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"CLICK" AND TURN THE PAGE:
A CASE STUDY OF A YOUNG CHILD
DEVELOPING MULTIPLE STORYBOOK LITERACY

DISSERTATION

Presented in Partial Fulfillment of the Requirements for
the Degree Doctor of Philosophy in the Graduate
School of The Ohio State University

By

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ABSTRACT

This case study describes a young child, age 2½ to 3½, as he interacts with and explores traditional, Language-Experience Approach (LEA), and CD-ROM storybooks. The study was approached from a theoretical framework that includes a sociocultural analysis, an analysis of the constructed understandings of the child, and an analysis of the socially constructed understandings of the parent and child. The framework is derived primarily from the work of L. S. Vygotsky, but also includes a perspective of speech utterances introduced by M. M. Bakhtin. The goal was to describe the subject's storybook sharing experiences with three types of storybook media and discover the ways he developed multiple storybook literacy through interaction and exploration of the various media. The situatedness and uniqueness of each type of storybook medium created the context for multiple storybook literacy.

Data analysis revealed seven distinct episodes of interaction: episodes involving artifact use, interaction with print, reading strategies, word meaning, story text, illustrations and hypertext, and sharing and negotiating the routine. The proportion of engagement in episodes across and within storybook sharing experiences was unique for each medium under investigation.

The findings indicate that the various storybook contexts created different learning opportunities; therefore, different features were salient for each storybook medium. The
subject focused on different aspects of storybook knowledge during each type of
storybook sharing experience, which created a complimentary relationship between the
storybook media. During traditional storybooks he focused predominately on story text
and illustrations, during CD-ROM storybooks he focused on artifact use, hypertext, and
negotiating the routine, and during LEA storybooks he focused on print and reading
strategies. Therefore, each storybook medium contributed uniquely to the subject's
overall storybook knowledge and literacy development.

The study has implications in terms of the importance of representing various
storybook media within the expanding conception of multiple literacies. Also, this
toddler's experience with technology indicates that our work at reconceptualizing literacy
is not over. Technology is an important aspect of this toddler's life; he generalizes new
technological concepts in decontextualized ways throughout the study.
Dedicated to my Sweetie Pie,
James
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TABLE OF CONTENTS

| Dedication ......................................................................................................................... iv |
| Acknowledgments ............................................................................................................. v |
| Vita .................................................................................................................................. vi |
| List of Figures ................................................................................................................ x |

Chapters:

1. Introduction ..................................................................................................................... 1
   1.1 The Theoretical Frame ............................................................................................ 4
       1.1.1 Sociocultural Analysis ............................................................................... 4
       1.1.2 The Constructed Understandings of the Child ......................................... 6
       1.1.3 The Socially Constructed Understandings of Parent and Child ............ 7
   1.2 What’s New Here? ................................................................................................. 8
   1.3 Who Is James? ....................................................................................................... 10
   1.4 James’s Home ....................................................................................................... 12
   1.5 The Study ............................................................................................................. 14
   1.6 The Data ................................................................................................................. 18
   1.7 Phases of Data Analysis ....................................................................................... 19
   1.8 Trustworthiness .................................................................................................... 30
   1.9 Limitations ............................................................................................................ 31

