1990

Emergent Literacy Behaviors And Children'S Constructions Of Scenes.

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Order Number 9114888

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University of Alabama at Birmingham, 1990

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EMERGENT LITERACY BEHAVIORS AND CHILDREN'S CONSTRUCTIONS OF SCENES

by

JACQUELINE ALLISON OSBORNE

A DISSERTATION

Submitted in partial fulfillment of the requirements for the degree of Doctor of Philosophy in the Department of Curriculum and Instruction in the Graduate School of the University of Alabama at Birmingham

BIRMINGHAM, ALABAMA

1990

ABSTRACT OF DISSERTATION
GRADUATE SCHOOL, UNIVERSITY OF ALABAMA AT BIRMINGHAM

Degree Ph.D. Major Subject Early Childhood Education and Development

Name of Candidate Jacqueline Allison Osborne

Title Emergent Literacy Behaviors and Children's Constructions of Scenes

Children's constructions of scenes were examined in order to investigate the coordination they made between pictures and dictated texts in those scenes. The design used a quasi-longitudinal grouping of eight subjects between the ages of 3 and 5. The subjects were 3-4 months apart in age, and their development was followed for 4 months. Matching cohorts of the same ages from Head Start and from a private nursery school were also studied for purposes of comparison. The children were asked to draw pictures and to dictate a story about their productions. The interviews were taped and transcribed.

The pictures, dictations, and interview transcripts were integrated with the interviewer's notes on the observation of the production of the scenes. The resulting data were examined by producing a taxonomic analysis and following the technique of Spradley (1980). The resulting domains were reviewed for semantic similarity and then organized into larger domains, which were then described in detail.

The major findings were that the subjects moved toward an integration of picture and text in the preschool period; that they used spatial placement to identify and guarantee the meaning of their scenes; and that they used left-right spatial orientation in writing their names once they could produce two letters of that name.

Abstract Approved by: Committee Chairman Milly Cowles, Ph.D.

Program Director Anne Comeaux Shelly, Ph.D.

Date 12/10/90 Dean of Graduate School Anthony Hand

ACKNOWLEDGEMENTS

Sincere appreciation is expressed to Dr. Milly Cowles, Chairman of the Dissertation Committee, for her generous donation of time, patience, and guidance in directing this dissertation. Warm thanks are also extended to Dr. Anne Eddowes, Dr. Gary Manning, Dr. Jerry Aldridge, and Dr. Gypsy Clayton for their expertise and helpful suggestions.

It is with pleasure that the children of Kilby Laboratory School are acknowledged for their participation in this study. The children of Handy Head Start and Playcare Day Care Center are also acknowledged for their contributions to this study. The administrators of the school are warmly thanked for their cooperation and assistance.

Most importantly, the writer wishes to express her love and gratitude to her husband, Dr. Thomas Osborne, for his great patience and emotional support throughout this study.

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CHAPTER I

INTRODUCTION

> ...to completely analyze what we do when we read would almost be the acme of a psychologist's dream for it would be to describe very many of the most intricate workings of the human mind, as well as to unravel the tangled story of the most remarkably specific performance that civilization has learned in all its history. (Huey, 1908/1968, p. 8)

One of the oddest and most interesting things about the human species is that they live in a mental world that is constructed from symbols. It is possible by means of this symbol system to talk and think and read about Alpha Centauri or the Atlantic Rift Valley without ever going there. Those can be places in a mental world, although they are likely not to be a part of a person's environment.

This symbol world is constructed from what Charles Sanders Peirce (1932) called the semiotic function, that is, the mental ability to signify an object or idea, and, thus, create a mental representation of that object or idea. This semiotic function appears during the first years of life, when children develop complex sensory-motor sequences of behavior to elaborate and integrate the processes of sensorial perception and motor routine actions in the environment. One of the first evidences of the semiotic function is the beginning of play. A cardboard

box can become a car or a bed for a doll. A toy telephone elicits a phone call routine. Objects begin to represent, or stand for, other objects in the child's environment. Language is the semiotic function in full flower. Humans can speak, then read and write, of what they know, then of what they learn from what others speak and write. They acquire their symbols even when they have not had their experiences first hand. The development of the ability to use language is believed to be a unique attribute of the human species.

Reading and writing are complex semiotic procedures, built on a complex foundation of processes, with hierarchies of sub-skills and concepts. Educators have seldom been able to penetrate below the surface of reading and writing behaviors to examine the complex behaviors beneath. Reading is something that the average adult in a literate society does well and depends on for information necessary to function. Learning to read probably begins at birth when the newborn child begins to process visual information about the environment. He proceeds from there to grow into complex ways of understanding the visual world, which include the written page of storybooks and eventually textbooks.

How humans read and, indeed, how they process visual information of any kind, is a highly tangled web of processes and conventions that researchers are spending a great deal of time and energy unraveling. They have looked

at many facets of the child's environment in searching for ways to help children construct the underlying skills, abilities, and cognitive understandings necessary for reading.

The nurturing environment of the family has been investigated for its contribution. Some families use literacy skills daily, and inculcate them in their children, whereas others are less able to provide experiences with literacy. There are many possible factors at work in such a setting, which have made it a rich field for investigation.

The inclinations of the child have been investigated as well, because some children are more interested in literacy activities at an early age, and ask more questions about aspects of print than others. Some of these children construct concepts of reading before schooling ever takes place. Whether factors interior to the child or in the environment account for the young child's search for meaning in print is at present unknown.

Internal processes are another focus of investigation. Memory, perception, attention, and the like have all been investigated as possible sources of variance in the interest in reading and the ability to read. The theory of semiotic function presupposes that humans are active in the construction of meaning from the environment. Each person can be said to construct a world from the raw data of experience, first through signs, as he explains experience

to himself, and then through symbols, as he explains his experience to others and accepts their explanations to him in socially conventional language.

There are two major sets of symbolic systems that must work together to produce the activity that is reading. One is verbal representation, or language, and the other includes nonverbal representations such as motor schemas, information about nonverbal objects, and nonverbal events (Paivio, 1986). Verbal representation is generally considered to be the foundation of all language-related abilities, with written language skills "piggybacked" on to oral language. Verbal representation is accomplished through the interaction of subsystems that process phonetics, semantics, syntactics, and pragmatics (Gardner, 1985).

Although reading and writing, the acts of literacy, are usually thought of as language-based, they also require spatial knowledge for actions such as recognition of instances of print, an understanding of the transformations of print, and the production of graphic likenesses. This kind of knowledge is drawn from spatial representation, which is a combination of

> loosely related capacities: the ability to recognize instances of the same element; the ability to transform or to recognize a transformation of one element into another; the capacity to conjure up mental imagery and then to transform that imagery; the capacity to produce a graphic likeness of spatial information. (Gardner, 1985, p. 176)

Gardner proposed a theory of multiple intelligences in which linguistic and spatial intelligences are separable and are organized differently in the brain. His theory implied that children, who would have more highly developed intelligence in one area or the other, might rely more heavily on one ability or the other in learning to read. His theory proposed no mechanism to explain how the two intelligences are combined to produce the activity of reading or writing.

Paivio (1986) proposed a theory of dual coding to account for the combinations of verbal and nonverbal (including spatial) representations. In it there is the assumption that the two are functionally independent, so that one system can be active without reference to the other. Representations in the two systems are interconnected by access routes. Paivio's theory did not hypothesize a route of development by which the child would develop the proposed access routes. He implied that they would develop through experiences with the environment.

If one accepts the hypothesis that verbal and nonverbal systems are separate in organization in the brain, then access routes must be established between verbal and nonverbal systems during the course of development. The child must be able to understand print as spatially organized language that can be recoded for linguistic representation in order to understand written language.

Some researchers have stressed that children can and do move across the symbolic modes of verbal and nonverbal (graphic) expression to communicate (Brittain, 1979; Emig, 1977; Kellogg, 1969). Others have pointed out that the picture in a book is most salient to children, as they are unsure of the purpose of print on a page (Hiebert, 1983; Isom & Casteel, 1986) and that they ask questions about the print (presumably developing knowledge of print) when it is unusual or stands out in some way (Sulzby, 1985; Yaden, Smolkin & Conlon, 1989).

The first group of researchers has typically investigated children's production of graphic forms, including print, whereas the second group has focused more on children's comprehension of print embedded in the environmental context of a page or a scene. Ferreiro and Teberosky (1979) found that children did not distinguish between the two symbol systems in the beginning stages of reading. They also found that the children they studied had difficulty moving back and forth between drawing and writing, which could be seen to indicate that the access routes between the two systems are relatively undeveloped at this stage.

It is easy to underestimate the task proposed for the child by a blank sheet of paper. The visual space of the paper, the manipulation of the writing/drawing instrument, and the organization of the production must be brought together into some sort of workable order (Freeman, 1977).

The relationships among the elements of the scene, whether pictured or written, must be organized into semantic or syntactic relationship, and an overall representation achieved that integrates the various entities and relationships that are present in the scene produced (Biederman, 1981).

There is clearly a need for more research into how children orient to the page of a text and what they look for and find there at various stages of their development. Early reading has been found to have a positive effect on later reading development. What constitutes important strategies of orienting to print at early stages may become automatic and unnoticeable at later stages in the development of reading skills. Reading is a complex behavior comprised of subskills, but the exact type of hierarchy any child might build from these subskills is unclear at the present (Samuels, 1979).

How do children understand the separate function of picture and print on a page, and when and in what way do they explain that to themselves? What is their mental arrangement of the place the picture or the print should occupy, and how do they reconcile the different functions and rules of the two representational systems? Do they expect the two systems to follow similar rules and have similar attributes, or do they at some very early age distinguish the form and function of one from the other?

These questions have to do with the scene that is present on the page of a storybook or a drawing by the child. There are rules for the construction of scenes that children learn very early from experience in the physical world. Such rules include the operation of gravity, and the rule that objects occlude other objects behind them; the probability that certain objects will be present in certain scenes and in particular positions in those scenes (a stove would be in a kitchen and would not be on the table); and that objects have familiar sizes (Biederman, 1981).

What is the place of print in such scenes? If the stove were on the table the child would ask about it. If the print is at the top of the page instead of the bottom it may pass without comment. Do the laws of gravity, then, not apply to print? And if not, why not? When do children learn to process the print differently? Or have they simply learned to ignore it, as an unessential part of the scene, until something in the environment alerts them that the social world around them requires attention to this special element on the page?

Do children prefer to draw first and then add a print caption or do they prefer to begin with a story line? Is there a place on the page that they designate for the print, or do they place it on any space that remains after they have drawn what they wish? Is there a coordination between picture and label or story? Where do they place

their names? There are many questions open for investigation in the way that children compose these scenes.

Purpose of the Study

The focus of the study was on some of the links that children build between the verbal and nonverbal systems of representation as they develop print awareness in the pre-school years. A major objective was to determine the ways in which children constructed scenes in their drawings and added print to those scenes. The questions that were considered were how children understand the separate function of picture and print on a page, and in what way they explain that to themselves; their mental arrangement of the place the picture or the print should occupy; whether they expected the two systems to follow similar rules and have similar attributes, or whether they distinguished the form and function of one from the other.

Spradley's (1980) ethnographic techniques of participant observation and ethnographic interview were used to investigate these questions. The children's behaviors and knowledge about the cultural conventions of drawing and writing were observed and their explanations of their productions were recorded. A quasi-longitudinal grouping of nursery school children was selected for study. They were 3-4 months apart in age and were followed for 16 weeks, until their ages overlapped. Triangulation was

accomplished by gathering data from children from Head Start and day care who were of similar ages.

Definition of Terms

Picture was operationally defined as any scribble or graphic representation a child made in response to an invitation to make a picture. Likewise, writing was operationally defined as any scribble or conventional letter production a child made in response to an invitation to write something or to write his name.

Significance of Study

Completion of this qualitative study has resulted in the identification of variables that are important to the phenomena under consideration but that might have been missed if the researcher had decided what variables to focus on and measure ahead of time. Now that those variables have been described they can later be studied by quantitative methods where that seems appropriate.

The results of this investigation provide evidence that children do attend to spatial relationships in constructing concepts of literacy. Other interesting avenues of research suggested by this study are in the areas of the development of domain-specific knowledge systems; the development of access routes between verbal and nonverbal knowledge; and children's development of print awareness embedded in visual scenes. The findings supply another tiny piece of the puzzle of how a human

learns to represent the world to himself through reading and writing.

Scope and Limitations of the Study

The scope was limited by the small sample size and restriction to one geographic locality. The limitations are those common to qualitative studies. Validity should be high because the phenomena under study were well described by the technique employed. Reliability is limited due to the small sample size.

CHAPTER II

REVIEW OF THE LITERATURE

The ability to create signs and symbols is one of the most notable characteristics of the human species. The 18-month-old child who uses a block to represent a telephone or a truck is exercising the semiotic function, as a physicist is when describing a trajectory using algebraic equations. The difference between them is possibly one of developmental change, not functional ability.

Semiotic functions were first described by Charles Peirce (1932) who described a developmental progression of signs from icon to index to symbol. His theory described icons as signs that are related to the things they stand for by some direct physical resemblance, as when a hieroglyph picture of a house stands for a house. An index is a sign that is related to something it stands for because it participates in or actually is a part of the event or object for which it stands. Smoke can be an index of a fire because they are part of the same phenomenon. Symbols are signs that are related to the things they stand for by an arbitrary bond agreed upon by those who use the symbols. When cat is used to mean a particular kind of mammal, the written word is a symbol for that animal. A sign is a symbol if it is neither an icon nor an index.

Jean Piaget (Inhelder & Piaget, 1958) surmised that humans represent reality to themselves by building up an internal model of the world through their experiences with it. He suggested that the earliest form of internal representations is deferred imitation, by which he meant the imitation of a behavior hours or days after the child has observed it. He also identified two types of internal representations, symbols and signs. The symbol refers to those idiosyncratic representations used internally to explain the world of phenomena to oneself. The sign is a learned conventional representation that can be used for communication because it is a cultural artifact. Children make less use of symbols as they learn more of the conventional signs. They may not use the signs in a consistently social manner in the early years, as anyone who has sat through a session of egocentric speech with the 3-year-olds in the housekeeping corner can testify.

The ability to use signs and symbols is the foundation of the human ability to read and comprehend print. Humans have been using their abilities to create and understand print for some thousands of years, but the process by which they do this has been studied for only the last hundred years. The vast amount of scholarly research devoted to how humans read has shed light on some aspects of the process, but much remains to be explored.

Reading Process Research

The process by which the human mind comprehends the written page is an enduring source of fascination. A. R. Luria (1970), a Russian neuropsychologist, developed a description of the brain in which particular zones synthesize into coherent wholes collections of information from our memory and our senses. In his description of complex forms of behavior, actions like reading depend on the coordinated operation of several areas located in different zones of the brain. The complexity of a task like reading defies simple explanations of development and behavior and requires research along many lines to arrive at even the simplest description of the process.

Venezky (1984) identified at least four, and perhaps as many as six, separate lines of reading research, each with its own history and methodology. Basic research on reading processes, research on reading instruction, the testing movement, and the study of literacy and its role in society throughout history are the major areas of interest he has identified. In addition, he identified research on legibility, readability, and reading disabilities as significant areas of research.

Although these various research areas all dealt with the area of reading, they did not necessarily have the same goal in view. Research on reading processes is more similar to other basic psychological research than it is to research on the practice of reading instruction, and has

never had as a primary goal a direct effect on practice (Venezky, 1984).

The development of research on reading processes is a part of the history of cognitive psychology. Cognitive psychologists, studying traditional psychological problems, occasionally found the study of reading to lend itself to their overall goals. They neither began with instructionally defined problems nor applied their results to pedagogical practice.

The first research studies in the area of reading processes were done by James McKeen Cattell in the 1800s in Leipzig in the laboratory of Wilhelm Wundt, the founder of cognitive psychology. Cattell did research on letter and word recognition, legibility of letters and print, attention span, and parallel processing of information. Emile Javal, at the same laboratory, demonstrated that eye movements proceed in jumps. During the next 20 years, experimental psychology examined "cues for word recognition, the eye-voice span, the role of peripheral vision in reading, memory for connected text, and subvocalizations" (Venezky, p. 7, 1984), and developed the empirical basis for our present knowledge of reading processes.

The study of memory contributed the insight that the learning of new material is aided by the structure of previously acquired knowledge (Henderson, 1903; James, 1901). Bartlett (1932) reached similar conclusions, and

described schemata as being built from past experiences, and remembering as a constructive process drawing on schemata often not closely connected. Thorndike (1917) concluded that reading was a highly active process involving higher order organization and analysis.

Between 1908, when Huey's The Psychology and Pedagogy of Reading was published, and 1968 when it was reissued, the phenomena investigated by these early researchers had been more precisely measured and described, but little had been added to their empirical description of the reading processes (Venezky, 1984). The lack of further progress in this direction of research on reading processes did not mean that they had been fully described, but rather that experimental psychologists were shifting their interests to behaviorism, leaving the study of reading to educational psychologists. Their interest, in turn, was captured by the need to measure progress objectively in order to study individual differences and learning disabilities which were incorporated into Progressivism. Diagnosis and assessment became the major focus of interest in the study of reading.

The collected literature on diagnosis and assessment is very extensive. Venezky (1984) characterized it, however, as a classification of "almost random searches for relationships, unanchored by any theoretical framework and often unbothered by the limitations of the methods employed (p. 17)." The major trends in this literature are school surveys and studies of outcomes of instruction. The first

has focused in recent years on trying to isolate school-wide factors that can account for achievement in reading, using a case-study methodology. The second trend has been to develop reading achievement tests and diagnostic tests into an inescapable ritual of school life. Beginning in the late 1950s, the availability of federal funding for basic research in education and a renewed interest in cognitive processes have led to a return of interest in the study of reading processes. Some of the topics that have been investigated are letter recognition, comprehension, letter-sound correspondence, word recognition mechanisms, and subvocal speech. The present-day application of such research, however, is aimed toward the development of information processing models for vision rather than an understanding of the nature of reading as such.

Reading acquisition has been assumed for many years to be dependent on explicit instruction. It has been thought to involve "understanding how to relate meaningful utterances to discrete written units, acquiring strategies to analyze words into phonemes and distinguish phonemes as single letters and letter clusters ..." (Mason, 1984, p. 510).

Reading Instruction for Young Children

Within this framework, reading instruction for young children prior to first grade entry has been controversial. There are two important philosophical and pedagogical points of view on the education of the young child which

have influenced thought about reading instruction for this age group. The first stresses the maturationist view, that the child develops abilities and skills which are within him. Important early practitioners and philosophers of early childhood education such as Rousseau and Froebel held this view, and more recent practitioners and theorists such as Gesell and Piaget have continued in this tradition. The other point of view descends from John Locke and the later behaviorists, who believed that growth and development accrue as a general result of environmental influence and active instruction. Practitioners from Montessori to Bereiter and Engleman have adopted this approach to education.

The maturationist view has been dominant in this century, with a resulting caution about providing reading instruction for the young child. For example, a 1960 report of the Educational Policies Commission of the National Education Association argued against reading instruction for kindergarten children because

> they believed that the relative function of maturation and experience had not been resolved because some skills seem to develop regardless of practice opportunities, others require both training and practice, and still others develop only with maturation, even though practice is given. Reading skill was thought to be characterized as a function primarily of maturation. (Mason, 1984, p. 508)

Claims that a certain level of readiness, or maturation, is necessary before the beginning of reading instruction can be found in 19th century educational

tracts. The empirical basis for these beliefs (Coltheart, 1979) rested in studies which indicated that children with mental age scores above 6.5 - 7.0 obtained scores above a chance level on tests of reading and phonics knowledge. The idea of reading readiness is still widely accepted, although more recent research has indicated that the relatively simple classical notion of maturation, in which a child develops reading readiness as a result of an unfolding innate developmental plan, is untenable.

The emphasis on providing a head start to young disadvantaged children, beginning in the 1960s, combined with a back-to-basics movement in the public schools more recently, has led to a renewed interest in reading instruction for the very young. Initiatives at the state level to develop public education programs for 4-year-olds have also stirred debate on appropriate educational instruction for the very young child in recent years. For example, the National Assessment of Educational Progress (1985) confirmed earlier research indicating that better reading skills among junior high and high school students were dependent on improved instruction in preschool and the early school years.

Critics of the maturational point of view have maintained that the idea that children will eventually learn to read if they are allowed a longer time to mature may actually be harmful. Clay (1972) argued that "to relax and wait for 'maturation' when there are many concepts and

skills to be developed would appear to be deliberately retarding the child (p. 6)." Mason noted that it is the children who are behind at the beginning of first grade because they have not had early reading experiences who often continue to be poor readers. The idea that they can catch up as a result of maturation is probably a myth.

Maturation can be considered in at least two ways, one of which is exemplified by Jeanne Chall's (1987) stages of reading development, a 6-stage schema, from pre-reading to highly skilled reading. Stage 0, prereading, covers the ages from birth to age 6, during which children in a literate society acquire knowledge about and insight into print, learn to recognize common letters, signs, and some common words. They can also write their names and pretend to read a story they have memorized. Children are viewed in a schema such as this as acquiring discrete but progresively more complex skills.

By contrast, the developmental point of view stresses the child's own construction of concepts of literacy. Children do not copy or project reality, but "construct it out of their experiences with the environment" (Elkind, 1979, p. 249). Young children are limited in the understandings they can construct, first, by their sensorimotor abilities, and second by the logical structures available to them at their stage of development (Elkind).

