, it can be said that in both cases children move along a continuum in developing word reading knowledge. Initially children rely heavily on context to attribute meaning to a graphic display. They then move to a more refined attention to graphics and finally to very specific attention to phoneme-grapheme relationships. In this study the greatest gain was made in identifying logos that were presented in partial context. This provides evidence that instruction with logos can be used to move children away from being totally dependent on context. To some extent, this finding is congruent with Mason's claim that the greatest shift in word reading ability occurred between context

dependency and visual recognition. In both cases, the most significant result was found when children made the initial transfer from context reliant to graphic reliant reading.

Prerequisite Skills Required For Conventional Reading

Present findings are also consistent with the view that children may require certain prerequisite skills before being able to read conventionally. Because there was no significant difference between the gains made by the experimental group over the control group on Clay's Word Test, it can be concluded that treatment with logos alone was not sufficient to move children entirely from context reliant to graphic reliant reading. Other researchers, Ehri, 1987; Goodall, 1984; Masonheimer, Drum, and Ehri, 1984; Richgels, McGee, Hernandez, and Williams, 1987; maintain that environmental print reading alone will not automatically enable children to make the shift to conventional reading. Based on the findings of this study, however, it may be that instruction with environmental print facilitates the development of word reading competencies as outlined by Mason (1980).

Implications

Theoretical

Unlike most of the previous environmental print research that has focused mainly on children's responses to environmental print in testing situations, this study has undertaken the use of instruction with environmental print as the treatment. Because treatment resulted in significant mean gains across all contexts of logo presentation, there is a strong theoretical implication that helping children attend to print in environmental logos can foster literacy development. Given that children quite commonly begin to recognize sight words as they learn to read, the recognition of environmental logo words, which has been compared to the recognition of sight words, may be a valuable stepping stone from context reliant reading to graphic reliant reading. Moreover, environmental print, could in fact provide a vehicle for the instruction of other reading skills and knowledge that would enable children to make the transition to conventional reading.

To reiterate, this does not imply that children will move naturally from environmental print reading to conventional reading; however, it does place value on the role of environmental print in the literacy development of young children.

<u>Curricular</u>

Because educators strive to provide children with meaningful curricula, it is only logical that language and literacy activities related to environmental print be included in early literacy programs. Familiar environmental print that children have seen repeatedly in their environments can be used effectively to bridge the gap from home to school. In fact, it is believed that beginning reading programs should include words that have personal meaning to the children involved (Hiebert, 1983). Inclusion of personally chosen environmental print items can help children feel ownership of the class as contributors to their own literacy programs (Kirkland, Aldridge, & Kuby, 1991). These environmental print items serve as a basis for oral and written language development.

Since instruction with environmental print appears to facilitate literacy development, there is a need to discover how the reading and writing of environmental print can best be incorporated into the literacy programs of young children. The following are some suggestions for using environmental print in the classroom.

1. journal; As outlined in this study, children would glue environmental logos into a booklet and would then draw, write, or have sentences/words scribed for them.

2. logo bulletin board; With the help of parents, children would cut environmental logos out of books, papers, napkins,

or other items that contained print found in their
environments. These logos would then be brought to school
and posted on a bulletin board.

3. pocket chart stories; Using sentence frames and logos
that the children have brought in, logo stories would be
created.

(ie. I eat at McDonald's.

   I eat at Dairy Queen.

   I eat at A & W.

   But, I don't eat at The Bay.)

After being read chorally, children would then create, read,
and/or write their own stories using the same sentence
frame.

4. logo alphabet; Alphabet cards or posters would be made
using environmental logos (ie. M - McDonalds, W - White
Spot) (Kirkland, Aldridge, & Kuby; 1991).

Implications for Parents

Because children know much about print before coming to
school, parents play a vital role in their children's formative
language and literacy development. Although daily activities may
appear to be incidental, the learning that occurs is not. With
an increased awareness of the value of identifying print in the
environment, parents could enhance their children's literacy
development by pointing out the print on labels, having children

identify the print, and naming the letters of various environmental print displays. If done in a positive manner, these activities should help children develop greater print awareness, alphabet name knowledge, and perhaps even word identification ability before coming to school.

Future Research

There is a need to extend the current body of knowledge related to the role of environmental print in the development of print awareness and word identification among young children. There is also a need to determine children's existing knowledge of print and to design literacy programs that build on what they already know.

This study found that instruction with environmental print was effective in furthering literacy development, therefore future studies could be conducted to examine whether or not these results are generalizable to other populations. It would be interesting to explore the effectiveness of environmental print instruction on ESL and Special Needs children. It is very likely that familiar environmental print items could be used successfully to foster the language and literacy development of these children.

Further studies are also necessary to determine the skills and knowledge that children need in order to make the shift to conventional reading. What exactly is it that enables children

to rely on and interpret graphic information successfully? Current research suggests that letter naming ability may not account for the fact that some children read while others do not (McGee, Lomax, & Head, 1988). It has been suggested that the ability to use invented spelling is a better determiner of conventional reading ability (Richgels, McGee, Hernandez, & Williams, 1987). If it is phoneme-grapheme awareness and not letter name knowledge that distinguishes readers from nonreaders, investigations of the use of environmental print to develop this awareness would be of interest to the field. Future studies should provide further insight as to how children become conventional readers and how instruction with environmental print can facilitate that development.

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APPENDIX 1

PRESENTATION OF LOGOS BY CONTEXT

71 a

Full Context	Partial Context	Context Free
Sun Maid Raisins	Pepsi	McDonalds
STOP	Coke	Burger King
Sun Rype Apple Juice	Cheerios	Dairy Queen
Dairyland Milk	Dairy Queen	7-up
McDonalds	STOP	White Spot
Shell	White Spot	Cheerios
7-up	A & W	STOP
Pepsi	Safeway	Dairyland Milk
Lego	Oreo	Shell
The Bay	Burger King	Oreo
Burger King	Chevron	A & W
Oreo	The Bay	Jello
Safeway	Lego	Lego
Dairy Queen	Jello	Sun Maid Raisins
Chevron	Sun Maid Raisins	Sun Rype Apple Juice
White Spot	7-up	Safeway
Coke	Sun Rype Apple Juice	The Bay
Cheerios	Shell	Coke
Jello	Dairyland Milk	Pepsi
A & W	McDonalds	Chevron

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APPENDIX 2

PRESENTATION OF CONTEXTS

Full Context

Partial Context

Context Free

APPENDIX 3

CLAY'S WORD TEST (1979)

APPENDIX 3

<u>Word Test</u>

I

Mother

are

here

me

shouted

am

with

car

children

help

not

too

meet

away