2. Traditional Storybooks ................................................................................................. 33
   2.1 Episodes Involving Artifacts with Traditional Storybooks ............................... 34
   2.2 Episodes Involving Interaction with Print with Traditional Storybooks .......... 38
   2.3 Episodes Involving Reading Strategies with Traditional Storybooks .............. 40
   2.4 Episodes Involving Word Meaning with Traditional Storybooks ..................... 43
   2.5 Episodes Involving Story Text with Traditional Storybooks .............................. 44
   2.6 Episodes Involving Illustrations and Hypertext with Traditional Storybooks .... 46
   2.7 Episodes Involving Sharing and Negotiating the Routine with Traditional Storybooks ........................................................................................................... 50
   2.8 Summary ................................................................................................................ 52
<table>
<thead>
<tr>
<th>Figure</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>James's Behaviors/Statements – Coding Criteria and Examples</td>
<td>22</td>
</tr>
<tr>
<td>2</td>
<td>Parent Behaviors/Statements – Coding Criteria and Examples</td>
<td>23</td>
</tr>
<tr>
<td>3</td>
<td>Episode Descriptions and Comparison to Yaden, Smolkin, and Conlon (1989)</td>
<td>27</td>
</tr>
<tr>
<td>4</td>
<td>Proportion of Engagement in Episodes</td>
<td>29</td>
</tr>
<tr>
<td>5</td>
<td>Salient Features of Each Medium According to Type of Storybook</td>
<td>29</td>
</tr>
<tr>
<td>6</td>
<td>LEA Storybook, My Counting Book, Page 1</td>
<td>101</td>
</tr>
<tr>
<td>7</td>
<td>LEA Storybook, My Dad is Awesome, Page 5</td>
<td>105</td>
</tr>
<tr>
<td>8</td>
<td>LEA Storybook, James Has a Boo-Boo, Page 3</td>
<td>108</td>
</tr>
<tr>
<td>9</td>
<td>LEA Storybook, Toy Story Book, Page 2</td>
<td>109</td>
</tr>
<tr>
<td>10</td>
<td>LEA Storybook, The Funnies, Page 4</td>
<td>111</td>
</tr>
<tr>
<td>11</td>
<td>Comparison of Storybook Sharing – Proportion of Episode Occurrence</td>
<td>122</td>
</tr>
<tr>
<td>12</td>
<td>Comic Interpretation of Storybook Media</td>
<td>138</td>
</tr>
</tbody>
</table>
CHAPTER 1
INTRODUCTION

James (J) - "I want to click on something."

Mother (M) - "Okay. You got your arrow."

(James grabs the softball-size yellow ball on his Microsoft EasyBall - a mouse especially designed for young children - and moves the arrow to Stellaluna and clicks (pushes the mouse button to select an item). Stellaluna comes to life, then the elephant, the giraffe, and the caterpillar as he clicks them in turn. He clicks the objects two and three times each to see if the hypertext changes and notices the giraffe).

J - "The giraffe ate the plant. Now he got a drink" "These bats don't do anything."

(James was clicking rapidly on the bats with no response.)

M - "I bet they do. " "Try putting the tip of your arrow right on one and try again."

(James moved his arrow and clicked the bats again.)

J - "Look, Mommy, the bat flew away!"

M - "Okay. Now, do you remember how to go on to the next page?"

J - "Yea, you go down here."

(James indicated by pointing to the icon on bottom right-hand corner of the screen, that he knew where to click and turn the page.)

This is not your typical storybook sharing session between parent and child. In this scenario, James and his mother are seated in front of a computer, and each has his own
mouse to interact with and explore the storybook. The CD-ROM storybook they are using is *Stellaluna*, an interactive storybook published by Living Books.

This storybook experience is one of many that today’s children and parents can enjoy. Since the publication of the first children’s book by John Newbery in the 1740's, there have been dramatic changes in the look and feel of children’s books. While the children’s books of yesteryear contained engaging stories and verses, attractive pages, and sometimes even toys (Norton, 1983), they are no match for the books written to amuse today’s children. Today’s children’s books include pop-ups, lift flaps, moveable parts and levers to animate illustrations, buttons that elicit songs and sound effects, and interactive and fully animated storybooks. The storybook experience has become an interactive exploration of storybook media.