An alternative viewpoint is that expressed by Perfetti and Lesgold (1979), in which reading is a narrower segment of general cognitive processing skills. Children are understood to process print as they process other information, with resulting constraints on skill acquisition due to such factors as the capacity of short-term memory storage.

The Debate Over Early Reading Instruction

The content of instruction for the early years is a matter of great debate. Maturational vs. directed instructional approaches to early literacy acquisition have predictably surfaced once again in discussions over the appropriateness and content of instruction at the stage of preliteracy. Traditionally, this stage of development occurred in the home, before the child entered the arena of formal schooling. Froebel's games and rhymes for mother and child could be seen as an early form of preliteracy instruction. More informally, many parents have normally engaged their children in early literacy activities. Snow, Nathan and Perlman (1985) observed parents labeling items in picture books and expecting their child to fill-in bits of text, developing narratives about pictures, asking questions about stories, and encouraging comprehension.

Children also bring individual interests and aptitudes to bear on understanding print. Lass (1982) identified characteristics of children who read early, prior to formal school instruction. Although they are not always highly

intelligent or gifted, they do have a good-to-excellent visual memory; a great interest in identifying letters, words, and numbers; a wealth of books and toys; and almost always, an interested adult or older sibling available to answer questions.

Those children who begin to learn about how to read at a very early age are at an advantage in a literate society. Their early knowledge of print is positively related to later reading (Mason, 1984). This positive relationship suggests that early reading instruction provided in preschools and kindergartens may benefit all children, and particularly those most at risk for learning disability or from low income homes (Chall, 1987). Of what, then, should early instruction consist? Evans and Carr (1985) and Fox (1987) identified two different instructional approaches to introducing print-related concepts. The first assumes that learning to read occurs as a consequence of mastery of a series of separate tasks, in the Lockean tradition. Typical instructional activities might consist of matching letters with pictures by initial sounds, recognizing and naming letters of the alphabet, and reciting letter sounds (Weir, 1989).

An alternative approach has been based on the belief that reading, speaking, listening, and writing develop concurrently. Children are expected to construct understandings about print through meaningful experiences with oral and written language. Typical instructional

activities would include reading stories; writing, using invented spelling; and shared book experiences.

This second approach has been favored by professional organizations such as the International Reading Association, (Early Childhood and Literacy Development Committee, 1986a; 1986b) and the National Association for the Education of Young Children (NAEYC, 1986a; 1986b) in keeping with their historic commitment to developmentally appropriate programs for young children (Weir, 1989). Investigators such as Hough, Nurss, and Wood (1987), Mayfield (1983), McCormick (1983), and Wepner (1985) have reported positively on instructional methods premised on holistic philosophy, which stresses the active construction of meaning on the part of the learner.

Collins (1986) found four types of reading instruction presently being used in preschools, based on these two approaches. The first, which she identified as being based on the developmental or maturational philosophy, holds that children should function at the concrete operational level before beginning reading instruction. Practice based on this theory teaches preschoolers to learn words by their gestalt or total structure. Attention to word configuration can be supplemented by phonics instruction, providing a ciphering system as a base for reading strategies.

The second, which she called the bottom-up or inside-out, teaches a distinct set of higher level skills,

decoding letters and words. The third approach was labeled top-down, or outside-in , or holistic, in which instruction is dovetailed with talking, listening, and writing activities. Shared book experiences, predictable stories, creative writing, and word banks are used, following the strategies identified by Holdaway (1979). Graphemic features are taught after a large sight vocabulary has been learned.

The fourth approach was called scaffolding, or interactive, and is similar to the third except that it is aimed at individual children instead of whole classes. As the individual child constructs concepts about literacy, he will indicate by his questions the kind of information for which he is ready. The teacher's job in this model is to provide the appropriate information.

Mason (1984) pointed out that while children carry out tasks that involve reading, "they learn about its untaught aspects, such as the terms describing reading and the rules governing the act of reading" (p. 510). She identified these further as three strands of knowledge about print. The first she termed the <u>function</u> of print. The research on print awareness in relation to signs, logos, and food product names relates to this strand, and has to do with acquisition of the set of concepts concerning the meaning of environmental print, and then print in general.

The second strand Mason called the <u>form</u> and <u>structure</u> of print. This includes awareness that letters have

distinct forms, and that these forms can be related to word sounds.

The third strand, which describes the social and task constraints of reading, she called the conventions of reading. It includes "an understanding of the terms that are used to talk about reading . . . as well as the rules that govern the act of reading . . . and later, the procedures and social rules for engaging in reading lessons" (Mason, 1984, p. 511).

Mason's model of reading development proposed that children learn concepts about print along each of these strands, and as they interweave these knowledge structures, a braid of reading knowledge is formed. It is as if ribbons were woven, loosely at first, and then more and more tightly, until a strong structure is formed. There are many unanswered questions about development along each of these strands. In the area of function, we could ask what leads children to learn about the function of print, and the answer is that we know fairly little about this. In the area of form and structure, letter-naming has been positively correlated with success in reading, but training experiments in letter recognition have been unable to demonstrate any positive effects. Mason stated that letter-naming should be considered a mask for more basic concepts about print which are yet to be investigated and understood.

The Development of Writing and Conceptions of Print

The writing process has had considerably less research attention over the years than has reading, at all levels. Graves (1980) discussed the lack of research on children's writing and pointed out inadequacies in the research that was currently taking place. This lack is most likely due to social factors that value reading more than writing as necessary for success in a literate society .

Speaking, listening, reading, and writing are often thought of as the four important modes of communication. Another form of symbolic communication is the graphic mode, such as drawing and painting. Emig (1977) found that children appear to move across the related symbolic modes of verbal and graphic expressions to communicate. Verbal and graphic expressions are both expressive forms that externally represent internal thinking (Piaget & Inhelder, 1969). Graphic representation has the added advantage of communicating mental imagery in concrete form, which can provide visual evidence of internal thought processes (Pizzini-Zapeda de Kane, 1980). Graphic representation is also a form of symbolic play, considered to be the most developed form of children's play (Piaget & Inhelder, 1969).

Lowenfeld and Brittain (1964) described children as moving in a progression of stages from scribbles, at ages 2-4, to representation, at ages 4-9. They found that children drew in a "preschematic" way from ages 4-7,

characterized by the emergence of representational scribbles and a use of space that revolves around the child's own perception of the world around him. Kellogg (1969) investigated children's symbolic play, from the earliest scribbles to well-developed representational forms, and found that children in the scribbling stage place their marks so that they occuppy a defined space with respect to the edges of the paper. They also spontaneously develop a symbolic system that includes alphabetic symbols. Brittain (1979) found a parallel development in forms of drawing and writing. The development of a symbol system in children's drawings emerges with a parallel development of the alphabetic symbols. This parallelism points out a basic fact of child development, namely that abilities and skills that are well differentiated at the adult level arise from processes that are not well differentiated in their genesis. When young children sit down to draw and write they may be talking, singing, moving, working out rules for sharing, as well as doing what adults might recognize as writing (Dyson, 1981; Koreznik, 1977).

Wheeler (1971) noted that children write and become more skillful in their production even without adult intervention or direct instruction. The acquisition of motor skills is not as great a problem for children as is perceptual learning. Mason (1980) observed that early writing may "serve to organize the visual analysis for

print, and to strengthen important memoric strategies" (p. 210).

Researchers have identified some of the perceptual skills that are gained by children as they draw and write. They learn about visual qualities of objects that they attempt to draw, and about the graphic properties of color, line, and shape (Smith, 1979). They must also plan and organize their drawing or text, written or dictated. As their drawings become more complex, they form basic objects like people, houses, and trees, and then eventually form them into scenes (Brittain, 1979; Smith, 1983).

Clay (1982) noted that practice in writing could be critical for children in learning to orient themselves to print at an early stage of learning. Several researchers have noted that young children begin to write at about the same time that they begin to recognize printed words, and have surmised that writing as a means of learning about the form and structure of print may be more important than is generally realized (Calkins, 1980; Graves, 1980; Mason, 1980).

The origin and meaning of this importance may be found in the more general consideration of how children develop cognitively and how they understand the visual space of the written page or the sheet of paper on which they scribble and draw, for "when children are first given a blank sheet of paper and a writing tool the space of the page, bounded by the edges, gives them an immense number of potential

'degrees of freedom' which have to be reduced to workable order" (Freeman, 1977, p. 4). These degrees of freedom must eventually be organized into manageable schemas that are culturally recognized as drawing and writing. These schemas, in turn, are very likely to be related to schemas that children use for reading.

Clay (1989) stated that knowing where to attend, in what sequence, and how to pick up information perceptually, facilitates learning to read . At early stages of orienting to print, children may hold picture and text upside down with no sense of inappropriateness. After some instruction and familiarization with the universe of print, changes in orientation will be disruptive to readers, which led Clay (1982) to hypothesize a two-stage process in orienting to scanning print. She proposed a first stage in which children attend most to directional behavior, attending to the left-to-right, horizontal processing. Later, at stage two, children orient to the individual letters within the words, using a subschema to scan and categorize individual letters. At this stage, inverted presentation of text interferes with processing. She hypothesized that inadequate attention to helping children orient to print at these early stages may impede their progress in reading.

The important components of print to which children must attend at this early learning stage are the starting position for scanning, sequential movement along a line,

and return on the diagonal to a new starting point (Clay, 1982). How the child may first locate the print to which he must thus attend is an unresolved question.

Ferreiro and Teberosky (1979) found in their study Literacy Before Schooling that preschool children will point to a place above a line of text if asked to show where "it says . . ." and that they will alternate reading from the top to bottom with the bottom to top of the page. They tend to travel from left to right on one line of print, and then right to left on the next.

In studying how children sorted out picture from writing when interpreting a page with picture and text, Ferreiro & Teberosky (1979) found that children move through three stages in their conceptualization of the relationship between the two. At the first level, children did not differentiate between picture and text, pointing first to the picture and then to the text when asked "where does it say ___?" At this stage of development, children believe that both text and picture are readable, and that one does not have to distinguish between the two symbol systems. As they are complementary, with weak boundaries, one can go back and forth between them in a fluid fashion. Text is not seen by children as providing meaning directly, although it may describe the picture. It may provide a label for the picture, and when it does so, an ordering system begins to develop. The ordering system does not involve any correspondence between graphic, written, and

sound elements, but instead embodies a relationship between written form and certain objects.

At a second level, the text was considered to be a label for the picture, with the text representing the name of the pictured object. At the third level, the children would give evidence of a search process oriented toward confirming predictions about the text. Text was no longer considered to be predictable from the pictures, and the children looked for cues within the text.

These researchers also investigated the genesis of writing behavior. They found middle-class children experimenting with writing at 2 1/2-3 years of age, by making continuous wavy lines with the continuity of cursive writing, or a series of small circles or vertical lines with the discontinuity of print. Children hypothesized a correspondence between writing and the object referred to in what they "wrote" in terms of quantifiable aspects of the written string. They used longer or larger strings for longer, larger, older, or greater number of things written about. The researchers found these children to have difficulty moving back and forth between drawing and writing, with drawing used to support writing, to guarantee its meaning. Drawing often preceded writing.

Children's writing of their names was considered to be a prototype of all future writing. It was a first stable string of letters and a first model of recognizable social writing. Clay (1982) also considered the child's name to

be a starting point. She hypothesized that this and other early writing serve to organize the visual analysis of print and to strengthen important strategies of memory. She went so far as to assert that practice in writing could be critical at an early learning stage, before the basic visual scanning and memoric processes are established.

The Development of Print Awareness

In the early 1970s, research began to indicate that young children were aware of environmental print and that when tested on whether it was the color or the print on a product that they recognized, the print was the salient factor (Jones & Hendrickson, 1970). Continued research made it apparent that children as young as 2 years of age were attending to print, at least in some cases. Knowledge of the form of print seemed to be acquired simultaneously with knowledge of its function (Isom & Casteel, 1986). The children were not readers in the traditional sense, in which a child must be able to recognize words in isolation. The children used environmental cues like the context of a package or billboard to identify print as having meaning (Goodall, 1984; McGee, Lomax & Head, 1988). This perspective on the origins of reading emphasizes its social character, in which children are thought to attend to pragmatic, semantic, syntactic, and graphic systems simultaneously to find meaning in print (Harste, Burke, & Woodward, 1981).

These systems may all be important at different stages of acquiring the structure of reading abilities. Whereas prereaders can identify print in the context of the environment, readers can identify the same print when abstracted from environmental supports. To learn to read in the traditional sense, children must at some stage switch from relying on an environmental print strategy to a letter and graphic cue strategy (Silvern, 1986). The way in which this switch is made has not been elucidated.

Furthermore, although letter knowledge with its emphasis on graphic detail is a necessary condition to beginning reading, it does not seem to be a sufficient condition. Children with excellent letter identification skills may not read at all (Silvern, 1986). McGee et al. (1984) found that children named letters in response only to certain print items, when those items had letters presented in isolation or letters that were larger than average, in bold-faced type, or uniquely colored. Evidence also indicated that early readers used a visual strategy to move into reading, rather than a phonetic one, but that the visual strategy was discarded in favor of a phonetic one once some words were learned (Ehri & Wilce, 1985).

Mason (1980) described a hierarchy of stages leading into reading acquisition. Children first become aware that letters have discriminable patterns, then that letters provide clues for reading, and finally that sounds in words are determined by letters. Children who are guided by

their parents to attend to environmental print, such as signs and labels, and are given assistance in figuring out their meanings have a head start on learning the skills necessary to begin to read.

The research on print awareness in the context of picture books has also provided researchers with interesting information. Typically, the picture will be most salient to these children, who are unsure of the purpose of the print on the page (Hiebert, 1983; Isom & Casteel, 1986). The characteristics of the print in the book are also important in eliciting attention. Children ask more questions about print that is unusual or stands out in some way because of format or salience (Sulzby, 1985; Yaden et al., 1989).

Children also must construct understandings about the conventions of print and the printed page. Studies concerning the conventions of print have indicated that children cannot be expected to know the terminology or procedures teachers use to teach reading (Hardy, Stennett, & Smythe, 1974). After a year of instruction, many still will not understand terms such as right, left, beginning, or word. More generally, readers require a number of spatially organized schemes, or representations of general patterns or regularities, related to the way in which books or other texts are organized, handled, and read. These schemes are conventional. Frank Smith (1988) pointed out that the organization of a book or newspaper can differ

considerably from one culture to another, and that conventional rules of "discourse structure include organization into paragraphs, chapters, or sections . . . which readers as well as writers have to observe and expect" (p. 14).

Reading and Spatial Relations

Spatial organization of reading material and of reading tasks seems to be an area of research that has had little attention. It seems reasonable to assume, however, that children must absorb conventions about spatial organization of reading material as they learn spatial representation and scanning skills, and must construct hypotheses about that organization. A structure of knowledge made up of social conventions, visual processes, and schemas for organizing and understanding the information that they perceive about spatial organization ought to be one of the roots of reading behavior.

Language-based acts of literacy require spatial knowledge for such actions as recognition of instances of print, the production of graphic likenesses, and an understanding of the transformations of print. Some theorists and researchers believe that this aspect of reading behavior would begin with the way in which we understand and explain the nature of space to ourselves. Spatial intelligence is thought to be based on experience with the world of objects. The question of how humans come to understand space has been of interest to a number of

philosophers. Kant (1902) argued that there is no way for humans to understand reality except through interaction with the world, and that it is therefore impossible to separate completely the acts of knowing from the known. Bergson (1946) argued that, whereas space may be continuous, our mental model of it is created by isolating and abstracting, and thereby states of consciousness are created which are integrated into a simultaneity.

Spatial knowledge is assumed to be organized at three levels: Action-in-space, perception-of-space, and conceptions about space. These systems coexist at the adult level of experience, but can be presumed to develop in children, with the third arising out of symbol formation, which is the last system to develop fully (Werner & Kaplan, 1963). Constructions of spatial knowledge are thought to arise out of a foundation of perceptual and practical activity (Piaget, 1968); Piaget & Inhelder, 1967; Piaget, Inhelder & Szeminska, 1960), and actual locomotion in space is probably an essential condition of construction of these spatial representations (Carr & Schissler, 1969; Lee, 1968; Lynch, 1960). This spatial knowledge is probably

> paradigmatic for the way in which humans know things and events that are not spatial but that are, in effect, "spatialized" by the human mind in order for certain relationships to be grasped or remembered. (Siegel & White, 1975, p. 47)

The way in which humans understand the information on a printed page is presumably one of those spatialized events.

In order to read, children must know the appropriate spatial orientation to a page of print. Preschool children typically do not know the conventional left-to-right and top-to-bottom orientation. Ferreiro and Teberosky (1979) found that children will usually point to places above a line of text, and alternate going from top-to-bottom of the page with going from bottom-to-top. They also tend to travel from left-to-right on one line of print and right-to-left on the next. Of the children that they studied, half of the middle-class and a quarter of the lower class children understood the correct conventions by age 6.

Drawing is thought to be an intermediary stage between direct apprehension and ideas (Bates, 1976). Drawings are immature because the idea is not yet mature. When the image becomes interiorized, children can represent it, and from that point they can refine it. Ferreiro and Teberosky (1979) pointed out that both drawing and writing evolve from the common root of graphic conceptualization. Written language, like drawing, is a representation of something. Given the common genesis, a central question for research is whether children conceptualize drawing and writing in a similar way.

Ferreiro and Teberosky (1979) maintained that drawing has a relationship of similarity to the objects it refers to, whereas writing does not. Although this is true at the adult level, it probably is not so at the level of the young child, who may understand written language as an

object to be understood as such, rather than as a symbol to be decoded. Ferreiro and Teberosky likewise argued that writing constitutes a system with its own rules but that drawing does not. For a young child, this is also probably not true. The countless box houses with chimneys and a doorknob on a door placed squarely in the center that appear in preschool classrooms every year would indicate that children are actually working out a symbol system with their drawings.

Gardner's (1985) hypothesis that spatial and linguistic intelligence arise out of separable brain functions and develop toward separate symbolic systems implies that the origin of writing would be quite complex. Oral language is a symbolic system in its own right (Bates, 1976). Graphic representation as part of spatial representation is likewise such a symbolic system. Writing, as a part of the graphic universe, must have a developmental history that springs from the same roots as drawing, yet becomes associated with oral language at some point.

Ferreiro and Teberosky (1979) maintained that although written language may have close links to both drawing and oral language, it is neither derived from drawing nor is it a transcription of oral language. They identified it as a specific type of substitute object. They hypothesized a developmental progression in this understanding.

According to this progression, at the first stage, print and picture are not differentiated. The two constitute a unit to the child. Text is related directly to the picture, and the child moves back and forth between them. At the second stage, the child begins to differentiate between the picture and text. The utterance that goes with the picture is attributed to the text, but is not analyzed according to any segments or sequences; rather; it is attributed to the text globally. Children do this in one of two ways. One way is by attributing either the name of the object or a sentence about the object to the text. The other is by mediating between the name and sentence hypotheses, and attributing the name without an article but with a complement. At the third stage, children begin to consider properties of the print. Children will either attribute a name or a sentence to each part of the text. At the final stage, there is a search for some one-to-one correspondence between graphic and sound segments. At all of these levels, text can be predicted from the picture, according to the children. At earlier levels, the child has no doubt about his prediction. At later levels, he looks for clues to confirm his predictions.

Ferreiro and Teberosky's (1979) results clearly imply that the child is an active maker of hypotheses, in search of meaning and cognitive coherence. This is the essence of the constructivist and psycholinguistic view of reading

development. Frank Smith (1988) clearly stated the tenets of this view of reading development. The reader is seen, in this framework, to bring to the text a complex set of perceptual skills, an ability to apprehend the surface structure of a text, ability to process surface elements by rules of deep structure that the reader has constructed from many experiences with the world of print, and a transformational grammar to mediate between the surface and deep structures. These tenets could be applied to spatial constructions of meaning as well as to their more conventional use for explaining reading behaviors related to the construction of meaning for words or sentences. A bridge to their application in this way could be found in the work of researchers who investigate scene construction.

Jean Mandler (1984) distinguished three broad categories of schemes: (a) scenes, or spatially organized knowledge; (b) scripts, or events which are temporally ordered such as the routine of a kindergarten day; and (c) story grammar. Of these, the last has been most extensively used in studying children's reading concepts. The appropriateness of using scene theory to investigate early reading concepts seems apparent, but has not yet been investigated.

Schemas, Stories, Scripts, and Scenes

A schema has been defined as knowledge already stored in memory (Anderson & Pearson, 1984). Motor procedures have been called schemas (Piaget, 1952; Schmidt, 1975) and

are assumed to have one kind of organization. Some knowledge, such as the alphabet, is serially organized, with restrictions on points of access (Klahr, Chase, & Lovelace, 1983). Schemas are thought to have the following points in common: (a) to provide an internal structure for efficient perception and memory of events; (b) to generate a set of interrelated expectations pertaining to a specific event; (c) to selectively retain or alter the representation of events originally attended; and (d) to be constructed through experience with real world events and to change their organization, and perhaps their representational properties with development (Goodman, 1980).

Anderson & Pearson (1984) defined a schema as an abstract structure, in the sense that it "summarizes what is known about a variety of cases that differ in many particulars (p. 259)." An important component of theory-building for this area is to determine "just how much and what knowledge is abstracted and how much remains tied to knowledge of specific instances (p. 259)."