It is important to note that the toddler in this study was emerging as a reader and writer. His emergent literacy development included numerous explorations and interactions, such as, reading, writing, symbol making, speaking, creating, and playing. Simultaneously with the development of multiple storybook literacy, described in this study, James was developing multiple literacies in other areas of emergent literacy. For example, he used various tools in numerous settings while writing. He used a word processor, email, stamp letters, sidewalk chalk, markers, crayons, paint, notebooks, and various other media both independently and as a shared writing experience. Even though data was gathered that included various aspects of James's emergent literacy development, the focus of this dissertation is narrow and includes only a description and comparison of his storybook experiences.
The purpose of this study is to describe how a toddler, James, interacted with and explored three types of storybook media both with his mother and independently. James’s interaction with and exploration of traditional (print version) storybooks, CD-ROM storybooks (like Stellaluna), and Language-Experience Approach (LEA) storybooks is observed, described, and examined. The traditional storybooks used include print versions of CD-ROM storybooks and numerous titles from James’s personal book collection and the local library. The LEA storybooks used in the study are books that James and his mother create together using a Language-Experience Approach format. The LEA storybooks include dictated oral text by James and some of James’s illustrations. How James and his mother created and used LEA books will be discussed in chapter 4.

This case study includes a description of James’s interaction with and exploration of storybooks, with his mother, at home. The benefits of storybook sharing between parent and child have been well documented by researchers (Beach & Hynds, 1991; Sulzby, 1985; Sulzby & Teale, 1991; Wells, 1986), and are commonly believed to provide children with the foundation they need to be successful in school. More specifically, Durkin (1966) found that students who were read to at home by their parents were likely to score higher on reading achievement tests in school. Additionally, studies of early readers often include experiences where the child was read to at home from a young age (Bissex, 1980; Clark, 1976; Durkin, 1966; Gardner, 1970).

The synthesis of storybook research suggests that children benefit in numerous ways from interaction with and exploration of storybooks at home with their parents. The importance of sharing storybooks with young children is clear. What is less clear is how
a young child interacts with multiple types of storybook media, such as, CD-ROM storybooks and LEA storybooks. A second unexplored aspect of storybook sharing is the similarities and connections that exist for the child as he experiences various types of storybook media. For example, what is unique and salient in each type of storybook experience as compared with other storybook media experiences.

These are the questions that this case study is intended to answer:

- How does a young child interact with and explore CD-ROM storybooks, traditional storybooks, and LEA storybooks?
- In what ways does a young child build multiple storybook literacy through interaction with and exploration of CD-ROM storybooks, traditional storybooks, and LEA storybooks?

The Theoretical Frame

This study was approached from a theoretical framework that includes three dimensions: a sociocultural analysis, an analysis of the constructed understandings of the child, and an analysis of the socially constructed understandings of the parent and child. The framework is derived primarily from the work of L. S. Vygotsky, but also includes a perspective of speech utterances introduced by M. M. Bakhtin.

Sociocultural Analysis

Wertsch (1989), in his discussion of the sociocultural approach to mind, indicates that mental functioning reflects the sociocultural setting in which it occurs. This approach examines the significance of historical and cultural influences on mental functioning. Interpreting the sociocultural perspective of Vygotsky, Wertsch notes that the sociocultural comparison need not be across traditional and modern societies. It is easy
to see, according to Wertsch, the sociocultural comparison and analysis of "a seventeenth-century Japanese peasant child and a twentieth-century young, upwardly mobile professional in America" (p. 15). However, it is also possible to compare artifact use in a single society, thereby using a sociocultural frame that is an implicit analysis of traditional and modern societies. The comparison of artifact use across several storybook media in this dissertation is viewed as situated within culture, and therefore is derived from a sociocultural perspective. For example, the cultural uniqueness of the artifacts of each medium – the commercially prepared traditional storybook, the handmade LEA storybook, and the animated CD-ROM – contributes to the sociocultural setting in which the mental functioning occurs.

One of the main themes that emerges from Vygotsky's work, according to Wertsch (1989), is the belief that "technical tools" mediate human activity. The tools that are examined and compared, in this study, are the artifacts of storybook media. Vygotsky (1929) proposed that children learn the effective use of symbols and tools and then practice that discovery, as part of their cultural development. James is learning how to use a variety of tools or artifacts during his exploration of multiple storybook media. He demonstrates his ability to negotiate his way through a traditional storybook, turning the pages left to right. He also focuses on how to manipulate a mouse during a CD-ROM storybook. In these examples, the paper book and the electronic book are the artifacts or tools that he uses.

In a recent editorial, Luke and Elkins (1998) discuss the reinvention of literacy for our "New Times." In their discussion, technologies play a vital role in the way literacy is used. They cite how the technological artifacts of the 20th century, such as newspapers,
magazines, and commercial texts, have changed how many people use and acquire literacy. What is notable about this discussion is that these new technologies do not replace older systems of communication. In today’s world, children experience and explore both traditional storybooks and their CD-ROM computerized versions, which provides the opportunity for different types of experiences with storybooks and the context for “multiple storybook literacy.”

The Constructed Understandings of the Child

Over the course of this study, James constructed meaning about print, story text, and reading strategies, as well as illustrations and hypertext. Understanding what he comes to know, over time, as a result of his experiences with multiple storybook media is important in describing and comparing the experiences. One way that researchers have tried to reveal the focus of the child is through the examination of questions asked during storybook reading. This study examines both the questions and dialogue surrounding the storybook sharing experience and reflects a Bakhtinian framework.

Bakhtin’s (1986) metalinguistic analysis of utterances in dialogue is based on the assumption that utterances are related to each other. Utterances, according to Bakhtin, are not self-sufficient, but reflect utterances of other speakers in the dialogue. Reflecting occurs when utterances of others are repeated or referred to, but also through intonation and non-verbal modes of communication. The dialogue that occurs between James and his mother are reflective in nature. They repeat each other’s utterances, refer to previous utterances, and communicate through intonation and non-verbal means. Therefore, when analyzing the behavior and talk that surrounds the storybook sharing experience in this study, a Bakhtinian framework is adopted. James’s and his mother’s talk and actions are
coded, and categories emerge based on episodic interactions, rather than simply interpreting James’s single utterances. James’s constructed meaning with regards to storybook experiences is revealed through analyzing dialogue episodes over time.

The Socially Constructed Understandings of Parent and Child

While the interaction between parent and child are reflective in nature and based on a Bakhtinian perspective, the way that the interactions change over time can be interpreted using a Vygotskian framework. This study, like most storybook interaction studies, has a Vygotskian framework (Sulzby & Teale, 1991). Vygotsky’s (1934/1986) work is derived from the conception that learning is a social and cultural enterprise. Focusing on the social aspect of Vygotsky’s work, a framework for interpreting the episodic dialogue in this study is created. Throughout the storybook experiences, understandings are co-constructed in a dynamic, unfolding social context. An examination of this social context reveals how the parent models and demonstrates reading strategies and uses scaffolding to support the child’s developing understanding of print.

Vygotsky’s (1934/1986) conception of the Zone of Proximal Development and the recommended practice by Clay (1993b) frames the mother’s choice of prompts and utterances that lead James toward higher mental functioning with storybooks. James and his mother are co-constructing understandings that enable them to share various storybook media experiences together, while at the same time, James is moving toward independent functioning with storybooks. James’s mother’s study of Vygotsky and training in Clay’s Reading Recovery strategies create the foundation for her interaction with James during storybook reading. She is able to identify his Zone of Proximal Development and scaffold his reading attempts to facilitate his movement toward
independence. Her goal is to lead James toward independence with each type of
storybook medium. James’s mother’s prompts, utterances, and non-verbal behaviors are
best understood using a Vygotskian frame to interpret the philosophy behind the social
ccontext of the interactions and how they change over time.

What is New Here?

The combination of three types of storybook media experiences, which create the
context for multiple storybook literacy, is a unique and expanded view of the storybook
experience. The child is observed in his natural setting as he interacts with and explores
CD-ROM storybooks, traditional storybooks, and LEA storybooks. Each type of
storybook is examined, and similarities and connections in James’s behavior and talk
across types of storybook experiences are analyzed. The purpose of this study is to
describe the child’s interaction with various types of storybook media and to analyze the
similarities and connections across these interactions that lead to multiple storybook
literacy.