Mandler (1984) asked what stories, scripts, and scenes had in common as schemata. Stories are literary descriptions of often long past and imaginary events. Story grammar research has described how children acquire and use schemas in this domain. Scripts represent familiar, everyday events like ordering food at a restaurant or doing the laundry. Some work has been done

on how young children acquire and use them (Fivush, 1984). Scenes represent places, such as the rooms, streets, and buildings in which our experiences take place. The structure of these domains, however, has much in common and they result in common types of psychological processing. They are thought to be represented in the human mind by related schematic forms of organization. Their primary commonality is thought to be that they are organized in spatio-temporal schemas (Mandler, 1984). Two factors that have been identified as important for the organization of a scene schema are inventory information, i.e., what objects typically appear in a scene, and spatial relation information, which describes the spatial layout of a scene. Mandler described these two visual-spatial relationships as the counterparts of the temporal and causal relationships that hold an event schema together. In addition, there are

> more spatial connections among items in a scene than there are temporal connections among events . . . [and] the connections form a network of at least two, and typically three dimensions. (p. 16)

Scene schemas are hierarchically organized, in that less detail is required to recognize an object when it is placed in a scene than when it is presented in isolation Palmer, 1975). If an object can fill a slot in a scene, only a slight sketch is required to recognize it. This indicates that the objects in the scene schema can be conceived of as schemas in their own right. "This hierarchical character of scenes is roughly comparable to that of stories or scripts" (Mandler, 1984, p. 87).

Other salient features of the organization of scenes include the fact that vertical information is remembered better than horizontal information, and organized pictures are remembered better than unorganized ones (Mandler & Parker, 1976). People are relatively poor at encoding absolute size of objects, but will notice a violation of an expected size (Mandler & Ritchey, 1977). Event organization has greater influence on accuracy of recall; that is, if the objects in a scene are organized in a way that suggests a familiar event, it will be recalled better than if it is haphazardly organized (Mandler, 1984). Children, however, are thought to organize information less on the basis of a semantic theme and more on the basis of perceptual organization (Goodman, 1980).

Once schemas are established, they tend to guide perception. Friedman (1979) found that the length of fixation on objects in pictures was a function of their typicality. People look longer at low-probability objects than they do at medium-or-high probability objects. The findings of Newtson (1973) and Wilder (1978) indicate that the perceptual process is fine-tuned by expectations, and that the schema prepares the person to see certain kinds of things. When he does, little attention is then paid to those things that match the expectations he has for the schema, leaving the resources of attention to devote to the more informative, i.e., unusual, items. Mandler (1984) pointed out that the fact that people remember information

better when it fits a known schema has obscured the seemingly contradictory fact that the schema directs our attention to the unusual.

Norman and Bobrow (1976) developed a two-stage picture of schema use, in which they distinguished schema selection from schema guidance. The former is very rapid, taking place in milliseconds, and will cause the individual to remember schema-related material. Once a schema is activated, however, its guiding role is to allow the individual to assume the obvious and to direct his attention to the unusual.

The reason for this may be that we wish to minimize the number of categories we have to deal with cognitively, particularly those based on irrelevant distinctions, while preserving those categories most useful for describing the perceptual scene we are observing (Tversky & Hemenway, 1983).

Palmer (1975) proposed that processing proceeds simultaneously in bottom-up and top-down modes. Bottom-up processes search for higher-level interpretations and activate higher level structural units, whereas expectations based on prior knowledge play a top-down role.

Five classes of relations have been identified which characterize the differences between well formed scenes and an array of unrelated objects (Biederman, 1981). The two physical constraints are support and interposition, the intuitively obvious propositions that most objects do not

float in the air and normally cover up the objects behind them. Probability indicates that certain objects are likely to be found in certain scenes, as bread would be in a kitchen. The objects are also almost always found in certain positions in the scene. Bread would normally be on the counter and not on the floor. The last constraint is the familiar size of objects.

The mental processing of a scene has been divided into visual perception and semantic perception for purposes of research, but the two seem to occur simultaneously in an integrated fashion.

> The mechanisms for perceiving and interpreting real-world scenes can be triggered so quickly and efficiently that conditions can readily be found in which an expectancy for a scene or familiarity with it is neither necessary nor even helpful toward its perception. (Biederman, 1981, p. 253)

Scene theory has been investigated extensively by observing how adults process the information in pictures and maps, visual representations of real scenes. Children have been found to process pictures perceptually in the same fashion as adults and with a developing sophistication of semantic understanding. This body of knowledge has apparently not been used to investigate the way in which children might interpret and process the picture and text of a page in terms of their spatial relationships. In the area of inventory information, at what point do young children begin to write their names or other elements of print on their pictures? How do they understand the story

or caption dictation that the teacher may add to their drawings? If asked to tell a story and draw a picture about it, which will they prefer to do first? When children conceive the spatial layout of their productions, do spatial considerations play any role in their decisions about where to put their names or where they prefer to have the dictation placed? Are there certain positions on the page that they expect print, picture, or name to occupy?

Need for Additional Research

There is clearly a need for more research in how children orient to the page of a text and what they look for and find there at various stages of their development. Early reading development has been found to have a positive effect on later reading development. What constitutes important strategies of orienting to print at early stages may become automatic and unnoticeable at later stages in the development of reading skills. Reading is a complex behavior comprised of subskills, but the exact type of hierarchy one might build from these subskills is unclear at the present (Samuels, 1979).

Silvern (1986) has noted that investigators of early reading have concluded that there is an unclear relationship between the way in which children learn to read environmental print at an early age and the influence this may have on subsequent reading acquisition. The extent to which prereaders are attuned to and use graphic detail to

respond to environmental print he states is similarly not resolved.

Investigators of scene theory have said that what is needed now is much more extensive work on the regularities to be found in the events and places that surround our daily lives. To understand these processes in detail requires us to understand the knowledge structures of the processor (Mandler, 1984). The way in which young children organize the information they perceive and make sense of it on a page may give some further insights into this process. Researchers into young children's early reading and writing have concluded that "a closer analysis of motor activity in the young child's orienting to print and its relation to attentional scanning during fixations of the eyes seems warranted" (Clay, 1982, p. 82), and that it is probable that early writing serves to organize the visual analysis for print and to strengthen important memoric strategies. The child's written work, Clay asserted, may provide us with objective evidence of what the child has learned. As the child writes, we have an opportunity to see how he organizes his behavior. What we need is a step-by-step processing analysis of how such learning occurs (Kintsch, 1979).

The specific theoretical issues that are addressed in this study are first, whether the development of reading is a constructive process or part of the natural maturation of the individual. If it is constructive then there should be

evidence of the subjects' engaging in that construction. A second issue is whether children use principles of scene construction in creating and interpreting placement of text and picture. If they are doing so, the subjects should demonstrate expectations for placement of text and picture. A third theoretical issue concerns the suggestions of Gardner and Paivio that verbal and spatial processing would be somewhat separate in development. If this hypothesis is correct there should be some division, with weak links, between the subjects' productions of picture and of accompanying dictation.

The focus of this research is on how children construct scenes that include writing. It investigates what elements children place in their scenes, how they place them, and how they understand the coordinations among the various elements of picture, print, and their names. Insight into these issues provides further information about how children may organize their conceptions of picture and print at very early stages in their construction of literacy.

CHAPTER III

RESEARCH DESIGN

Statement of the Problem

The primary purpose was to investigate the way preschool children represent spatial and language information on a page. A better understanding of how they represent and coordinate the two information systems will help investigators understand emerging literacy. Recent investigations of literacy development have stressed the importance of the early years in building a foundation of motor skills and cognitive processes that enable children to construct meaning from the printed page. These skills and processes are essential building blocks for higher level skills that are traditionally thought of as reading readiness, or beginning reading, which children use with increasing sophistication to reconstruct information from text. Many teachers would still agree with LaBerge & Samuels (1974) identification of competence in visual codes, such as letter perception, spelling patterns, and word groups, as typical and traditional readiness skills. During the emergence of literacy more basic processes, such as verbal representation, spatial representation, and fine motor skills, emerge and become coordinated to produce the ability to make graphic images of picture and print. The

development of these processes is also of concern and needs research.

Kintsch (1979) stated that, in an ideal world, a theory of reading would be developed as a subtheory of cognitive processing. Paivio's (1986) theory of dual coding of verbal and nonverbal representations suggests that an area of cognitive processing that needs investigation is the way children combine verbal and non-verbal processes to construct meaning from the two codes of print and picture within a visual scene. An investigation of this processing may yield insights into how children begin to understand reading.

The way in which children develop and understand the rules for the production or comprehension of a pictured scene that includes print is presently unknown. In the production of such a scene, verbal meaning may be coordinated with the picture or the print or both. The possibilities identified by the researcher are that:

1. children process print and picture identically at early stages of emergent literacy; or,

2. children may develop different rules for processing the picture and print elements in a scene at early stages of emergent literacy.

Possible different rule systems that they could develop might include:

1. relying on picture exclusively, ignoring print elements;

2. including a place for print within the scene but with no meaning attached to it or with a separate meaning attached to it; or

3. including a place for print within the scene with some meaning attached to it.

As children develop different graphic codes for symbolizing meaning by picture and text they may

1. move easily back and forth between picture and print when processing or producing meaningful scenes;

2. process picture and print separately for meaning when processing or producing meaningful scenes; or

3. rely more on picture or print for representing meaning when processing or producing meaningful scenes.

The purpose was to investigate the ways in which children understand and represent the information of picture and their own dictated text in a visual scene by studying how they organize and understand the visual information in a scene that they produce.

Method of Investigation

The research was focused on some of the links that children build between the verbal and nonverbal (oral language/print and picture) systems of representation while developing print awareness in the preschool years. Scene theory was used to conduct the investigation. The two characteristics that Biederman (1981) identified that define a scene schema are:

1. The relations among the elements of the scene are

determined by semantic or syntactic relations, and

2. The perceiver achieves an overall representation that integrates the various entities and relations present in the scene.

Scene theory is an area of schema theory that has not yet been used to investigate literacy and its development. The questions that could be asked in this area are many, and qualitative research was therefore the method of choice. Much of what has been learned about the literacy development of young children has come from careful ethnographic studies in the recent past (Teale, 1982). These studies have taken place in naturalistic settings, and have been careful observations of the stream of events within those settings.

A study of this type was chosen to define the further questions that should be asked and that could be investigated fruitfully with quantitative techniques. Ethnographic investigation, as defined and operationalized by Spradley (1980), was the method of investigation used in this study.

Subjects

The subjects used were eight children between the ages of 3 years 4 months and 5 years 6 months who were attending the University of North Alabama Kilby Nursery School. The children were white and of middle socioeconomic status, as determined by their enrollment materials. One was the child of a University student and two were children of

faculty. The rest of the children had parents who were professional or self-employed. All of the mothers but one were employed or in school.

The eight children chosen for the study had birth dates that were from 3 - 4 months apart (Appendix A). Four were male and four were female. This range of ages was chosen to allow a quasi-longitudinal variation on the classical longitudinal approach to the study of language development (Bates, 1976). The children were followed for 4 months until they overlapped each other in age, and, presumably, in development. The oldest child was of kindergarten age, but was enrolled in the nursery because of delays in physical growth. Her inclusion in the study allowed the age range to extend into the normal kindergarten age group. Tests done by her pediatrician indicated that her mental development and physical coordination were normal.

Triangulation of data sources was expected to enhance the robustness and stability of findings in this population. In addition to the problem of limited socioeconomic status and a small population, there was the additional problem that as children practice a visual motor skill, such as drawing or writing, they will learn from the experiment itself. The processes they are practicing become more automatic and, therefore, require less processing. Triangulation was accomplished by;

1. collecting a set of data by the same method from

eight children who attended Head Start and were of similar ages as the study sample (the data were collected once a month during the study); and

2. Collecting a set of data by the same method from eight nursery children of similar ages to the sample who attended a different day care center (the data were collected once during the study, at the end).

The data were analyzed in the same manner as that of the subjects, in consultation with the teacher of the child's class. The purpose for including the teacher in the analysis was to ensure that the child would be understood as well as possible, both verbally and in the context of his or her home and school experiences which he or she may have used in constructing the scene, and of which the investi-gator would necessarily be unaware.

Setting and Conduct of the Study

The study was conducted during a 4-month period, the time required for the subjects to overlap in age. The setting for the study was a classroom of the Kilby Nursery School. The book corner was used because it was somewhat isolated from the action in the classroom. Once each week during the four months the subject children were invited to come to the book corner with the investigator to create a scene on a piece of paper attached to a clipboard. Other children were allowed to observe and comment if they wished, and their comments were also transcribed and analyzed. The researcher asked the child questions about

the picture/text during production. The questions that the children were asked are listed in Appendix B. They were designed to be open-ended and to encourage the children to explain their thoughts about picture and writing. Follow-up questions were asked when appropriate to clarify the children's meaning.

Appendix C is a checklist designed by the researcher to aid in remembering the order in which the children constructed their scenes. Several items on the checklist are about the construction and placement of their names. Ferreiro & Teberosky (1979) have identified the schema of the child's name as the first likely element of emergent print to which the child attaches meaning. The way in which they construct and place their names may, therefore, indicate some of the meaning they attach to print.

In summary, the data collected were:

1. a visual scene comprised of picture and text produced by each subject child each week during the course of the study;

2. an observation of the child as the picture and text were produced to determine the order in which the child approached the task, the coordination of the theme of the picture and text, and the placement, form, and orientation of any text produced (Appendix C);

3. an interview with the child as the picture and text were produced to probe the child's understanding of

the process and placement of elements of the scene created (the interview was tape recorded and transcribed); and

4. the data collected from the Head Start and nursery children for purposes of comparison with the sample.

The interview and observation process was as follows. Each child was invited to tell a story by drawing a picture or writing on the clipboard, which had two pieces of paper with carbon paper between. Each child was offered the use of a blue pen, a red pen, or a pencil. The child was asked whether he or she preferred to draw or write first, and if writing were chosen, was asked whether he or she preferred to write or to have the teacher do so. If the child chose to have the observer (teacher) write the story, he or she was asked where the text should be placed on the page.

Whether story or picture was first produced, the child was asked if he or she would like to add the complementary element, by using another type of writing implement. If the elements of text and picture were confounded, this change of color facilitated interpretation. If writing was to be added to a picture, the child was again asked if he or she would like to do the writing or have the teacher do so. The writing produced, whether by teacher or child, was in the form of a story line or a label. Either was accepted. If the child produced the writing, it was either in the form of scribbles or of conventional letters, and either was accepted. When the child was satisfied with the production, he or she was asked to add his or her name to

the production. The teacher did not assist with this task, and accepted whatever the child produced. When the child concluded the production, the teacher read the text back and gave the child the carbon copy to take home.

Analysis of the Data

The data produced and described (on tape) by the children were analyzed by producing a taxonomic analysis (following the techniques of Spradley, 1980) of the elements of the scene, picture, and text. This process was integrated with an analysis of the interviewer's notes on observation of the production of the scene. The information gleaned from the Head Start and nursery children was analyzed by the same taxonomy to determine similarities and differences and compared to that of the subjects'. This method usually produces a thick description of the phenomena under study, and suggests possible further research needed. The taxonomy was developed by examining the data for the cultural domains, or patterns of behavior and knowledge, exhibited by the subjects. These domains were treated as categories of meaning. The children's statements and behaviors identified in their drawings and in the taped transcripts were treated as included terms. These were analyzed into the following list of 34 cover terms and semantic relationships.

How to write
How to understand the purpose of writing
How to misunderstand the purpose of writing
How to get started on a story

Kinds of guarantees
Kinds of questions about print
Kinds of repair sequences
Kinds of scene elements
Kinds of scene violations
Kinds of written elements
Reasons for words
Reasons why story and picture do not coordinate well
Reasons why story elements might be missing in the picture
Reasons why you cannot change the scene
Things you cannot do with your writing
Ways for a child to extend a picture
Ways for a teacher to extend a picture
Ways for a teacher to write your story
Ways to avoid scene violations
Ways to coordinate text and picture
Ways to extend a story
Ways to guarantee meaning
Ways to make a name
Ways to move back and forth between picture and writing
Ways to remember what is written
Ways to show action
Ways to tell a story
Ways to use the verb "write"
Ways to write
Ways you cannot write
Where you should write
Where you should not write
Where your name belongs
Where the teacher should write

The 34 domains were then examined to determine what relationships might exist among them. When similarities based on semantic relationship were noted, they were organized into a broader domain, and the data were examined to determine if additional related terms should be included. A taxonomy was developed from these larger domains. The final domains that were used to describe the data found in the study were as follows:

Coordination of story and picture
Elements in scenes
Names
Pictures
Scene violations

Stories
Storytellers and artists
Writing

These domains were described in detail, and illustrated with material from the transcripts and from the children's productions.

CHAPTER IV

RESULTS

Storytellers and Artists

Gardner's (1985) theory presumes that different minds will organize information in various ways, and that early in development, preferences for one mode of knowing the world appear and dominate over other alternative modes of knowing. If people could be assumed to progress on their preferred line of development over the life-span (a hypothesis without evidence at present), then the roots of end-states, such as ballet dancer, architect, or novelist, would be found in early interests in kinesthetic knowledge, visual spatial concepts, or a preference for language learning.

It is interesting to note that by about age 4 1/2 the children in this study did have preferences for either graphic or linguistic representation as the starting point of their productions. The youngest children, Kenneth and Jessica, began with storytelling as their starting point and moved toward drawing. This move was more pronounced on Jessica's part.

From the beginning, the remaining children had strong preferences. Laurie drew pictures and wrote her own

stories, beginning sometimes with the picture and sometimes with writing. She would then read the story she had written. Rita told stories first, with one exception, and then drew pictures to go with them. Perron, Matt, and Beau began their productions with pictures, exclusively. Julia began her productions with either, but always had the story line in mind from the beginning, which she would illustrate and then dictate. The three male artists, on the other hand, often had no story in mind when they began drawing, and were sometimes unwilling even to describe their pictures orally when they had finished. It was as if they were expecting the picture itself to provide any necessary meaning.

One child who was not included in the study chose only to tell the story and never to illustrate it with a picture. This was unusual, as he was the only child in the study, the group of children, or the children in the other programs studied, who ever made this choice. It is possible that his poor fine motor skills made him reluctant to attempt drawing an illustration for his stories, and at age 5 it is true that representational symbols never appeared in the drawings he did in other settings.

No storytellers were found among the day care children. Of the Head Start children, two began with a story one time each, and only one may have been a storyteller. Her drawing skills were still immature, and

had few recognizable symbols, and she may have chosen to begin with a story for that reason as well.

The choice of a beginning point, story or picture, had consequences for the finished scene. The storytellers, Rita and Julia, were quite clear about where they wanted their stories to be written on the page, and drew their pictures in the remaining space. When the artists had finished drawing, they would designate an empty space for the story. If their thoughts expanded to fill the page, the story dictation would be relegated to a corner or dispensed with altogether. Names, however, were always added to their productions.

What's in a Name?

Ferreiro and Teberosky (1979) consider the name to be the first stable letter string, which was the case with the sample. Their names were the important written elements in their productions. The genesis of the stable string was an interesting evolution to observe.