This study also brings new perspective by addressing a gap in the field of emergent
literacy with respect to CD-ROM storybooks. The observation and description of CD-
ROM storybook experiences is a new area of study in the literacy arena. Therefore, there
are few studies that focus on CD-ROM storybooks specifically. Matthew (1996) studied
comprehension of dyads of third graders who used CD-ROM storybooks in comparison
to their counterparts who read traditional storybooks. Matthew found that students who
read CD-ROM storybooks had increased comprehension over students who read
traditional print versions of the same story. Johnston (1995) found that the use of CD-
ROM storybooks benefited kindergartners. The CD-ROM storybooks were found to
increase the verbal ability of kindergartners who used them for at least 42 minutes per week for seven weeks. Both Matthew and Johnston found that CD-ROM storybook use benefited students in their studies. No studies were found involving preschoolers use of CD-ROM storybooks or their connection across various storybook media.

Studies which focus on CD-ROM storybooks are important in the field of emergent literacy, because researchers have found benefits for students who use CD-ROM storybooks, and because today’s students are inundated with visual and electronic media from a young age. When they enter preschool, they are already familiar with video images (Soule, 1988) and electronic media (Perez, 1990). CD-ROM storybooks bring together these familiar media components with written text. Today’s preschoolers may be less familiar with text, in the traditional sense, than they are with video images and electronic media due to their unprecedented exposure to these technologies. CD-ROM storybooks are one way teachers and parents can use students’ familiarity with video images and electronic media to present written text and story. This makes CD-ROM storybooks a powerful tool for teachers and parents of young children.

Another unique attribute of the study is the access to the participant. The three-year-old was available to the researcher virtually around the clock for the duration of the study. Studies of at-home literacy are rare due to the intrusiveness of an outside researcher and the labor-intensiveness of such studies. Researchers (Leichter, 1984; Sulzby, 1991) who have conducted studies of family literacy caution others of the difficulty in producing the desired family-setting result. While some researchers have attempted to study dyads of parents and children in laboratory settings, this environment does not duplicate behaviors that would occur naturally at home. Some researchers
(Clark, 1976; Heath, 1983; Scollon & Scollon, 1981; Taylor, 1982; Taylor & Dorsey-Gaines, 1988; Yaden, Smolkin, & Conlon, 1989), however, were able to gain access and produce studies of at-home literacy that are extensive in scope. These studies are the exception rather than the rule.

Researchers agree that literary transaction cannot be understood apart from contextual influences in the home (Beach & Hynds, 1991). Taylor (1986) emphasizes the importance of investigating at-home literacy due to the dynamic, complex, multi-dimensional aspect of literacy. Taylor concludes that family literacy occurs while families go about their daily lives rather than in staged settings. Over a decade ago, Scheieffelin and Cochran-Smith (1984) discussed the need for the investigation of home contexts and their connection to literacy. At that time, they indicate that a gap existed in the research between age two and formal schooling. Also stressed by Scheiieffelin and Cochran-Smith, is the importance of using an ethnographic approach when studying what they perceive as the complex relationships involved in the acquisition of literacy. Since that time, there has been an infusion of family literacy studies (Sulzby & Teale, 1991; Taylor, 1986; Taylor & Dorsey-Gaines, 1988; Yaden, Smolkin, & Conlon, 1989); however, a gap still exists with respect to technology use in the home. The examination of a broad scope of storybook experiences for a three year old at home, as well as the inclusion of CD-ROM storybook experiences in this study, adds unique and valuable information to the body of knowledge in emergent literacy.

Who is James?

The subject of the case study, James, is the older of two children. His younger sister, Molly, was born in the midst of this study, shortly after James’s third birthday. He lives
with both biological parents who recently celebrated their sixth wedding anniversary. James’s mother is his primary caretaker, and he has not attended day care. James lives in a suburb of the mid-western city of Dayton, Ohio. The suburb, Clayton, is a rural community comprised of mostly middle-income residents.

James’s development from birth to the beginning of this study was typical. He learned to sit up unassisted at six months and began to walk at nine and a half months. He used single-word utterances and some two-word combinations by the age of one year. He received regular well-baby check-ups, and his progress was noted as typical. He received immunizations on schedule and did not have any illnesses that required hospitalization. He remained healthy, having no ear infections or colds until age one and a half, when he contracted bacterial pneumonia. He was treated at home and recovered quickly. He has had an average number of colds and flues since that time. He was breast-fed until the age of ten months, when he weaned himself naturally. By age ten months, he walked, fed himself, and drank from a cup independently.