Kenneth, the youngest child in the study, began with undifferentiated scribbles, so that it was not apparent where a written element could be distinguished from a picture element. When asked to locate his name on the paper, he began by pointing to a scribble in a corner (see Figure 1). This was a satisfactory solution for him for about 3 weeks. The dictation he gave was printed for him across the bottom or the top of his scene, at his direction. During the 2nd month he did not identify any

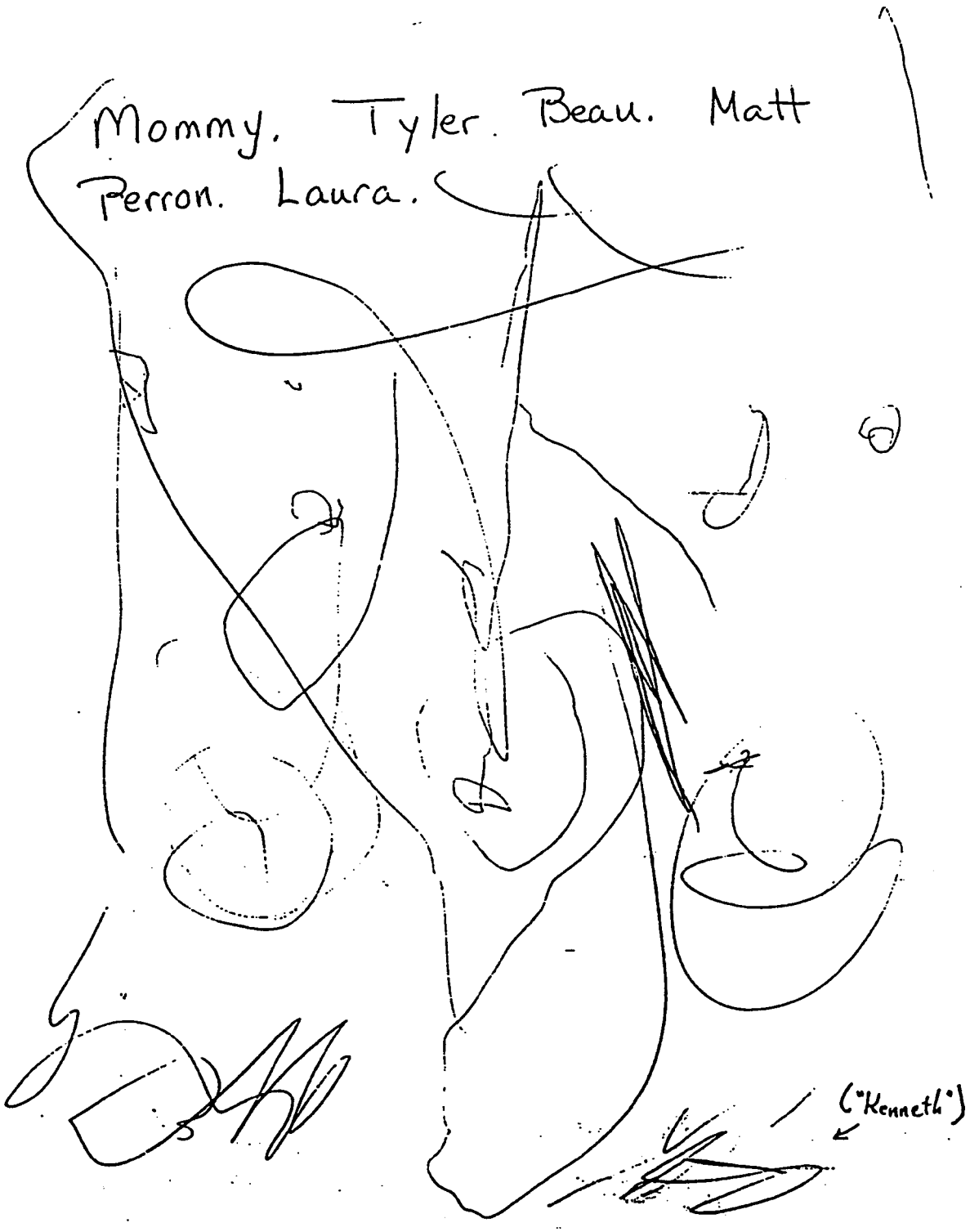


Figure 1. Kenneth's name scribble

particular one of his scribbles as his name, but instead pointed to a word written by the teacher as the location of his name. The next week he produced a long wavy line at the bottom of the page which he identified as his writing. When asked for his story dictation, he replied by naming letters beginning with ABC that he wanted written. At the end of the second month he wrote his name across the top of the page, and continued to write across the top thereafter. The scribble on February 27 was similar to a picture scribble, but by March 20 (see Figure 2) these had evolved to circles and straight lines and a wavy line, the writing scribbles described by Ferreiro and Teberosky (1979). He named the letters as he wrote them ("U, Q, S"). He identified this writing as his name, although he did not orally produce letters that belong in his name. It is interesting to note that this was produced with left to right orientation, as were subsequent writing scribbles.

The interesting interpretation that could emerge from this apparent line of development is that a particular spatial area, the corner, was used to identify the name scribble in the beginning, when it looked otherwise like any other scribble. After some experiences with dictation, he adopted the top of the paper for orienting the writing scribbles. This spatial area could be used to orient the line of writing across the page (he often wrote close to the edge of the clip on the clipboard as if for that purpose). The story dictation was presumably useful to him

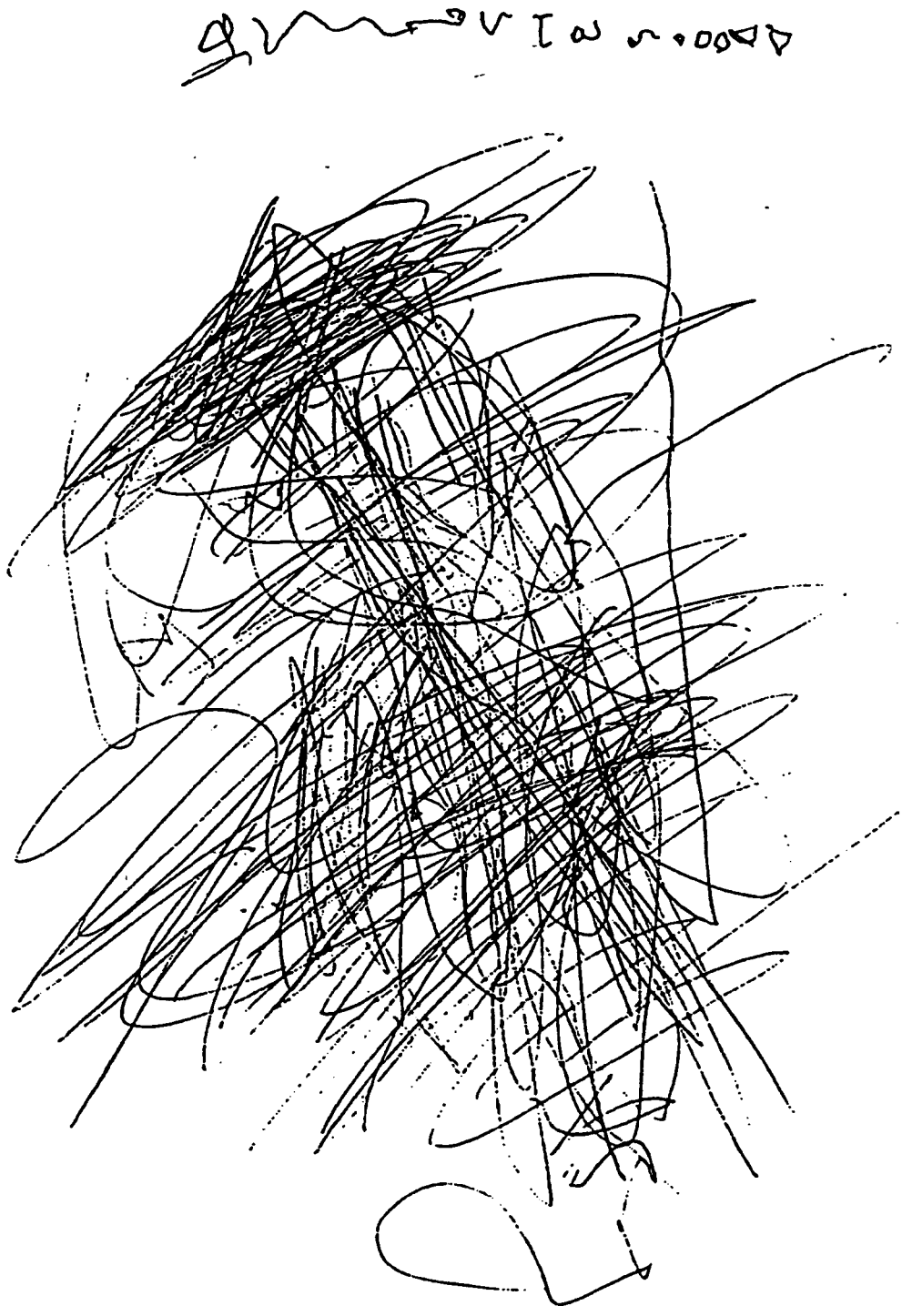


Figure 2. Kenneth's name is written at the top of the page.

to observe while working out this spatial schema for writing.

The day care child who was Kenneth's age already could write the first letter of his name. The Head Start child would make a scribble when requested to write his name. When asked what the scribble said, he would name some letters, not the letters of his name. He had no particular spatial placement for the name scribbles.

Jessica, the next oldest child, did not use space as a guarantee in the way that Kenneth did. She began the study by making one straight line or circle for her name and then produced the first letter of her name on February 8th. She requested that the teacher finish this name for her. She did not attempt to write her name again until the end of the study, but gave some thought to the space it should occupy. On February 13th she stated a preference that her name not be written sideways, as someone else's had been. For the next month, when asked if she would like to put her name on the picture, she produced a straight line which appeared to be a placeholder or a symbol for a letter string (see Figure 3). She stated that "I'll just make a line, and then I'll make my name on top of the line," and left it at just a straight line. She repeated this device in the next picture that she drew, but here the teacher made her name for her on the line she drew. Then in the last picture, on April 25th, she wrote her name as a string of letters from left to right (see Figure 4). Some of the

Figure 3. The straight line at the top is Jessica's name.

Figure 4. Jessica's name is written above the tadpole people.

letters were misplaced, but the essential name schema had clearly emerged.

The day care child of this age was unable or unwilling to write anything of his name, stating that "I can't." He did make letters, however, which had the shape of a word, which he identified as whale. The Head Start child in her first scene used a small circle symbol for her name, placed in the right hand corner of the page. In the second (see Figure 5), two large circle symbols at the bottom of the page represented her name, and in the last sample (see Figure 6), a wavy line at the bottom stood for the name string. It could appear that she also was working out a spatial placement for the name string even before conventional letters appeared.

Laurie had great confidence in her abilities as a writer. After the first few sessions she produced her own writing and clearly preferred that to any dictation, which she found unnecessary. This preference for her own production seemed to cause her to search diligently for a way to write all of the things she intended and also to find a way to guarantee their meaning.

At the beginning, Laurie's writing and drawing were not very distinct from one another. Her first scene (see Figure 7) primarily used spatial distinctions to distinguish between the dog (lower right), her name (lower left) and her dog's name (upper center). Laurie's dogs were very important to her, and her next scene was composed

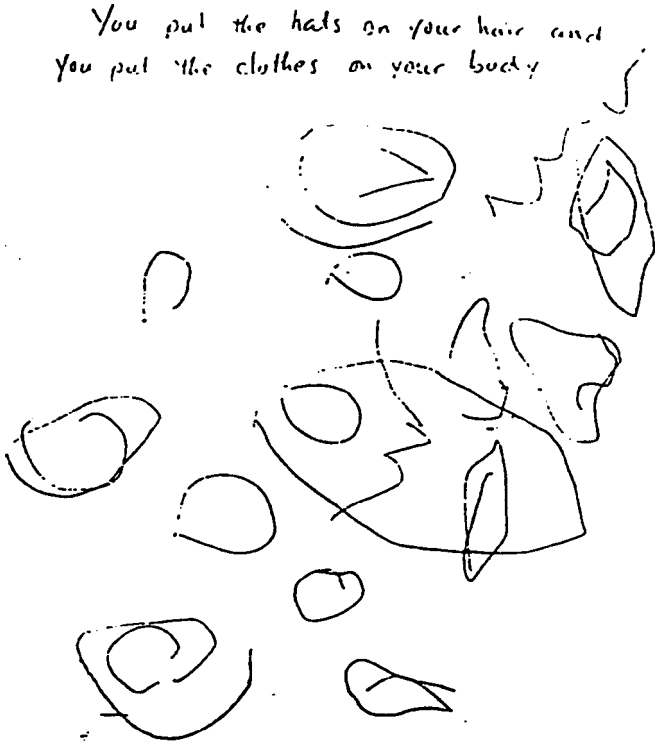


Figure 5. The two symbols at the bottom are Amanda's name.

Figure 6. The wavy line at the bottom is her written name.

Figure 7. Laurie's name is 'written' in the lower left quadrant, and her dog is drawn in the lower right. Her dog's name is written at the top.

of a picture of her dog, Penny, and his name. When she had written his name, however, the teacher was unable to read it, so Laurie asked the teacher to write his name directly above her writing. She then refused to write her own name, and insisted vehemently that she could not write it and that the teacher must do so.

By the next week, she had recovered her confidence and wrote a story. When another child challenged her production the following exchange took place:

Child: Her don't know how to write. Her don't know how to write her name.

Laurie: Well, I'll show you.

Teacher: Is that more of your name?

Laurie: I'll get it all right.

Child: That's not her name.

Laurie: Yes, it is my name, too.

Teacher: She'll show us where her name is in a minute. Is this part of your name?

Laurie: I can do it whatever way I want to. Can't I?

Teacher: Yes, whatever way you want to do your name.

With this assurance, Laurie proceeded writing with confidence, and wrote a story.

Teacher: This is a long story, isn't it? Do you know what your story's about?

Laurie: I don't know yet, till I'm through.

When she had finished writing she asked for a green pen with which to do the picture.

Laurie: Now I want the green one.

Teacher: You're going to do the picture with the green

one?

Laurie: Yes. Then I'll write my name with the purple one.

This was an interesting use of color to distinguish the elements of the page: name, story, and picture.

Unfortunately for Laurie's plan, however, with the exception of the red pen, which she did not use, the other colors had blue ink. The older child was still skeptical.

Child: What is all that writing?

Laurie: That's my name.

Teacher: That's her name and her story.

Child: That doesn't look like a story or a name.

Laurie, therefore, demanded that the teacher write a label, Penny, and Laurie and Champ, to guarantee the meaning of her writing in this scene.

In her next story, the red pen was indeed used for the story, and blue for the picture. The two elements would have been distinct without this device as her picture now took on a recognizably schematic shape of a person while her story was made with the wavy line sort of writing. Perhaps Laurie realized this, as she abandoned the color device thereafter. Her name was produced with some recognizably different scribbles on the left side (see Figure 8). She continued with variations on this pattern until the end of March, when she demanded that the teacher add words to her picture and writing. These words were of more than ordinary importance to Laurie, and perhaps she

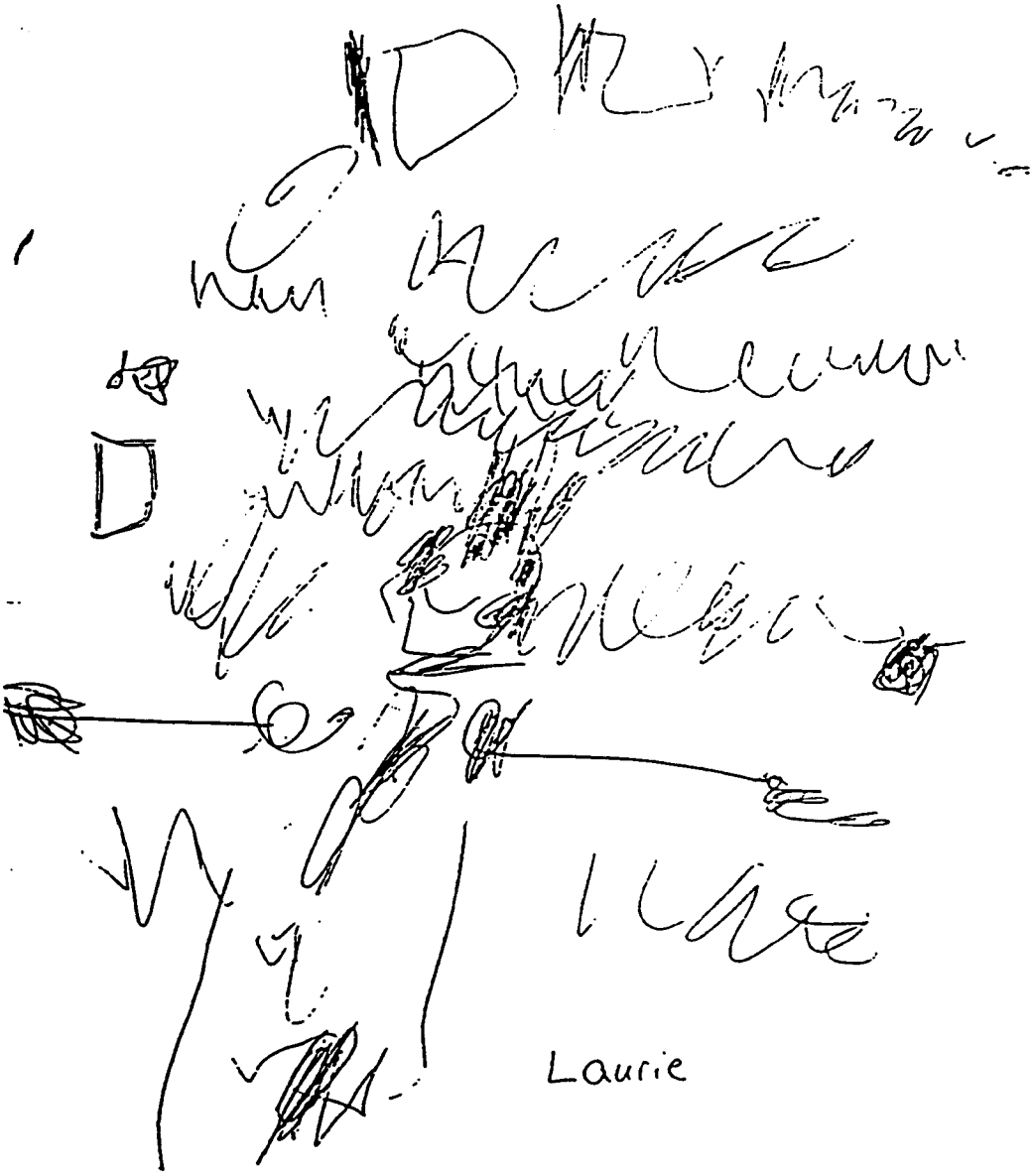


Figure 8. The two symbols on the left that were outlined for identification are Laurie's name. The wavy lines are her written story.

wanted to ensure their meaning. Laurie's beloved Nanny had just been diagnosed with advanced cancer. Laurie expressed a wish that she would not die and a desire for Nanny to give her some presents. These were an important part of their relationship. Her two forms of writing appear again, the wavy lines as a song and the more regular shapes as her name. In her final story, Laurie produced an L and an A, placed left to right, and spelled the rest of her name orally for the teacher to write, saying, "You do it. I don't want to."

Of the children Laurie's age, the day care child had achieved a letter string, although the letters were still unconventional. It was written from right to left. The Head Start child, Joshua, could make his J in the first sample, although he made it upside down. He also achieved a letter string made of unconventional letters in the next samples. The J continued to be upside down, although by the end he had achieved the left-to-right orientation.

Rita, Perron, and Matt, the next children in the series, all could spell their names, and did so flawlessly on each picture, each in left-to-right orientation. This was also true of the day care and Head Start children of these ages. Perron almost always wrote his at the top of the page (see Figure 9). The day care and Head Start children did also, and it is possible that this placement functioned as a support for the letter string of his name. Matt did that also for the first two months, and then one

Figure 9. Perron almost always wrote his name along the top edge of the paper.

day he moved it to the bottom. He said of the name he wrote that day,

Matt: Made a different name, this time.

Teacher: Yeah, one with a little curlicue on it.

After this (perhaps) first experiment with a variation of the name string, he then put it on the right hand side for a month and a half, although it could have fitted at the top. He returned to the top of the page for the name on his last story. Perron, and Matt for the first month and a half, generally left plenty of room at the top so they had no difficulties finding a space for their name. This was not true for Beau, the next older child.

Beau's pictures took up a lot or room, and he often did not give himself enough room for his name. He would then have to squeeze it into a corner where the letters would not all fit or he would put it inside the picture where again there would not be enough room to write it out. These may have been errors or they may have been experimentation. Evidence for the latter possibility is that Julia, the oldest, was definitely experimenting with her name. She wrote it using capitals, using just her initials, backwards, in script, with capital and small letters, in any variation that interested her. It has generally been considered a sign of an immature writer to make mistakes of Beau's sort, or to write backwards like Julia did. It may, however, be the case that it is a mark of increased confidence in the stability of the name string

that one can take risks to see where it can be squeezed into the picture or how it can be changed and still remain the same.

Beau was also the first child to add another element to the name string, the name of his beloved Paw. Once this string was added to his inventory, Beau never left it off, always writing it in addition to his own name. Julia went far beyond this, and she flowered into writing her stories with an assist from the adults to tell her the spelling, and experimenting with other conventions of print. On January 24th Julia wanted to write her own story, about ghostbusters, and got about half way through before the task became too tiring and she asked the teacher to finish the writing. In this same scene she made a symbol that the ghostbusters used for their logo, and wrote her initials, which she very clearly distinguished from her name, by noting that they spelled "jam." Julia used labels in her pictures and used an M as a label on the hat of Mario, a character in a Nintendo game she told a story about.

Julia used name strings besides her own to help her with her writing. In the semester previous to this study she had learned to spell her mother's and brother's names, as well as the family dog's name and several others, and had practiced writing them on the computer and in spelling inventories. In this story about ghostbusters, which she wanted to write herself, she used those name strings in an interesting way.

Teacher: Watched is spelled W A T - can you make a t?

Julia: My brother's name [Thompson].

Teacher: C H E D, D is next. D Julia, do you know how to make a D?

Julia: For Donna [her mother's name].

The Head Start child of Matt's age had a curiously different pattern of development than the other children in the study. In her first scene (see Figure 10), there were a number of letters of her name, but they were spread out around the picture, as though she didn't know how to pull them together. She seemed to have the individual letters, or close facsimiles thereof, that she could make, but no idea how to make a string of them. By the second month (see Figure 11) the string had become associated, and was clumped together as a string, but did not have the typical left-right orientation yet. By the last month (see Figure 12) the name string had migrated to the top of the page, and was a left-right string. Again, it appeared that the placement at the top of the page assisted in the early stages of pulling the string together and giving it the necessary directionality.

Cory and Victoria, the day care and Head Start children of Beau's age, each wrote their names with confidence and varied the placement of the name. They were not observed experimenting with the name string, however.

What is Writing?

The children had ideas about what constituted writing and what it might be used for. On February 13th, Kenneth

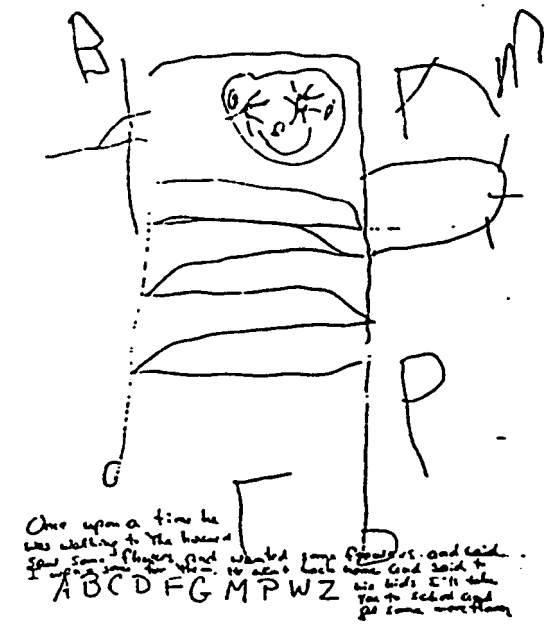


Figure 10. The letters of Amber's name are scattered.

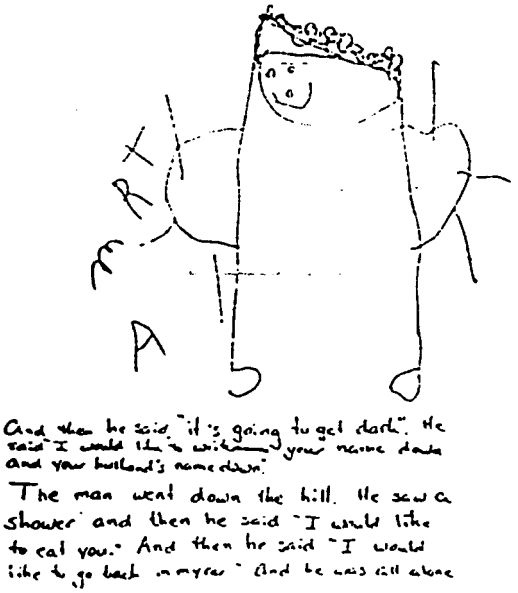


Figure 11. Amber has begun to localize the elements of her name.

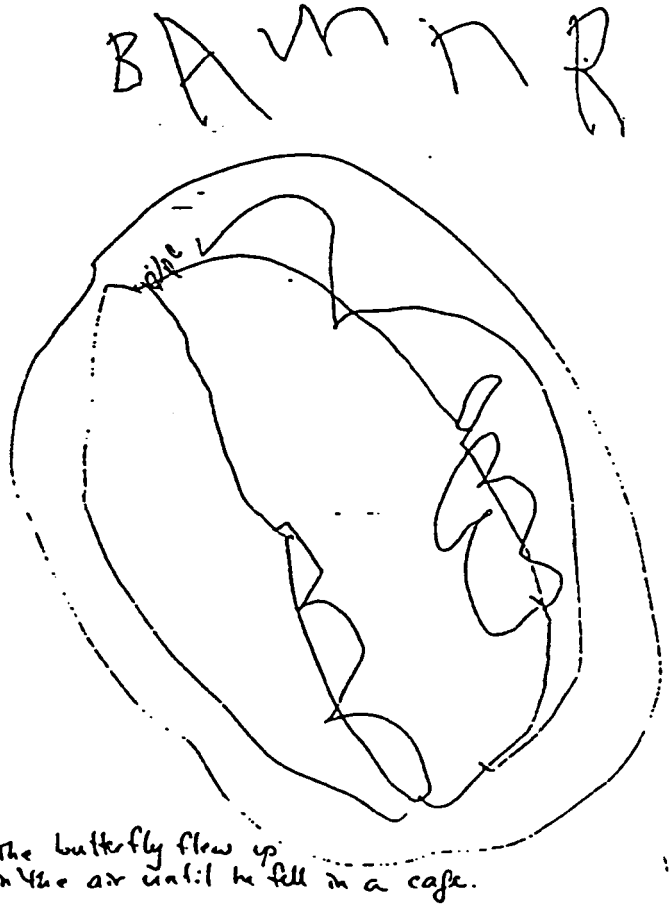


Figure 12. The name now appears as a string, along the upper edge of the paper.

dictated letter names when asked what he wanted written for his story, and by March 20th, he was writing his own letters. When asked to read what he had written he replied with letter names. In his last story, on April 24th, Kenneth wrote at the top, and then indicated he wanted to dictate the meaning of his writing. He dictated "Leo in his cage," which he wanted to be placed just below his letters.

Jessica seemed to consider writing only in relation to her name. She did not offer to write anything else, or make comments or ask questions about writing. Laurie assumed she knew all about the subject, of course, as she was an accomplished story writer. Some of her comments reveal her actual confusions, as she referred to writing the hair of the figure she was drawing and writing the fingers as well. On February 20th we discussed drawing and writing a little.

Teacher: Are you writing letters or a picture?

Laurie: Letters.

Teacher: Letters?

Laurie: Well, I already saw the thing I drawed for somebody else. Dear Penny, good-bye.

Teacher: Do you write letters or draw them, Laurie?

Laurie: I write letters.

Teacher: Do you write pictures or draw pictures?

Laurie: Write pictures and draw pictures.

Teacher: Both? What's the difference between drawing and writing?

Laurie: I don't know.

That this is not always just a verbal confusion is indicated by an exchange at the end of April.

Laurie: Me to write it... I'll tell it what it's about. And draw a picture. I think this is a picture.

Teacher: You think it's the picture. How can you tell if it's the writing or the picture? [no answer] Does it just look different?

Laurie: Yeah.

Teacher: How does writing look that's different from drawing, Laurie? Can you think of a way?

Laurie: It's just the same.

In this case they were more the same than usual at this stage in her development because she had been writing the number 2, which turned into butterflies. She expected her writing to be readable, as she directed the teacher to "read every word here," although there was some confusion as to where, exactly, the writing was located on the page.

Rita gave evidence of the same sort of confusion in verb usage when she was asked in February about the elements of her page.

Teacher: I just wondered if this name is drawing or writing.

Rita: Writing.

Teacher: It's writing. And is this drawing, or writing (pointing to the picture).

Rita: Writing.

Teacher: The picture.

Rita: Both of these are writing, and this is drawing (pointing to her picture and name as writing and the story dictation as drawing).

Perron was the first child to use a print element in a way other than a name on his drawing. On March 27th the children had been using Logowriter for the first and only time all year. The activity involved adding their names to house icons and moving a car from one house to another. Perron had been one of the interested participants in this game. When he made his drawing that day he put his name next to a picture of himself, and used it as a label. This was the first and only time that he did not put his name at the very top of the page. He was also the first child, on that same day, to enquire about how a word might be spelled. The word he wanted was "house," a clear connection to the computer game.

Matt distinguished between his name as written and his picture as drawn, but in a fascinating exchange on February 27th, he responded with a separate, second picture when asked to write something (see Figure 13).

Teacher: Do you want to write something? Show me how you would write something?

Matt: I want to write something, I want to write. This is not going to be in the picture. I'm going to write a wagon. You don't know how to write a wagon, but I do, I make a circle. Here. Right here. A wagon. It's not in the picture.

Teacher: Yeah, I know, it's not in the picture.

Matt: Now, I'm going to make somebody pulling it.

Teacher: But, you were going to write something about this, weren't you? Is this writing?

Matt: Um hm.

Teacher: So, this is the picture down here, and this

Figure 13. Matt identified the small picture of the man with the wagon in the top right corner as his writing.

is the writing up here?

Matt: Um hm.

Teacher: Well, how is the picture different from the writing?

Matt: Because the writing's up here, see, it's not in the picture.

Teacher: I see it's not in the picture, I was just wondering, what makes it writing?

Matt: Oh,...

Teacher: Can you show me where there's some writing on this page?

Matt: That's writing, and that's writing, and that's writing.

Teacher: Really, so the fishing boat and the shark are writing, but the dead man and the boat are the picture. And what's this, here? Is this picture or writing?

Matt: Writing. It couldn't be in the picture.

Teacher: So, pictures and writing are separate?

Matt: Yeah.

Matt had separated out two pictures, identified one as the picture and one as the writing. The actual difference between the picture and the writing was the spatial placement of the two pictures.

Beau was the first child to produce a letter string other than his name that had conventional letters in it, the name Paw. He clearly knew the letter names he needed to write this word.

Beau: First I need to write something.

Child: P E?

Beau: No, not P E.

Teacher: We'll have to see what he will write.

Child: P A.

Teacher: You've got paw, right? Look, I can read your word. It says paw.

Beau: Well, I just write, well, it's pretty hard to write an A like that.

Beau seemed quite unconcerned with whether it could be read by anyone or not. By the end of April, however, he used this letter string as a label on the trailer he drew, to indicate that that particular trailer in his story did indeed belong to his Paw. Again, spatial placement of the label was the important variable which gave additional meaning to the letter string.

None of the day care or Head Start children were observed experimenting with writing in this way, and did not generally seem to expect to be able to write, as Laurie clearly did. Victoria, the Head Start child closest to Beau's age, was beginning to copy words from around the room, thereby increasing her knowledge of letter forms and word elements.

Writing Stories

What evidence may there be that children understand the meaning and/or purpose of story dictation? Is this something adults should do to develop children's concepts of print? Do the children themselves have an interest in their dictated stories beyond perhaps describing their pictures?

Kenneth was a novice at story dictation, and was absorbing the concepts about placement and structure of print, as described above. Evan and Danyell, the day care and Head Start children this age, were equally unsophisticated about the nature and purpose of writing. Evan simply refused to dictate anything to go with his picture. Danyell indicated where he wanted the dictation, "a dog," to be placed. He then stated, with obvious scorn for such a strange depiction of a dog, that the written word was not a dog, and that his scribble was a dog.

Jessica was a little more sophisticated about the purpose of print and showed evidence that she understood its purpose on several occasions. In her first story she had trouble getting started until the teacher suggested an event they had shared as a story theme.

Teacher: Why don't you tell about coming down to the Fairgrounds and seeing me riding my horse.

Jessica: Riding a unicorn.

This variation on the suggestion presented difficulties, as Jessica said, when she finished her picture,

Jessica: I don't know how to make a picture of a unicorn.

Teacher: Well, if you draw something and tell me it's a unicorn I'll put a label on it so we'll all know it's a unicorn.

Jessica may not have known exactly what a label was, but she accepted this assurance that it would guarantee the meaning of her drawing. Before beginning to draw it she said:

Jessica: I think I want to write some more words about it.

Teacher: O.K., do you want to write them or do you want me to write them?

Jessica: I want you to write them.

Unlike Laurie, Jessica had no confidence that she could write words, she knew the adult could write them, and she knew she wanted some more of them to describe flying on her unicorn with her mommy.

When Jessica told her next story, the teacher made a copy of it and cut out her name, and asked Jessica if it would be all right to put her name on top of her picture, which she indicated would be all right, or on top of her story, which she rejected, stating that "I wouldn't be able to see the rest of the words."

On February 20 Jessica was drawing her picture, which she had chosen to do first, when a friend came up and asked:

Child: What is her story about? What about her, hm, what about her letter part?

Jessica: It's not there yet.

When her picture was completed, she stated that she was ready for a story part.

The ever confident Laurie may have had a struggle to find ways to guarantee the separation of name, picture, and story, but in her own mind she was quite clear that she was making these separate elements on her paper. When she drew her first picture she told the story as she drew it. When she was finished the teacher asked:

Teacher: Is this a picture of the story you just told?

Laurie: Yes, but I'm going to write now.

Teacher: You're going to write now?

Laurie: I'm going to write it. I'm going to write his name, Champ Nelson.

Laurie proceeded to identify the various parts of her picture as either written or drawn (see Figure 7).

Teacher: Can you show me which part of this is his name?
I thought that was. Can you show me which part is the picture of him?

Laurie: I didn't do very good.

Teacher: You did beautifully. Is this part his head? See, I can tell what's there. Are these the cows over her?

Laurie: No, that's the way I was telling the story.

Laurie was often willing to read the stories she wrote; however, she could not remember them the next time we went to the book corner to tell stories.

Laurie also asked for her stories to be written on occasion if the content was important enough, as in the story about her Nanny. On January 30 she dictated a story about her dogs, and when the teacher asked if she was ready to put her name on she said, "Well, that's not all," and did indeed have more to say. This was common to the children, as though their stories were not a stream of language that could be interrupted at some point by an adult, but rather that they had an end point in mind somewhere and would not be satisfied until we had reached it. If the teacher asked "Are you ready for the story?"

The answer would be, "No, not yet," until they were ready. When they were ready they would indicate this by body language, sitting back up away from the clipboard and putting down the pen and saying, "Now I'm ready for the story."

Rita launched right into her first story as soon as we sat down together in the book corner. She knew she wanted the story, and she wanted it written before she drew anything. Rita was the first child in this series who had had experience with story dictation from the previous year, which was true of all of the other older children in this class who were in this study, and this earlier experience with story telling may have helped her feel comfortable with this mode of production. On the occasions when she thought she would like to do the picture first, she would change her mind and hand back the paper and ask for the story, as in this sequence.

Teacher: Do you want to do the story part first or the picture part first?

Rita: The picture.

Teacher: O.k., here's your paper for the picture part.

Rita: (handing it back) Well, you can write the story part.

Julia, the most sophisticated story teller of the group, was clear about her productions. "It's a real story," she stated when we finished her first one. "Mine is very long," she said before we began the next one, and indeed it was long. On February 7th, she specifically

asked for a title to be written before she began her story, and indicated she wanted the story placed directly underneath her title.

The children seemed generally comfortable with the idea of writing down stories, and had some ideas they wanted to communicate in this way. Kenneth was the least experienced storyteller. His first scene was a list of the names of people he could see while sitting in the book corner, and he identified the scribble he produced as himself. For his second attempt, the teacher provided some scaffolding to assist him in beginning to tell stories.

Teacher: What's going to be in this story?

Kenneth: Beau.

Teacher: What will Beau do?

Kenneth: Coming to school.

Teacher: Beau is coming to school... any more in your story?

Kenneth: Uh huh, Kenneth.

Teacher: What will Kenneth do?

Kenneth: Go home.

Teacher: Kenneth will go home. What a nice story. Would you like to draw a picture about that story?

Kenneth: Uh huh. Writing a robot.

At this point things became fairly complicated. Kenneth may have meant he was drawing a robot, because he was now scribbling, or he may have meant that some new character in his story was riding a robot. The ambiguity led to difficulties in communication, and therefore to the

following repair sequence:

Teacher: What?

Kenneth: Writing a robot.

Teacher: Riding a robot? Oh, how exciting! Who's riding the robot?

Kenneth: Mans.

Teacher: How exciting! A man is riding the robot?

Kenneth: Matthew.

Teacher: Matthew is riding this robot?

Kenneth: Uh huh.

The interesting thing about this sequence is that Kenneth used the same strategy he used in his first story, naming children he could see in the room, this time adding action at the teacher's prompting. In the following story, he used this strategy on his own.

Teacher: O.k., what's going to be in your story?

Kenneth: Beau's [unclear] home.

Teacher: Beau did what?

Kenneth: [unclear] school.

Teacher: Beau goes to school?

Kenneth: Kenneth going home.

The next story in the sequence named the children he could see again, but described the action he could see, as well:

> Beau is playing with a truck. And a boat. Playing with a rope. Tyler's looking. Perron's looking. Matt and Perron are playing with the train and a string.

Now Kenneth was ready to switch from storytelling to drawing as the starting point of his productions. His first one on February 13th was the picture of one object, an airplane. On February 20, he named one object and two people, and on February 27th, he named an object, a kite, flying. It is as though the drawing mode was catching up to the speech mode of production, following the same pathway of naming objects or people first, and then adding a predicate on the later returns to that theme. On March 27th, Kenneth drew a picture of Leo, an animal, and thus a new category of figures. On April 10th, two animals were named for his scribble, and on April 27th, Leo was drawn in his cage, again a predicate for the pictured figure, and an addition of an expectable element to the composition of the scene.

Leo was the theme of Kenneth's stories from the end of March to the end of April. Many of the children had recurring themes they used for their stories, and these seemed to have some emotional content that was important to these children. Leo was important to Kenneth because he was scary. He is the big lion mascot of the University, and the children were often invited to go and visit his cage on a walk. Kenneth regularly refused to go on a walk there, and on the occasions when the whole class went he refused to go near the cage. He was also frightened of the Leo costume in the housekeeping corner.

Jessica had several recurring themes. One was the unicorn, which appeared in many of her stories. Jessica had several toy unicorns, and usually came to school with one in her hand. Her favorite activity first thing in the morning was to go in the bathroom with Rita and wash the unicorn for about half an hour.

The other recurring theme in her stories was her mother, which seems natural. Many children mentioned or pictured their mothers in one or more of their stories. Jessica's mother appeared in every story, whether it began with a unicorn, with planting a garden, or going to the store. Her mother is in medical school, and Jessica only sees her on weekends. When mommy is coming home was one of the major themes of her conversation during the first semester of school. It is interesting that her mother disappeared from her stories after the spring break, when once again she had appeared long enough to be a presence in the household, and then deserted Jessica again. Deserted is not too strong a word from the perspective of this child, who surely understood very little of career objectives and only observed repeated long-term leave-takings. When mommy was no longer a central element of the stories Jessica lost interest in story telling or drawing and her productions for the last month of the semester were less elaborated that the earlier ones. This is also, however, the time during which she made major progress on figuring out her name string.

Laurie was another child with a recurring theme in her stories. Five of her first six stories were about her dog that died and the new dog. The death of the first dog was told and retold, as was her pleasure in having the new dog. A recurring theme is a useful device for starting stories, although its purpose is probably more in the emotional realm. By starting her story by focussing on her attachment to her dogs, however, Laurie was never at a loss for how to get started.

The artists all had a common strategy for telling a story. They picked a theme from the pictures they drew, sometimes a caption for the picture, and sometimes a more detailed description using one of the elements of the picture as a springboard. Perron's caption, "my daddy and an angel were walking" (see Figure 14) is an example of the former. Matt's story, "A crab was walking and he was looking for a fish. The crab couldn't find the fish" (see Figure 15) is an example of the second.

Five of Beau's first seven stories also had a recurring theme, in his case, pictures of a tornado. He had witnessed the destruction of the tornado in Huntsville when he went there with his family to help out some friends who had their house destroyed by it. In this case, using the tornado as a starting point for his stories arose from a suggestion from a peer. This was his first storytelling session, and he had chosen to begin by drawing a picture. He had started by drawing a box, which he was able to do in

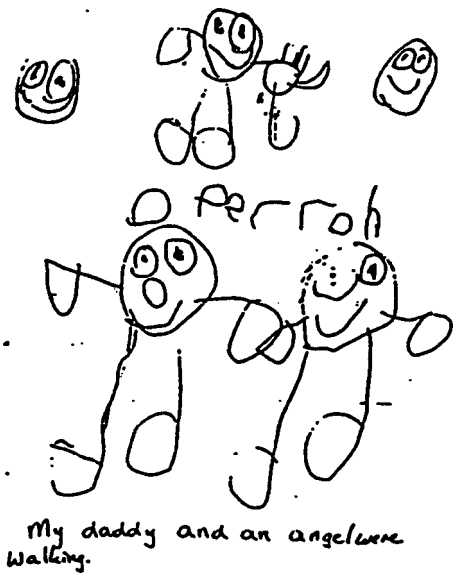


Figure 14. A simple caption for the dictation.

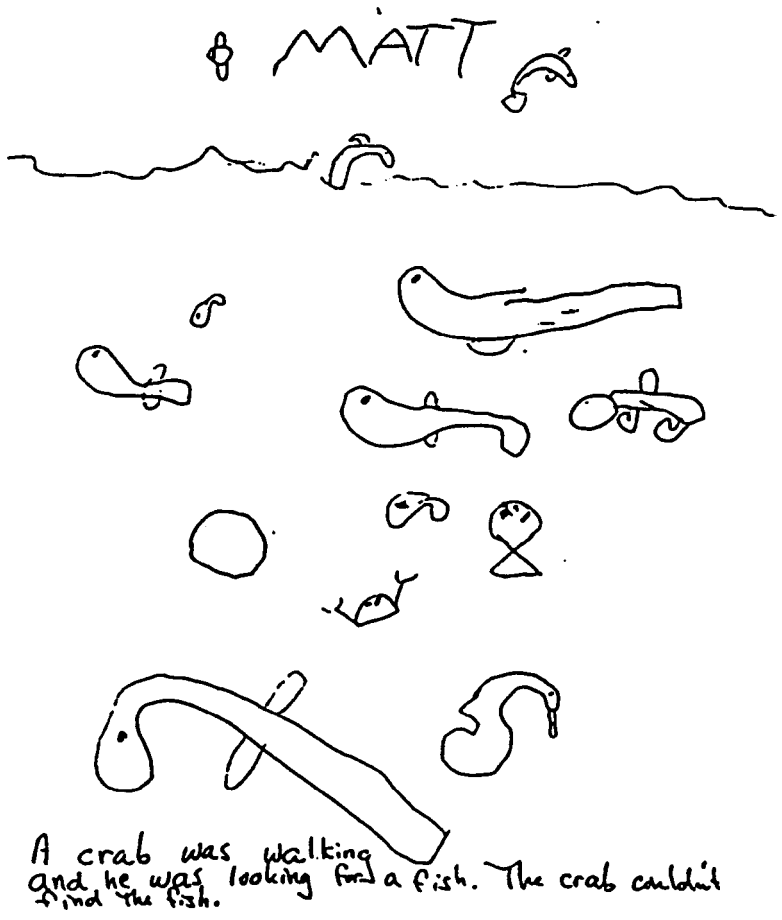


Figure 15. A simple caption for a picture filled with characters and action.

three dimensions. His friends were trying to guess what his drawing was about.