James has a great interest in books and reading. His parents began reading to him prior to his birth and continue to read to him today. By age ten months, he was able to point to characters and items in books and was beginning to use one-word utterances to label items in books and in his environment. Also by age ten months, he chose to look at books as an independent play activity and could negotiate his way through a book from front to back.

James’s parents both hold advanced degrees and are graduate students. James’s father is an active duty member of the United States Air Force and travels on Air Force business frequently. James’s mother is the researcher in this study and is a reading specialist and
Ph.D. candidate in the area of reading education at The Ohio State University. She is also a trained Reading Recovery teacher. The Reading Recovery training that she received allowed her to work as a special reading tutor. She was able to analyze students' reading miscues and use specific techniques and prompts to facilitate her students' development of independence with text reading.

James's Home

James's playroom is the setting for data collection. The playroom is comprised of five work centers. The centers include a computer area, reading corner, table work area, sports corner, and toy area.

James explores CD-ROM storybooks in the computer area, which consists of a large desk, chair, computer, and various CD-ROM storybooks. The hardware used in the study is a Packard Bell Legend 937CDT with a 14-inch color monitor. The computer is located on a large desk and the subject needs assistance to climb into the chair and begin a CD-ROM. James sat in his mother's lap for the first two weeks of the study, but she moved out of the immediate setting (and sat in a chair beside him) to allow for more independent exploration, for the remainder of the study. James uses a Microsoft EasyBall as his mouse, which he operates independently throughout most of the study.

The software used in this study is a collection of CD-ROM storybooks. The availability of titles of CD-ROM storybooks is limited. The researcher procured every title possible through Internet access and in-store availability, both East and West Coast.
The CD-ROM storybooks chosen either included or were derived from an actual conventional storybook that could be read with James. This excludes the animated storybooks that are video-based or movie-based. The titles chosen for the study are listed in the bibliography.

James engages in silent reading, dramatic play, and storybook sharing with his mother in the reading corner. The reading corner contains a large washing machine box decorated as a clubhouse, pillows, flashlights, a small rocking chair, books on audio tape and a tape player, a crate of homemade LEA books, and a crate of commercial books to share.

James does puzzles, draws pictures, and plays with playdough in the table work area. The table work area contains materials that James can reach on his own, such as paper, scissors, crayons, markers, puzzles, stickers, playdough, items for playing with playdough (cookie cutters, plastic utensils), and an easel. The easel has areas for using magnetic letters, drawing on a dry erase board, and drawing on a chalkboard. There are two chairs at a child-size table and a child-size rocker in this area. The rocker is often used while doing work at the easel. The easel was added to the table work area midway through the study.

The sports corner consists of sport-related items for dramatic play and sports activities. Balls, bats, gloves, hats, golf clubs, etc. are housed in a crate in the sports corner. A basketball net and foul line marker are also part of the sports corner area. Here, James engages in dramatic play as a character in Space Jam, a military guy in a helmet, Daddy playing softball, Pop-pops playing golf, and various other fictional and real-life characters.
The largest area of the playroom is the toy area. It consists of several cabinets filled with miscellaneous store-bought toys, household items, and homemade toys. In this area, James engages in dramatic play, uses props, builds with blocks, creates games and activities, etc. He removes and returns items to the cabinets on his own. He uses tools and creates new combinations of props to play various games and activities.

The Study

This case study describes James’s interaction with and exploration of three types of storybook media that create the context for multiple storybook literacy. The use of single case descriptions to explain the development of literacy has emerged as an acceptable practice among emergent literacy researchers. Studies conducted by Bissex (1980), Crago and Crago (1976), Harkness and Miller (1982), Lass (1982), Martinez (1983), and Snow (1983), set precedence for further single case studies in the field of emergent literacy. Researchers who studied their own children and single case examples, conduct studies that derive their strength from context, presenting the natural environment of literacy development. It is within this natural environment that we view James as he “goes about” literacy learning.