Perron: Ooh, it looks like a door opening, and a dog crawling into a dog house.
[long silence, while Beau scribbles furiously, covering up the box shape]

Perron: What is that, Beau?

Beau: I don't know yet. It's hard to find out.

Perron: A tornado.

Beau: No. Yeah, a tornado.

This theme then became one to which he returned many times, until his final story pictured the basement in which the people hid from the tornado until it went by.

Julia was easily the most versatile storyteller of the group, and used a variety of strategies to begin her stories. She would often begin the sessions with her story in mind and ready to be told. On January 24th, she remarked before she began that it was very long, and it was. On the 30th of that month she used someone else's story theme from the previous week that had gotten laughs when the stories were read to the group. At the end of the next month, she copied a story theme someone had just used:

Julia: What is Laura's?

Teacher: Her's is about ghostbusters.

Julia: Mine is going to be about that, too.

Her strategy about the middle of March was to copy someone's picture and tell a story by making up a connection between the story and the picture. The following several stories were retellings of the plot of

the movie, "The Little Mermaid," which she had recently seen, and then Easter provided a plot for the last one.

The day care and Head Start children used the same types of strategies to tell their stories as those dicussed above. At least, there were no different patterns noted. The device of repeating an element of picture or story was quite pronounced among the Head Start children (the day care children provided only one sample so there were no comparisons possible between their samples). Amanda, the age of Jessica, used a hat theme for two of her productions The first was a story that was a list of objects, reminiscent of Kenneth's first story. The second time we met, she began by drawing a hat, which was the first object named in her first story.

Joshua preferred to draw people, and identified one of the people on his first drawing as Peewee. This was written vertically, to see if he would object to this orientation, which he did not (see Figure 16). His next drawing was also body shapes, and although he had not been shown the first drawing before we began, he indicated that he wanted Peewee written again, vertically (see Figure 17). The third one again had body shapes, and again he wanted Peewee and Peewee's motorcycle written vertically on the page. It is striking that he remembered and wanted this orientation reproduced. It is unknown, of course, whether this repetition was important to him as a variation on the

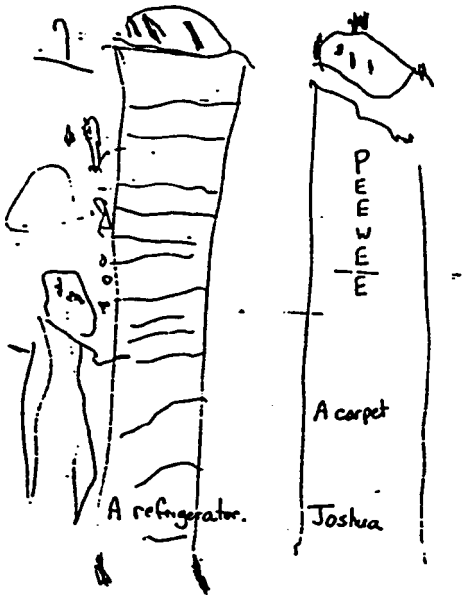


Figure 16. Peewee was printed top to bottom to see if the child would question that orientation.

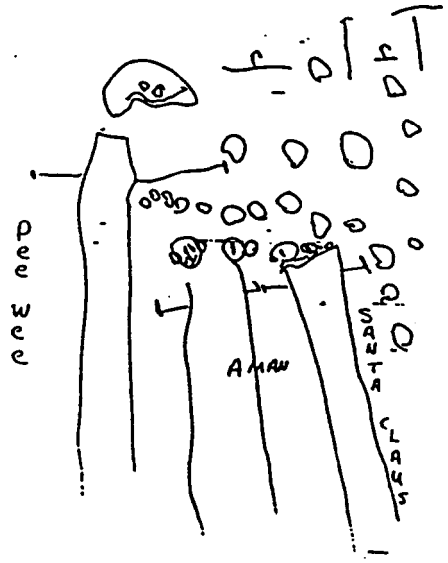


Figure 17. The same child requested the same caption and wanted it written in the same direction a month later.

normal orientation of print, or whether he preferred things to be written that way.

Casey, the age of Rita, drew a cage for her second picture, and produced almost the same cage for her third picture. She also remembered and wanted to repeat elements of her first dictation for her second dictation, although the story and picture did not seem to go together in theme. Tyler, the next older child, also repeated the picture from his first story in his second session. It was an almost identical house, although the story was different.

Three or four weeks intervened between each of these sessions, and it seems remarkable that the children would have remembered and reproduced some elements from one session to another so faithfully. Variations on a theme, however, may assist children with mental processing, by allowing them to hold some things constant while experimenting with others.

Drawing Pictures

Everyone seemed very confident that he or she could draw. Spatial orientation did not seem to be used as a guarantee of meaning in the drawings as it sometimes did for names or writing. The children confidently drew whatever they wished, although a very insecure child, like Jessica, or a novice, like Kenneth, needed some reassurance to get started. Other than the elements of pictures mentioned above, children drew clouds, sharks, whales, fish, crabs, sea snakes, apple trees, angels, vehicles like

cars, trucks, and trailers, mermaids, and Minnie Mouse with great aplomb.

Mandler's (1984) description of the two important defining scene schema elements as inventory (the objects that typically appear in a scene) and spatial layout can both be found in the children's drawings. Kenneth, the youngest, added a cage to his lion by the end of the study, an object that ought to belong with a lion (at least in his experience), and appropriately placed it around the lion scribble. Daniel, the day care child Jessica's age, carefully and painstakingly drew water all around the figure of his whale.

By the time children were the ages of Perron and Matt, they spent a great deal of time adding elements appropriate to the scene they were constructing. Matt's castle scene included a dragon, a knight, a dungeon, and a passageway into the dungeon (see Figure 18).

More abstractly, Laurie's struggle to divide picture, name, and writing can be seen as an attempt to reproduce the elements of a more abstract conception of a scene. She could, in fact, be seen as struggling with the semantics of her scene, in considering what constitutes writing or a picture, as could the other children who clearly worked on this problem.

Coordinating Story and Picture

What sort of links did these children make between their pictures and their stories? Were the pictures an illustration of the story, or was the story a description

Figure 18. Scene elements appropriate to a castle setting include the dragon, the flag, a dungeon on the lower left, a passageway to the dungeon, and an entry gate.

of the picture? How did children coordinate these two elements?

Kenneth began coordinating his by continuing, as if there were no dividing line between his story and his pictures. In his first story, which was the list of names of the other children in the class, his picture was simply "Kenneth," an additional name. In the second, when the idea of adding action to the people was suggested to him, the picture was again of an additional person in action. In the third in his series, the story part was again people plus action, but the picture was suddenly spaceship! or airplane! (the meaning shifted in the course of the drawing). The scribble had no permanent identity, changing as his thoughts changed, and also had no discernable relationship to the story he had told. When the story was read back to him after his drawing was completed, this lack of coordination between the theme of the one and the theme of the other was of no concern to him. This lack of coordination continued, with pictures of an airplane accompanied by ABC's for a story; a kite for a story with a tree, his mommy, and brother; his own writing, which says "fly a kite" and accompanies a picture of an airplane; the picture of a snowman accompanied by writing which was the names of letters; and then the picture of Leo, with the dictation, "A Leo." The importance of this picture theme seemed to help Kenneth coordinate these two elements. His next picture began with a tiger drawing.

Teacher: What is this on here?

Kenneth: Um. A tiger.

Teacher: A tiger. Oh! wonderful. Is it a picture of a tiger, or is it his name, that you're writing?

Kenneth: A friend of Leo the lion.

Teacher: He's a friend of Leo the lion? What's that part there?

Kenneth: Uhh, the tiger's feet.

...

Teacher: Can I write something on here? Right there? What should I write?

Kenneth: Leo the lion [points to picture].

Teacher: I'm supposed to write about that? What should I say?

Kenneth: That's Leo the lion.

In this case, it seems as though the dictation may have stabilized the picture. The emotional importance of Leo has pulled these two elements, picture and dictation, together. In his final story in this sequence, Kenneth very clearly drew a picture of Leo in his cage, and dictated that phrase to go with the picture. Neither the day care child nor the Head Start child his age achieved any coordination between a picture and a dictated story line.

Jessica began her productions with storytelling, and was able to draw the elements of her story. Her first story was about herself and her mother riding on a unicorn, and she drew a picture to illustrate that. Her second (see Figure 19) was about herself dressed as a clown on Halloween, and the Minnie Mouse costume she wore to nursery

I've been a clown for Hallowe'en. When I was a little girl I was. I went trick or treating. I got lots of candy. Then I went to school with my Minnie Mouse costume on.

Jessica

Figure 19. An early achievement of coordination between picture and story theme - Jessica in her Minnie Mouse costume.

school for the last Halloween. She drew a picture of herself in a Minnie Mouse costume to illustrate this story. For her third effort she began with the picture instead of a story, and drew a house, a unicorn, a mother and a baby. She made sure that all of these elements were in her story.

Teacher: What shall I write now?

Jessica: I went to the Fair one day.

Teacher: [repeating as she writes] I went to the Fair one day.

Jessica: With mommy

Teacher: With mommy.

Jessica: When I was a baby. Do I get to take this home today?

Teacher: Sure. Do you want to put some more in this story or is this enough?

Jessica: I think I'll put some more in the story.

Teacher: All right.,

Jessica: I, uh, rode a unicorn to the Fair. And, uh, I think that's all.

Most of these same elements were present in the first story she had done, which reads: "Jessica was riding a unicorn. We rode to the Fair. We got cotton candy. I flew up in the air. My mommy is riding with me."

The repetition of elements from one story to the next, with some variations, seems to be common among the younger children. The picture elements are also repeated, perhaps more often than the story itself, because these children have a few patterns, like the body shape and (in Jessica's

case) the unicorn that she figured out in her first story that they are able to repeat with efficiency.

In her scene produced on February 8th, Jessica was a more ambitious artist, and began by drawing an airplane, but could not quite bring her idea to fruition, so she covered it with a turkey drawn by tracing her hand. She then stated a desire to draw Canada, but when the teacher suggested that that might be a big job, she settled for several kitty cats. She then said that she had forgotten to draw a person, and added one, and then a "little horsie." When it was time for her story, she said that she and her mommy were planting a garden. Perhaps in this long sequence of drawing, she had lost a thread of some sort that would have helped her find a way to coordinate the picture and story. This often seemed to be the case with the older children, who preferred drawing to storytelling.

Her next several stories followed this same pattern, with elaborate picture drawing, and a story line that seemed to be disconnected from any theme in the pictures. On March 20, she returned to a more simple picture, of her mother, and the original story setting (for this series), stating, "I went to the Fair one day . . . with my mommy." This is the last story in which her mother appeared, and it seemed difficult for Jessica to find another story theme, without her mommy, that interested her. In her final picture at the end of April, she drew herself, her best friend, and her babysitter in her house, and asked that

this be written on the door of the house: "Me and Briana's house and we're playing in it. And Tanya's house. We're playing in our house." This was a well coordinated statement, pictorially and orally, and may have reflected Jessica's feelings about her relationship with her mother.

The other children who were this same age did not achieve any coordination between picture and dictation. Amanda, for example, dictated, "The hat. I see it. At Clancy's. The t.v. A box. Cheer . . . ," but when asked what was in her drawing, identified her scribble as balloons.

Laurie typically had more scene elements in her pictures, as she liked to draw a figure and write, sometimes names and sometimes stories as well. Her first several scenes pictured her dogs, and her stories were about them. The drawing and writing were done before the storytelling. At the end of February, Laurie finally drew a new picture theme, a monster. The story was still about the dog, however.

Teacher: Who is this a picture of?

Laurie: A monster.

Teacher: Are you going to read it to me now?

Laurie: Dear mommie, and daddy, and Penny and Champ [the dogs] I love you. And I hope we get a new dog. In the summer time. I would love another Champ, so I will name him Champ!

The next one was another figure, this time of her father, with a message to her mother.

Teacher: Is this the writing? How nice. Can you

read me what you wrote?

Laurie: Yes, it's, um, dear mommy, I love you, good-bye.

Teacher: O.k., and what's the picture.

Laurie: It's my dada.

Teacher: It's a picture of your daddy, and then it says something about your mommy? O.k.

The discrepancy between story theme and picture theme is not of concern to Laurie. The two elements are congruent in the last example, in that each is about a parent, but she made no attempt to coordinate them beyond that, and similar solutions were used in the rest of her scenes in the series.

The other children Laurie's age did begin to coordinate the theme of picture and story. Ashley (from day care) drew a picture of a butterfly and dictated, "The butterfly. It flies. It turns into a butterfly." Joshua did not dictate a story line, but his Peewee labels were identified with the body shapes that he drew.

Rita was the first storyteller of the group. In her first story there was simply no apparent coordination of story and picture theme, as the story was about her cats and the picture was of a spaceship. There may, of course, have been some connection in her mind between the two elements, but if so, it seems to have been unnecessary to verbalize that connection. In her second story, the story line read:

> Morgan hit Sabrina. Sabrina ran away when Morgan was in bed. Then Prina came and scared Morgan away.

> Buffy was sitting on the truck. It has bubble gum in the truck. They ate it all.

Of the two possible settings for this story, Morgan (a sister) in bed, or the truck, Rita chose the last to draw. When her picture was finished, the teacher asked her to show where each of the story characters might be. Buffy and Sabrina (cats) were each in the picture, and Buffy was drawn chasing Sabrina away.

> Teacher: That wasn't in your story, though, was it? [reads story aloud]. Rita, this is where Buffy is chasing Sabrina, up here?
>
> Rita: Uh huh.
>
> Teacher: So that's something that happened in your picture, but not in your story, right?
>
> Rita: Uh huh.

The coordination of story and picture has been accomplished this time by picturing a setting and a character from the story she told, and then extending the original story line in the description of the picture. Variations on this system of coordination were used by Rita, who often drew a main character from the story, although the setting might be quite different from the story. For example, the cats were the main characters in another story of February 20th.

> Buffy scratched Sabrina. He ran into the shelf and bumped her head. Sabrina did that, not Buffy. Sabrina fell down and said meow. Buffy and Sabrina and Prina ran away together. They three bumped their head on my bed. They slept on my bed and I was under the pillows. The easter bunny put Sabrina in the basket. Sabrina hopped in the egg.

The main characters of this story were then drawn in a spaceship, which they "spaced upside down. They spaced

upside down buttons," thus continuing their adventures in the picture mode.

Casey, the Head Start child Rita's age, made a strong connection between her story line and her picture through an emotionally important theme, the death of a number of her family members. While it seems unlikely that all of the people named by her as having died would have actually met that fate, her teacher indicated that several close family members, including her mother, had indeed died. Casey drew their pictures and told about them in the first session, and returned to this theme for her second story, although her picture seemed to have nothing to do with this theme.

Perron was a definite artist, and never chose to begin with a story. In his first picture he drew a lion, and then drew another, which shifted its identity to a picture of himself. This identity shift recurred in the story he told.

Perron: It's a lion. . . Another lion.

Teacher: Another lion!

Perron: That's a daddy lion.

Teacher: That's pretty wild. We're going to have two.

Perron: It's me and a lion.

Teacher: What shall I write?

Perron: Two lions went out, and that's all.

Teacher: Two

Perron: No, I mean one lion and one person.

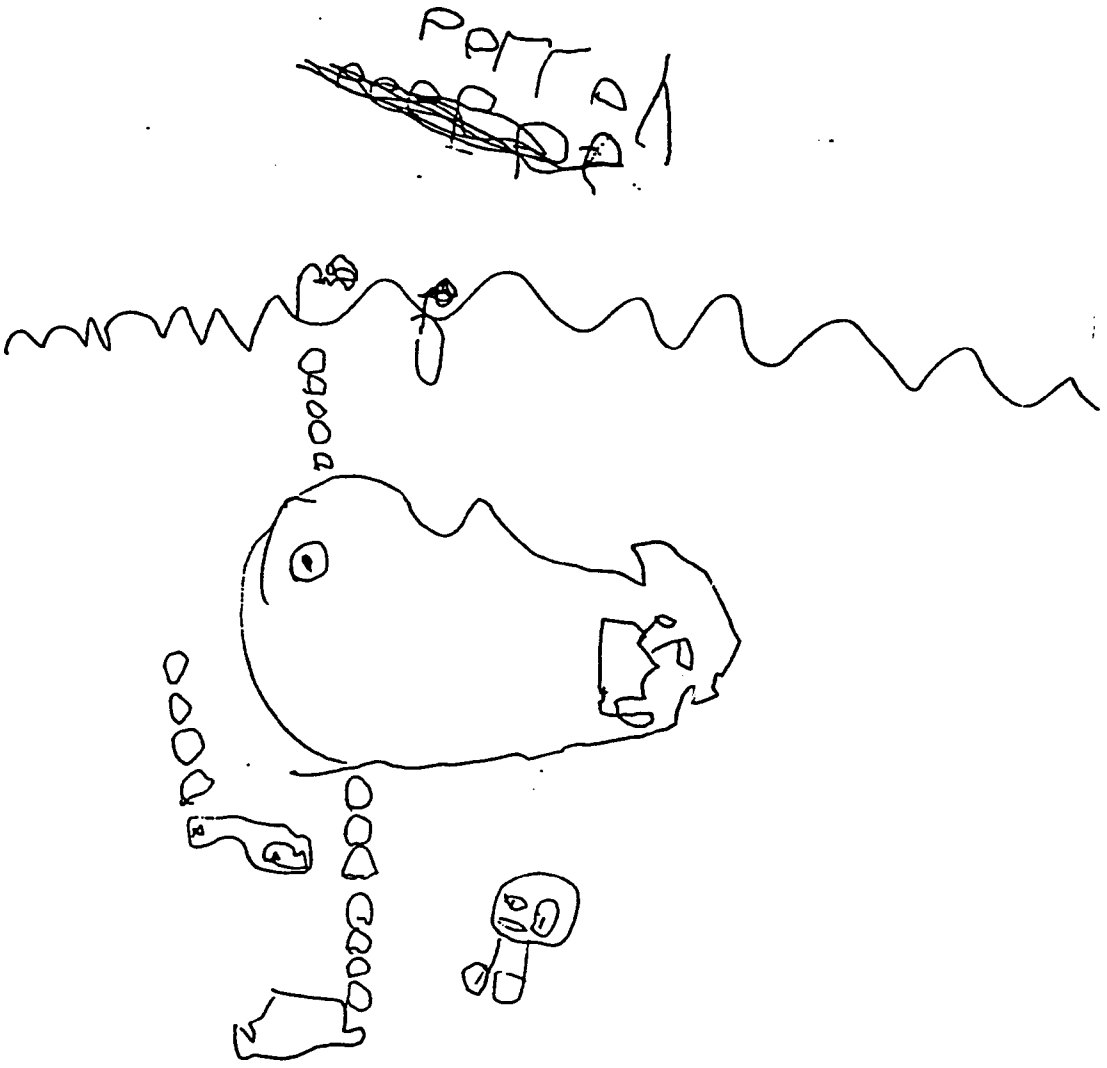
Perron's pictures began to get more complicated after this. Unlike the pictures of the younger children, Perron's pictures indicated that he had enough control of his drawing to be able to try many more elements, like angels, crabs, and whales, and the possibilities this opened up seemed to absorb his interest more and more. His drawing on February 13th (see Figure 20) included a crab, a "hook that fell down," a killer whale, a baby killer whale with a crab inside, a "sewer...[that] belongs under water," a dolphin, and a drowned person. It would have been difficult to find a story line that would have fit in all of these elements, and Perron settled for a brief description, "A crab inside a whale. And there's a person drowning, saying help."

Perron did not want any text written on his next several pictures. The heavy thinking seemed to be going on in working out the complications of picturing a bird inside a fish, or placing a road appropriately to go with his house, and when the drawings were finished, so was he. His final picture in the series was very complicated, took up the whole page, was a well coordinated scene of hidden Easter eggs, and apparently did not need any dictation to explain anything about it or describe any of the action.

Teacher: Perron, you want to tell me about this picture? What's this a picture of?

Perron: There's not enough room.

Teacher: I won't write it. I don't have to write it. Just tell me about it...Like, once upon a time...



A crab inside a whale. And there's a person drowning, saying help!

Figure 20. A simplified story line.

Perron: Once upon a time, what?

Teacher: Anything, about your picture.

Perron: Nothing.

Teacher: Nothing happened here? Nothing at all? How did those eggs get here?

Perron: Well, I'll have to draw the bunny for that.

He had no interest in adding a story line about how the bunny came and hid the eggs. The bunny, an important element of the story, had to be added to the drawn scene.

The day care and Head Start children this age had well formed stories, and Emily, from day care, had a picture as elaborate as any of Perron's (see Figure 21). Her story began with "once there was" and ended with "they lived happily ever after," with connected events between, indicating a well developed idea of what a story should contain. Tyler, from Head Start, could retell a fairy tale (the three pigs), only his ended with everyone playing instruments together (see Figure 22). Music often followed story time in his classroom.

Matt was another artist, who was working hard on elaborating his pictures. Like Perron, he didn't have very much to say about his drawings. For his first one, he stated that he would like to do the writing part first, and then the teacher asked him if he would like to do the writing or if he wanted her to do it. He chose to do it himself, "I want to do the writing part," and then drew a picture. When he had finished drawing, the teacher asked:

Teacher: Now, would you like me to write something

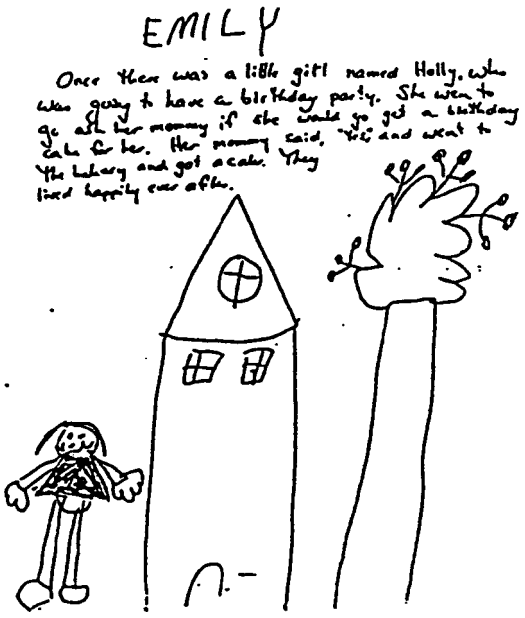


Figure 21. A well formed story and picture.

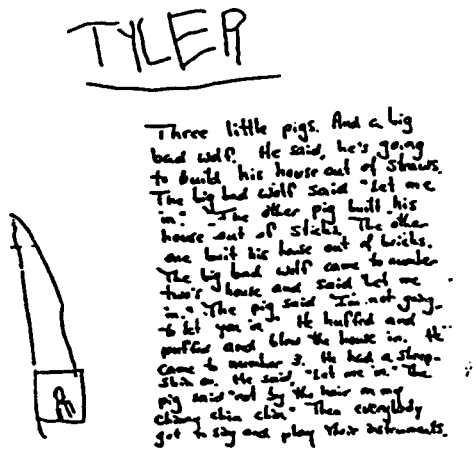


Figure 22. One of the pigs is waiting in the house.

about this?

Matt: Yeah.

Teacher: All right, can you tell me something about this?

Matt: I forget.

Teacher: You forgot what the story was going to be about?

Matt: Yes.

He was then willing to describe his picture, of a car driving on a hill, but it is interesting that he seemed to have a story idea in mind when he began. He seemed to lose the thread of it in drawing the picture, but remembered that he had had one, which confused him when he was ready to dictate the story.

Unlike Perron, Matt was almost always willing to give some verbal description of his picture. These dictations were very poor renderings of the complicated thought and design that went into the production of these scenes. The picture on February 22nd, for example, simply has the dictation, "Me and my daddy were walking." That sentence gives no clue to the depth of meaning in the picture.

Matt had begun by drawing his daddy (see Figure 23), and then added a hand attached to his which was the beginning of a new figure. He then stated that the daddy figure was himself:

Matt: Cause he's really bigger than me. Taller. . . I'll make a remote control racecar in my hands. . . A person driving the car.

Teacher: Oh, I see, a little person.

Figure 23. The design of this picture was far more elaborate than the story line would indicate.

Matt Yeah, but he doesn't even move.

Teacher: I like the way you did the wheels. That's really interesting.

Matt: Yeah, all I did was make right here.

Teacher: Well, that's how it would look from that direction.

Matt: That's how it would look from on top. . . I could do this, make my sister. . . You know why I make her so big? Cause she's only seven.

Teacher: Your sister has something, too. Oh! She has a remote controller too!

Matt: Yeah, we're racing them.

In the final picture, the whole family is walking down the road, Daddy walking the dog, Matt and sister racing cars, Mother, the cat having a race with the dog, and a sun, "cause you can't walk at night."

Lauren, the day care child, had a well worked out coordination between her picture and story as well. The girl in the story was having a birthday party, and was wearing a birthday party hat on her head. Amber, from Head Start, drew pictures of people and told stories about them, or told stories about people and then drew about them (see Figures 10-12). Although her body schemas and the detail of her pictures seemed immature by comparison with her age-mates (as did her name string, discussed above) she was able to begin in either mode, dictation or drawing, and make a congruent element.

Beau also began consistently with the picture. He discovered his tornado theme serendipitously, when a peer

suggested that idea as an explanation for his furious scribble.

Child: What is that, Beau?

Beau: I don't know yet. It's hard to find out.

Child: A tornado.

Beau: No. Yeah, a tornado.

He then added a dictation on this theme that stated his picture was of a tornado that "came to the house and tore the house up." Beau's pictures seemed less elaborated than Perron's or Matt's, and were more similar to Rita's than the other boys. His dictations were more closely coordinated to his pictures than her's were, however.

In his picture done on February 8th, he began with a plan in mind.

Beau: It's going to be a house.

Teacher: I could tell...When I saw [the chimney] I knew it would have to be a house.

Child: What is that?

Beau: It's a little thing, that's flying.

In a more elaborate scene done on February 22nd, he had the story clearly in mind before he began (see Figure 25), and spent a good deal of time at the beginning trying to orient the direction of the action on the page and decide what size to draw the vehicles in order to get the picture of the story to fit. He drew the picture first, and then told the story that he had had ready from the beginning.

Julia clearly had a number of strategies ready to coordinate the story and the picture, and she could begin

in either mode. One strategy was to tell the story and then draw a picture of the site of the main event. She could draw a picture of the main event of the story, or picture the main character of the story. She was an accomplished drawer as well as story teller, and had no difficulty finding a way to coordinate the two modes.

The interesting difference between Julia and the younger children was that she seemed to appreciate that a coordination of the two might be expected. On March 20th, she began by drawing a picture of a snowman, copying the drawing theme of a child who had preceded her in the story corner. The dictation of her story was about her daddy's trip to Minnesota, where he went to visit the biggest ball of twine in the state (if not the world). According to Julia's mother later, this ball of twine was of great interest to Julia and her brother, and her father had actually been to Minnesota the previous summer, if not to see that ball of twine. When challenged about how the snowman related to this story theme, Julia was not at a loss.

> Teacher: How does the story about your daddy going to see the biggest ball of twine in Minnesota, and this snowman, I don't understand how these two things go together. Can you tell me how they go together?
>
> Julia: Because [pause] it's [pause] it's almost Christmas time, that time. It was, we got a snowman, with his hat, when he was in Minnesota.

Julia had solved the discrepancy in an elegant and

plausible fashion, and maintained a coordination between the picture and the story theme, when such a connection looked as if it would be difficult, if not impossible.

Victoria, the oldest Head Start child, also seemed to understand that a connection would be expected. In her last session she drew a picture of a cage, as a friend had done, and dictated the names of many of her family members. When challenged as to how these could go together ("What does your family have to do with the cage?"), she replied, "Uh, clean it out," which seems like quite an elegant solution.

Scene Violations

The sample has been described as using spatial placement to assist with placing a name scribble; to assist with providing differentiation for writing and drawing scribbles before they become visually distinct; to divide picture "writing" from "drawing"; and (perhaps) to help to orient the name string in the early stages of its emergence in the scenes the children produced.

Another way to look at how children used spatial elements in their production of scenes is to examine instances in which the children rejected some element in a scene because it may have violated some rule of scene construction. There seems to be little information at present on how or when children begin to understand and use rules of scene construction. Objections they may make to spatial placements of various kinds may give researchers

some idea of the kinds of rules they may be constructing, and how they use those rules for processing scenes, and, indeed, for figuring out the printed page.

One of the earliest such objections noted was in Jessica's scene of January 24th. Although she did not object to having a cut-out of her name placed over the written dictation, she did object when it was placed on top of an element of her picture. Her specific objection was that "I wouldn't be able to see the rest of the words." It is interesting that she objected to covering up words in this way, and not a part of her drawing.

On February 13th, she stated that she did not want her name written sideways on her picture (as someone else's had been). She would not mind, however, if it covered up a bit of her mommy's dress. This indicates that she may have been aware of the normal horizontal nature of print, and did not want that orientation violated in her scene.

In her next drawing, Jessica did object to writing on her picture:

Teacher: Is it all right if these letters get right in the middle of this house?

Jessica: Um, it's ok if you get them right there [points to the bottom of the page].

Laurie did not yet seem to have any strong opinions about how things could not be done. She was still working out her ideas of what could be, perhaps. On February 13, she did not object to the dictation spilling over into the picture, overlapping an element of it. On February 27th,

she raised no objection to the dictation written along the side of her picture instead of across the bottom or top. As discussed above, Laurie was working out her ideas about the separation of picture, story, and name, and may not have had those so firmly established that violations of them would be noticed.

As discussed above, Rita had some idea of the separateness of name, picture, and dictation. Her clearest statement on placement of these elements was on March 27th, when she drew a picture of her house and Grandma's house that she had been to visit. She indicated that the dictation should certainly not be placed between them (see Figure 24).

Perron did not choose to dictate very much, as noted previously, and there were, therefore, few opportunities to note his possible reactions to scene violations. Matt, however, had some opinions. On February 22nd, the teacher asked if it would be all right if the writing of the dictation ran into the picture of his daddy a little bit.

Teacher: If I run into your daddy a little bit will that be o.k?

Matt: Uh huh, or you could make it on top of here.

Teacher: Oh, so you think it would be better if I missed your daddy?

Matt: Yeah, cause it wouldn't get in his face, and then I couldn't see my dad.

On March 27th, Matt wrote his name on the picture of some unknown person, putting it on his face. "I'll put my name on a nose," he said, giggling loudly, "I put my name

on his nose." The humor of the drawing was probably the unexpected position of his name, in the place of a nose, violating an expectation of the appropriate position for this element of the scene.

Beau had probably the most to say of any child about possible violations of scene expectations. As one of the oldest children in the study, he probably had more experience with print than many of the others, and the most opportunities to work out his ideas of scene construction. He often chose drawing as a free choice activity. On February 7th, the teacher asked if she could write across a line of his drawing.

Beau: Well, you can write right . . . You can start at the line but don't write across it.

Teacher: Don't write across the line? If I start here should I stop here [at the line] and go back over here?

Beau: Yeah.

In this same session, however, he indicated that it would be all right if part of the story or the dictation were covered up, because the picture could still be understood and the text read.

The scene that Beau produced on February 22nd required a great deal of attention to spatial considerations. It was a picture of an event, when a truck lost a trailer that it was pulling (see Figure 25). He wanted to depict the course of this event, and spent the first minutes trying to get the size of the trailer correctly so that he could picture it several times getting farther and farther behind

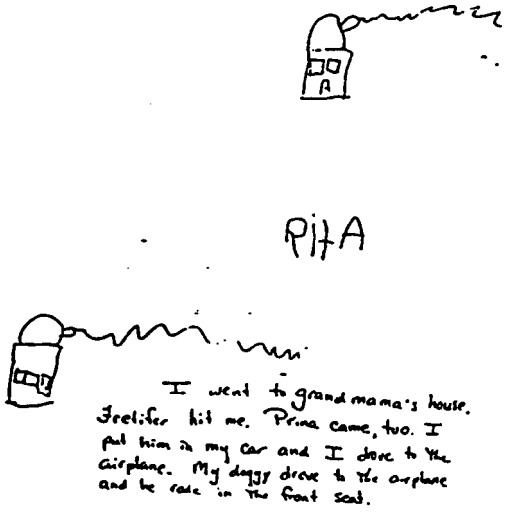


Figure 24. The story could not be placed between the two houses.

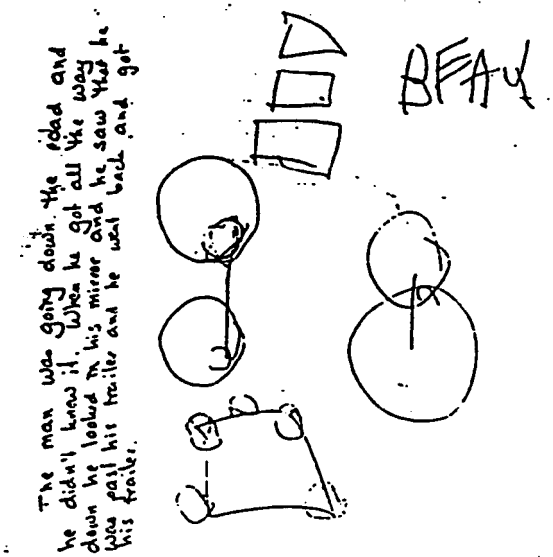


Figure 25. One of the very few stories that elicited questions about print.

the truck. He also had to work out what direction to depict this in, horizontally or vertically on the paper. He settled for the vertical axis (relative to the top of the clipboard), and then made the picture which left very little room for the story line. This necessitated a discussion of where it was appropriate to put the story and how it should be oriented.

Teacher: Where do you want me to put the writing?

Beau: I guess, you could put it right down through here [indicating a vertical line on the side of the picture].

Teacher: Oh, right down there!

Beau: I want it to say . . .

Teacher: Is it all right if I write it like this? [checking to see if this sideways orientation is acceptable]

Beau: Yes

Child: Why are you putting it upside down?

Beau: Cause there's not no place.

It is interesting that another child questioned this print orientation, as it is one of the few examples noted of children questioning about the print on the pictures. This orientation was questioned again when the stories were read and shown to the children at storytime.

When Beau finished his picture and story, the teacher questioned him about how to hold this properly when reading the story to the children.

Teacher: Now when I read this, Beau, how should I hold it to read it?

Beau: I guess you could read it . . .

Teacher: Show me how to hold it to read it.

Beau: Hold it this way [holding clipboard so the print is horizontal and his drawing goes left to right] and just tell the children that it was going this way [drawing vertical, top to bottom].

Beau clearly knew the appropriate directionality for print, as did the children who questioned why it was sideways on the paper. Beau expected his paper to be held in an appropriate position for reading when it was time to do so. It is also interesting to note that his name is oriented to the direction of the picture, not the direction of the text, which was added before he put his name on. This may be an indication that children think of their name as an element that is distinct from other kinds of print, of which more discussion will be given below.

Many of Beau's pictures following this one took up a lot of the space on the page. They were pictures of tornadoes, and the depicted violence of the event filled up the scene. This made it difficult to find a spot to put the name without violating the space for the picture. It also made it difficult to find a space for the dictation. Beau had various solutions to offer to these problems.

One solution was to move the paper down from the top of the clipboard to reveal an empty space that would hold his name. Another was to allow the text to enter the space of the picture "just a little." Dispensing with story dictation was an obvious solution. In this one, again, the tornado had filled up the page. "Now, I don't have no

space for the writing part. I don't want no writing part, just the picture part." It turned out that the picture was a school in a tornado, and that was an exciting idea, so when the teacher offered again to take some dictation Beau thought of a different solution. "Maybe you could write on the back of this." The teacher offered to squeeze it in at the very bottom of the page where there was a little bit of room, and that solution was accepted.

The day care and Head Start children did not seem to provide any further insights into this aspect of scene construction. This may have been because the relationship between experimenter and children in these settings was more superficial and did not provide a context for the sort of discussions in which these issues came up.

Elements of the Scene

Kenneth, the youngest child in this study, began working out some rules for the construction of this kind of scene, picture plus dictation, as soon as he had some experience with it. As noted above, during the course of the study he began experimenting with separation of writing and picture scribbles and the placement of writing scribbles on the page. Laurie, in her search for meaning, separated the picture, name, and writing by the use of colors, placement, or the distinction of wavy lines for writing and the line and circles elements for her name. It seemed from this sort of organization that names were special pieces of print, with a special meaning for the

children, and they often clearly reacted more strongly to a suggestion that the name could be moved or covered by something else than they did to other possible violations of their scenes.

On February 6th, Rita answered questions about her picture and story, and explained that her name was necessary because without it "Mommy won't know it's mine." When asked, "Is it part of the story, or part of the picture" she replied, "It goes right here." The name element apparently was not conceived as part of the dictation or the picture, but as another separate and most necessary element of the scene. On the 20th of that month, Rita again articulated
this idea.

Teacher: Rita, is your name part of the picture drawing or part of your story?

Rita: It's my name.

It could be argued that after all, the children wrote their names and the teacher wrote the dictation, and that therefore the children would feel more attachment to the name string. An indication of this is found in this exchange with Matt at the beginning of the study.

Teacher: Should your name be closer to the writing or to the picture?

Matt: Closer to the picture.

Teacher: O.k, why should it be closer to the picture?

Matt: Because, I can't even write the writing, really.

It is interesting to note that the children studied never

placed their names with the dictation, even if that was written first. They would sometimes place it between the dictation and the picture.

Matt explained his understanding of this issue further when questioned one day about why he put his name at the top with a sun, instead of at the bottom with the dictation (see Figure 26).

> Teacher: Your name is up here where the sun is. Why can your name be up here, but the story has to be down here? You don't know? But this is writing, isn't it [dictation]? And this is writing, [name] why are they different?
>
> Matt: Well, one of them's drawing.
>
> Teacher: One of them's drawing? Show me which is drawing? [points to his name] So, this is part of the drawing [his name] so it belongs up here with this drawing part?
>
> Matt: Yeah.

It is interesting that until this session Matt had always put his name at the top of the page, as noted earlier. On the very next drawing he broke away from this pattern for the first time and put it at the bottom, the beginning of his variations on name placement. In this picture, when the teacher asked him to point to the writing, he stated that "My name is my writing, but this [the picture] is the drawing." The following picture, drawn on February 27th, is the one in which he identified one picture as his writing and another as his drawing, which he did again on Marfch 20th. In the latter one, the figure on the left was identified as drawing, and the figure on the right as writing.

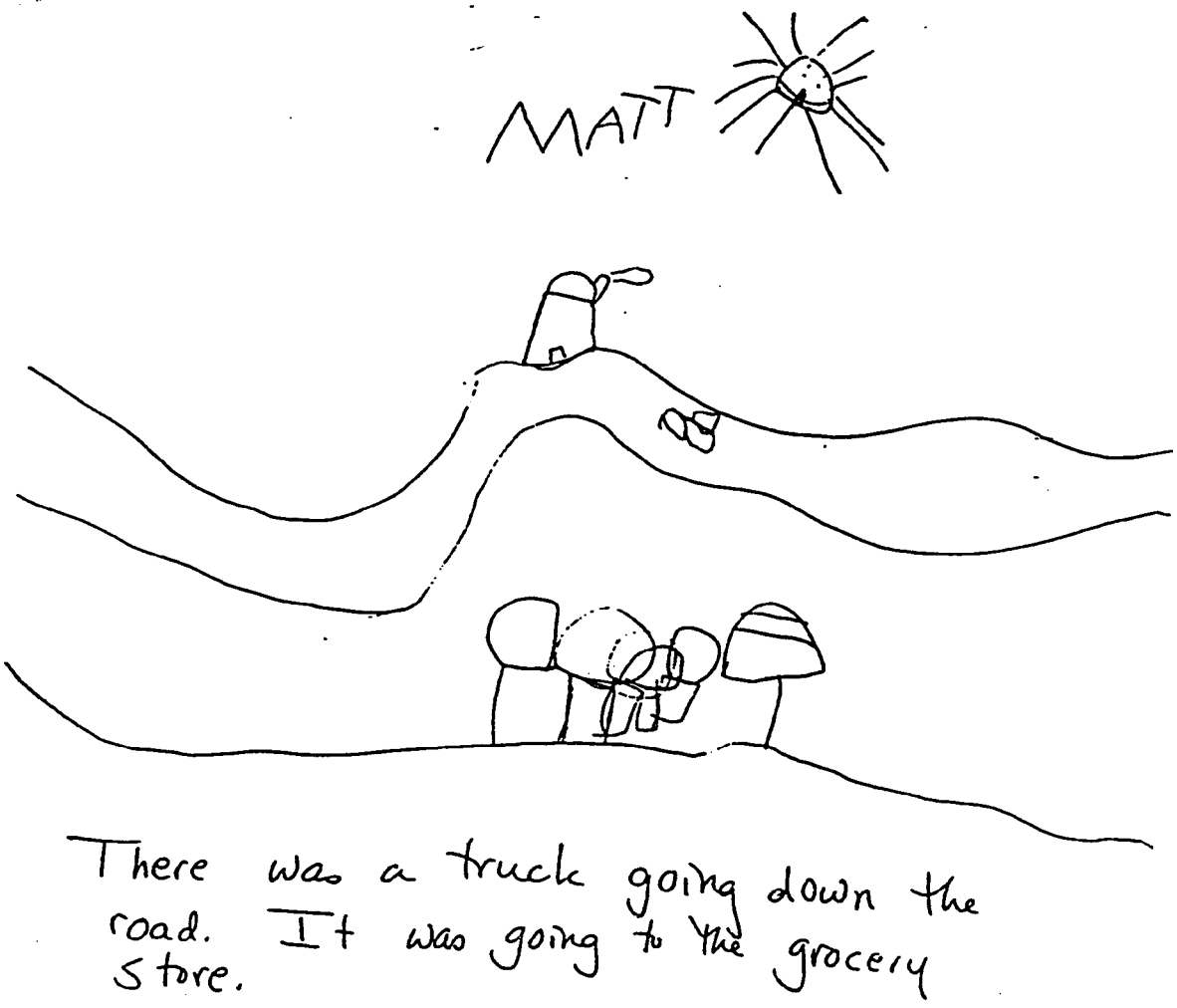


Figure 26. Matt identified his name as part of the drawing in this picture.

Teacher: And what about your name?

Matt: Matt!

Teacher: Is that writing or drawing?

Matt: Writing.

Part of what is happening in this series seems to be that Matt is figuring out a distinction between drawing and writing based on spatial considerations as an initial hypothesis. The name element, however, seems to have a separate and distinct identity from either.

Julia, the child with the most developed ideas about writing, felt that her name was an essential aspect of her productions. In this exchange, Julia had expressed the opinion that neither a part of the picture nor a part of the dictation could be covered up without destroying the meaning.

Teacher: You have to see all the words to read the story? And you have to see all the picture to see the story?

Julia: Yes.

Teacher: . . . If I covered up your name, could we still read the story?

Julia: No, then my mommy could not read it.

Teacher: But, Julia, could we still read the story if we didn't have your name, even if your mommy didn't know whose it was?

Julia: I think I really want my name.

Teacher: I wouldn't really cover up your name. I'm just asking what if?

Julia: Mm mm.

Teacher: Can't be done?

Julia: Can't be done.

Julia was perfectly capable of playing what if games in other contexts, but this was too serious a matter for such a game!

The separateness of names was mentioned in an exchange a week later, when Julia had drawn several figures from the ghostbusters movie and labeled them with their names (see Figure 27). She began by stating that she wanted to "put a name on," as distinct from when she had written her ghostbusters story, when she stated that she wanted to write a story. As she worked on the label, the following exchange took place.

Julia: How do you write man?

Teacher: . . . M A N. Is this drawing or writing?

Julia: This is drawing [pointing to the drawn figures].

Teacher: I know this is drawing, but what's this?

Julia: Names.

A final indication of the separateness of names and writing is given in her picture drawn on March 27th, when she surrounded the dictation with a speech bubble (like that found in a cartoon) and put a separate speech bubble around her name (see Figure 28).

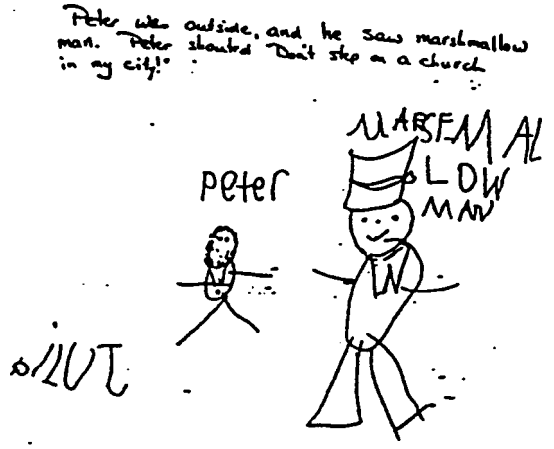


Figure 27. Julia used her writing skills to label the characters in her story.

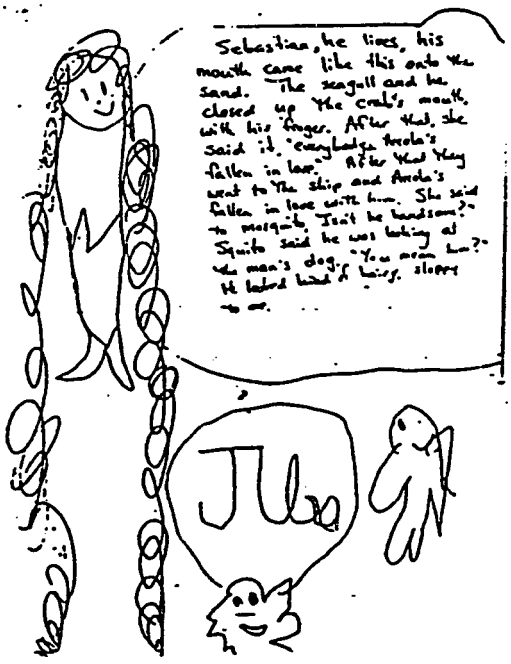


Figure 28. Julia used a separate speech bubble for her name.

CHAPTER V

CONCLUSIONS AND RECOMMENDATIONS

Purpose of the Research

The primary purpose was to investigate the way in which preschool children represented spatial and language information on a page. The focus was to study how the children understood and represented the information of a picture they produced and their own dictated or written text and how they coordinated and organized those elements in a scene.

Summary of Findings

In planning the research, it was hypothesized that the children might process print and picture identically at early stages of emergent literacy, or that they might develop different rule systems for processing picture and print at that early age. The evidence presented above indicates that children may not process print and picture identically, but that they can begin to make distinctions between them before there are observable differences in their form. In the stage of scribble drawing, print was distinguishable in their scene schemas even before identifiable early picture elements, such as suns or tadpole people, appeared. The distinguishing characteristic was often spatial, with a corner of the page or an

orientation horizontal to the bottom of the page used by the child to identify the writing, which was usually his or her name. As writing developed, spatial placement seemed to provide first a place for the name string to occupy, and then a support for the horizontal placement of the name string. These early developmental trends could lend support to Ferreiro and Teberosky's (1979) hypothesis that print is a specific type of substitute object that children investigate and about which they construct meaning at very early stages of literacy development.

It appeared from the evidence that the name string might be a specific type of substitute object. The children seemed to think of it as a third item that was distinct from the writing or the drawing. It seemed to have a slot, or place in the scene, and to be essential to the construction of a well formed scene. The rules for the construction of the name may be prototypical of the rules for writing, in its left-right orientation and its construction from letters, but young children do not appear to realize that it is writing and bears a relationship to other pieces of writing in the way that older children and adults do.

If children do not process writing and drawings identically at very early stages of literacy acquisition, and if they are constructing separate rule systems for drawing and writing that emerge from their early scribbles, what sorts of rule systems may they construct? One set of

rules that applied to children's names seemed to emerge from the data. The names were the first identified elements of print, usually identified in spatial terms (a corner of the paper, a wavy line at the top) and also as the first recognizably standard letter forms to appear. One surprising observation was the strikingly uniform appearance of the name string as a left-to-right, horizontally organized element. While children of this age do not typically understand the terms left and right, the subjects' spatial organization of the name string was usually produced in this way, with only two exceptions, Amber and Julia. Amber clearly moved toward the left-right orientation over the course of the study. Julia was experimenting with her name string in various ways, and the left-right orientation was one characteristic that she varied. Of the other 20 children in the study, every child who could write two or more letters of his or her name used the left-right pattern. It seems clear that the children have a rule that name strings are written from left to right.

That children can be very sensitive to orientations of print is indicated by the child who requested that the name Peewee be written vertically on his paper in the second and third sessions. These sessions were weeks apart, yet he made this request after seeing Peewee written in this orientation one time. When children first developed the name string, it appeared that they used a spatial slot.

This slot was the bottom or top of the page, which was used as a support for the horizontal orientation of the string. That this orientation may precede actual production of the string is indicated by Jessica's line that was apparently a placeholder for her name before she felt confident enough to produce it. Of course, it is not known what she was capable of producing, and may have been practicing the string at home, but at least in the school setting, she preferred to use the horizontal line before producing the string.

This spatial slot support for the name string became less common, perhaps because it was less necessary, for older children who had more experience and confidence in writing the string. With repeated practice the name string became more stable and the subjects had less need for spatial cues. It was the older children who seemed to experiment with spatial placement of the name, as well as with variations on directionality and other aspects of its formation.

The order of development of the name string seems quite logical. The first appearance was a scribble, identified as the name, and located spatially, as noted above. Once the child learned to make the first letter of the name, it was typically produced when the child was asked to write the name. There did not appear to be any particular spatial placement for this element. When the child became aware that there were a number of letters in

the name, and that he or she was unable yet to produce the whole string, some would state that. Others would not write their name, and stated instead that they could not do so, or asked the teacher to do so. Once the name string was mastered, or substantially mastered, the child would again write the name, apparently using spatial placement as a support element for the horizontal layout of the string.

These results were all obtained from children in institutions, where teachers typically put names on the drawings and other art work that the children produce, if only to ensure that each child takes the appropriate work home. It is unknown whether children raised in a home atmosphere, where there would be correspondingly less need for names on drawings, would follow this development. It is also true that any one child in this series, if followed longitudinally for the entire length of time of this study, might have yielded somewhat different results.

It was hypothesized at the beginning that children might develop different rule systems for processing the drawings and the dictation. What evidence was produced that this might or might not be the case? The possibilities considered were that children might attend to their pictures exclusively and ignore the invitation for dictation; that they might indicate a place for the dictation within their scene but with either no meaning or a separate meaning attached to it; or that they might

include a place for print within their scene with some meaning attached to it.

All three of those variations were found in the results of this study. Interestingly, even the very youngest children indicated a place on the page where they wanted their dictation placed, in answer to the question "where would you like me to put the writing?" Most children indicated that they would like it placed at the top or the bottom of the page. It was not very clear from their indications, however, whether they actually had expectations that the text should go in that position or whether they were politely indicating a conveniently empty spot in response to the form of the question. The best that can be said is that they seemed to understand the question and to have a preference. It would probably be worthwhile to follow up the possibility that children have such expectations in mind. A more controlled study to determine whether, in fact, they do have those expectations would contribute to the knowledge base.

Possible evidence that they may have a place in mind for the dictation, if they know it will be written down for them, could be found in the productions of Kenneth and Laurie. After some experience with dictation, Kenneth made his own writing at the top of the page. Laurie did quite a bit of early writing, and seemed to be searching for a spatial placement to guarantee its meaning as writing.

The large majority of the older children preferred to begin with drawing rather than storytelling, in conformity with the findings of Ferreiro and Teberosky (1979) that children prefer to draw first. Of the three children in the study, and a fourth in the class but not included in the study, who preferred the storytelling mode, two may have chosen it because their less well developed fine motor coordination made drawing pictures less rewarding for them than for the other children. The other two storytellers, both included in the study, had had experience the previous year (but not within the preceding 9 months) with telling stories dictated to the computer and then illustrated them with their own drawings. Whether that activity made them more comfortable with the strategy of beginning with a story is unknown, but it is a possibility. Three of the other nursery children who preferred drawing as a starting point had had the same opportunity.

The youngest children in the nursery group, Kenneth and Jessica, began with storytelling but moved toward drawing as a preferred starting point. Laurie did her own drawing and writing, fairly interchangeably.

The youngest children seemed to attach little meaning to the dictation. Danyell, the youngest Head Start child, was happy to indicate a place for the observer to write "dog," but then attached no meaning to this element. The youngest day care child did not want any dictation at all. Kenneth, the youngest nursery child, began by dictating,

and it seemed that he may have attached some meaning to it because he seemed to continue his train of thought on into his drawings. The dictation may have helped him construct a definition of writing, for after a few weeks of experience with dictation he began making writing scribbles on the top of the paper, in imitation of the dictation.

Kenneth and the children his age had trouble achieving any coordination between their drawings and the dictation. Kenneth did manage this by the end of the study, when he found a theme that was emotionally important to him. The other children his age did not. Jessica, Laurie, and Rita, and the other children from Head Start and day care did so inconsistently, and were not troubled by the lack of coordination. If questioned, they would not state or invent a means by which the two could be coordinated.

When the children began to develop well formed pictures that included an inventory of symbols combined to form a scene, verbal description or production seemed to taper off. It could be thought that perhaps these were less verbal children, but that is not the case, as they often had a great deal to say, and Matt's transcripts of his verbal description while drawing could be quite lengthy. At the end of the drawing, when asked for a verbal description, these children seemed to feel that was unnecessary. Perron often refused to give one, and Matt gave only the most rudimentary verbal description. Perhaps the processing demands for constructing complex scenes

demanded all of the children's resources. Possibly the complexity of the scenes, and their thought processes while constructing them, made it difficult for them to retrace their work mentally to give a verbal description. Conversely, the children like Rita, or Tyler, from Head Start, who produced relatively lengthy story lines, also had simpler drawings with fewer scene elements. These findings were congruent with the theories of Gardner (1985) and Paivio (1986), that the two modes are somewhat separate at this age, with relatively undeveloped access routes between them.

The oldest children in the study, Julia, Beau, and Victoria from Head Start, and Cory from daycare, had the best worked-out coordination between their drawings and the storyline. These children seemed to expect the one mode to describe and support the other, and, when challenged on that coordination, were able to provide a logical, if not obvious connection (as when Victoria said her family, about whom she dictated, would clean out the cage that she drew).

It could be argued that the connections the children made between text and picture were evidence of transductive thinking. Piaget's (1952) observation that children relate ideas that many not necessarily be connected in this preoperational stage of development seems applicable to the explanations of Julia and Victoria. It also appears that this movement toward coordination of text and picture parallels the movement from egocentric speech toward

socialized speech. These children seemed to be aware that some coordination was expected and to want to satisfy that expectation.

This line of development toward a coordination of picture and dictation, if found to be a general trend, would explain why the youngest children in Ferreiro and Teberosky's (1979) study, who were about the ages of the older children in this study, would have expected the text and picture to be congruent, with text describing and labeling the picture. That would seem to be a natural assumption for a 5-year-old child, if this description of a child's development moving toward a coordination of picture and dictation has validity.

The children in the sample, except for Julia and Laurie, did not do much writing of their own aside from the name string. Ferreiro and Teberosky (1979) maintained that children write in terms of quantifiable aspects of written strings, such as longer lines for the names of older people. That was not observed in this study.

It was observed that Laurie, as she worked out the differences in form and function for her drawing and writing, used color, spatial placement, and teacher-written labels as guarantees of meaning for the two of them. When the differences were visually observable, as in the wavy lines for writing and a tadpole person for the drawing, she abandoned other kinds of distinctions. Matt also used spatial placement to divide drawing from writing in his

schema, although his writing was actually a separate drawing.

The results seem to indicate that children do use spatial information about some elements of scene production in producing their drawing and writing. It would be interesting to investigate further to try to determine more clearly what expectations young children may have for placement and orientation of text. The only questions they raised about the printed dictations were asked when normal orientations were violated (as when Beau's dictation was written along the side of the paper). This would seem to indicate that they expect horizontally oriented text as a regularity, and that a vertical orientation captures their interest because it is unexpected. The left-right orientation of the name strings is also evidence that children use spatial information in orienting to print. The directionality found was surprising considering that children usually have a weakly developed sense of directionality until they are in kindergarten. The orientation of the name string would seem to be an important pattern not only for learning the first letter shapes, but also for establishing the first expectations about the directionality of print.

The results also would seem to indicate that children work toward a coordination of meaning between their drawings and their descriptions or stories about those drawings. It would seem intuitively obvious that those two

elements ought to be coordinated, yet the fact that children seem to be working toward that coordination indicates that it may not be automatic, and is, in fact, a feat of the construction of meaning from the raw materials provided by the pens, crayons, and paper which adults give to children for play and experimentation.

Finally, it is worth noting that there were few differences noted among the groups of children. Names and their construction were important to all of the groups, and the rules for their construction seemed to be constructed at similar ages. One Head Start child seemed to be late in gathering the name string and orienting it in space, but had achieved this by the end of the study. The groups of children seemed to be moving toward coordination of text and picture in similar ways, and no particular lags were noted in this area. This similarity between groups would seem to indicate that perhaps visual spatial processing, if it is indeed an important variable in learning to read, write, and draw, may be closer to those processes of organic brain development than some other, more ecologically based and socially determined aspects of orienting to print.

Conclusions

The findings lend support to the constructivist view of reading development. The behavior of children like Kenneth, Jessica, and Laurie demonstrated that they were actively searching for guarantees of meaning for their

drawing and writing. They used color, form, labels, and spatial placement to indicate the meaning of their scribbles as written or drawn. This lends support to theorists in the Piagetian tradition such as Elkind (1979), and Ferreiro and Teberosky (1979) who described children as constructing knowledge of reading and writing.

The findings can also be seen to support the idea that a part of the development of print awareness is a development of a scene schema for the placement of elements on a page. The subjects appeared to be making hypotheses about what adults call writing and what they call drawing based on spatial placement of scribbles or graphic symbols. They also seemed to use a slot in the scene to place their names, which would be congruent with a hypothesis that they are using a scene schema in their constructions.

This would indicate that reading behaviors, at least in the stage of early literacy, have concepts about spatial relations as a root behavior. Children can use spatial placement to distinguish between writing scribbles and drawing scribbles before there is other observable difference. The name string appears to acquire left-right orientation as soon as two letters of the name are mastered. Spatial placement on the bottom or top of the page appears to assist in stabilizing that left-right pattern in the early stage of name-string development. Children appear to distinguish between drawing and writing as terms in their vocabulary by placing these elements in

different locations in the scenes that they create. The name seems to be considered as a third element, distinct from either drawing or writing.

The evidence of the study would not seem to contribute much support to a theory that children are processing the picture and the text separately. The development of symbolization for pictures and letters appears to arise and develop concurrently, as noted by Brittain (1979) and Clay (1982). Coordination of the two symbol systems seems weak in the younger children, and to become stronger as they get older. The subjects moved from little or no coordination of the theme of the story and of the picture toward a linkage of those two elements. The oldest children appeared to understand that a coordination would be expected.

These results could be viewed as the development of links between two separate processing systems. They could also be viewed, however, as a gradual diminution of transitivity and egocentric thinking. As the child moves toward socialized speech, there may be a congruent movement toward conformity with social expectations about the coordination of pictures and text.

The subjects did, however, appear to have preferences for either drawing or storytelling as a preferred starting point for their productions. It remains possible that this preference might be based on preference for one mode of processing over another. It is unknown what different

routes the subjects' preferences might take them as they construct further hypotheses about print.

It is also unknown whether they might prefer different starting points at different stages in their development. Perron and Matt seemed to be so focussed on working out the elements of their drawn scenes that they had little interest left for verbal production. It is possible that a child might concentrate on one processing mode at a certain point in development, which could explain this behavior.

Recommendations

One of the more interesting findings was that the subjects used left-right spatial orientation for the name string as soon as they had mastered two or more letters of their name. A follow-up study should be done to determine whether this tendency is statistically significant, whether left-handed children follow the same pattern of development, and whether there would be any long-term significance if a child did not follow this pattern.

It appeared that children could be quite sensitive to the orientation of print, and that they may have constructed rules for its placement in scenes at an early stage in literacy development. A follow-up study could investigate this question more closely, to determine whether children are sensitive to, and can identify, instances in which print violates normal conventions of placement and orientation. The youngest subject, Kenneth, seemed to construct rules for writing scribbles and their

placement from the dictation that was written down for him It would seem that writing things down for children would be helpful to them in very early stages of literacy development, as they are working out and assimilating concepts of print placement. If spatial placement is important as a root concept of writing and reading, as this study seemed to indicate, then researchers might want to investigate the positive contribution that such dictation might provide to very young children.

Spatial placement may provide clues to children that lead them to expect print to appear on certain portions of a page. If that were true, violation of those expectations would lead them to ask questions about print, which would in turn help them develop their knowledge base.

The middle subjects were described as often so involved in working out the elements of their scenes that they had no interest in dictating a story line to go with their pictures. This was interesting behavior, as it may point to demands made on processing capacity when children are involved in scene construction. Little work has been done on children's construction of drawings since the landmark work of Lowenfeld and Brittain (1964) and Kellogg (1969). Scene theory would seem to be a possible further rich field of investigation in this area because of its description of rules of construction and violations of conventions. It would be interesting to investigate how children construct rules for scenes that correspond to

those conventions, and at what ages those rules become operative.

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APPENDIX A

Subjects by Sex and Age

Subjects by Sex and Age

Name	Sex	Date of Birth	Age at end of study
		Kilby Nursery School	
Julia	F	7/9/84	5.10
Beau	M	10/27/84	5.6
Matt	M	2/9/85	5.2
Perron	M	4/29/85	5.0
Rita	F	8/16/85	4.9
Laurie	F	12/25/85	4.4
Jessica	F	5/6/86	4.0
Kenneth	M	9/23/86	3.7
		Head Start	
Victoria	F	10/21/84	5.6
Amber	F	2/28/85	5.2
Tyler	M	4/20/85	5.0
Casey	F	8/19/85	4.9
Joshua	M	11/11/85	4.6
Amanda	F	4/29/86	4.0
Danyell	M	8/7/86	3.8
		Day Care	
Cory	M	11/27/84	5.6
Lauren	F	1/9/85	5.3
Emily	F	4/19/85	5.0
Ashley	F	10/27/85	4.7
Joy	F	1/28/86	4.4
Daniel	M	4/24/86	4.0
Evan	M	8/27/86	3.8

APPENDIX B

Interview Questions

Interview Questions

1. Would you like to make a story on this paper?
2. Would you like to do the picture first or the writing part first?
3. (If child composes picture first, when he is finished): Would you like to tell me anything about your picture?
4. (If child wishes to do the writing first): Would you like to write it or should I?
5. (If child does writing): Would you like to read it to me?
6. Does your picture show your story?
7. Would you put your name on your picture?
8. Why did you decide to put your name there?

APPENDIX C

Observation Sheet

Observation Sheet

Name of child_____
Date of Observation_____

A. Child chooses to make
   1. picture first
   2. story first
B. Picture is placed to leave room for text
   1. yes
   2. no
C. Child indicates place for text
   1. yes
   2. no
D. Theme of picture and text are coordinated when
   picture is drawn first
   1. yes
   2. no
   story is told first
   1. yes
   2. no
E. Child attempts to write name
   1. yes
   2. no
F. Name is separated from picture
   1. yes
   2. no
G. Name is written as a unit
   1. yes
   2. no
H. Conventional letters appear in name
   1. yes
   2. no
I. Name is written in left to right orientation
   1. yes
   2. no
J. Name is placed
   with text
   1. yes
   2. no
   with picture
   1. yes
   2. no

GRADUATE SCHOOL
UNIVERSITY OF ALABAMA AT BIRMINGHAM
DISSERTATION APPROVAL FORM

Name of Candidate Jacqueline Allison Osborne

Major Subject Early Childhood Education and Development

Title of Dissertation Emergent Literacy Behaviors and Children's Constructions of Scenes

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Date 12/10/90

PS-1428