This yearlong study, occurring from James’s approximate age of 2 ½ to 3 ½, documents his learning path of CD-ROM storybook use, which creates natural boundaries in data collection. The beginning boundary of data collection is James’s initial experience with CD-ROM storybooks. The end of data collection is marked by James’s independent use of CD-ROM storybooks. Independence was determined by his ability to complete CD-ROM storybooks, without assistance, as an independent playroom activity. At independence, James was able to start the CD-ROM by choosing the correct
icons, finish the CD-ROM in the same manner, and explore the CD-ROM without assistance throughout the storybook. His confidence and apparent ease of mouse use also indicated his independence. By the end of the study, James no longer looked to his parents for assistance, and he was able to use a regular mouse, rather than a mouse specifically designed for young children. After the close of this study, the researcher continued to videotape CD-ROM storybook experiences and reading and writing activities for an ongoing investigation of James's literacy development, and the researcher continues to collect data to date. The data collected after this study, however, does not enter into the data set, because James's CD-ROM storybook behaviors have remained relatively constant and independence was achieved.

The close of the study was also marked by the administration of Clay's (1993a) Observation Survey. A teacher-leader-trainer from The Ohio State University administered the Observation Survey. The data gained from the survey provides insight into the specific statements and behaviors that James exhibits throughout storybook experiences. While this study focuses on how he interacts with storybooks, the Observation Survey gives a picture of what he knew about print at the close of the study. The results are listed in the appendix for further review.

The learning path of CD-ROM storybook use creates natural boundaries in the length of the study; the types of activities and actions that are considered storybook sharing create further bounds for the study. Storybook sharing, in this study, involves two people sharing a story together. One or both participants or the electronic medium can read the story. The storybooks used can be any variety of commercially prepared traditional print storybooks, homemade storybooks using participant-created text and illustrations, or CD-
ROM storybooks. Each activity that involved storybook sharing, either LEA, CD-ROM, or traditional were considered part of the data set for comparison across storybook media.

There were other types of storybooks that James interacted with and explored that are described, but are outside of the bounds of the study for comparison purposes. For example, he often listens to books on audio tape. Listening to books on audio tape, however, is an independent activity, not a storybook sharing activity. James listens to the books on audio tape using headphones without his mother hearing or sharing in the story. James also reads books independently, both silently and aloud. When he is reading silently, it is obviously not a storybook sharing activity. There are times when he is also reading aloud, but it is still not a storybook sharing activity. He reads aloud to himself, sometimes approximating text and sometimes creating text. His reading is often not loud enough for his mother to hear and contains nonsense phrases. He chooses to read aloud for himself when his mother is engaged in other activities, and no attempts are made to include her in the storybook experience. These independent activities, while important to the description of each type of storybook medium, are not factored into the comparison data.

The initial data includes an intense introduction to CD-ROM storybooks (two CD-ROMs and their accompanying print version per week for five weeks) in which James’s mother participates in the exploration of the CD-ROM storybook and traditional print version with James. Following the five-week introduction, James’s mother becomes more of an observer and less of a participant in the CD-ROM experience. Once all the CD-ROMs are introduced, the CD-ROM experience becomes an activity that is chosen
by James, rather than planned by the researcher. So following the five-week introduction, James became more independent, and he chose which CD-ROM he wanted to explore, if any.

The majority of the study includes his exploration and developing independent use of CD-ROM storybooks at the rate of approximately one experience per week and activities that he chose in other domains, also approximately one per week. In this portion of the study, every CD-ROM experience was videotaped, but so were other playroom activities that James chose. Experiences with traditional storybooks and LEA storybooks were included in the activities James chose to engage in, during his playroom time at home. Most of the CD-ROM storybooks used for this portion of the study are the same ten titles used during the five-week introduction, but occasionally a new title was procured and introduced.

The frequency of the experiences was dependent on the amount of time spent in the playroom. James spent two to three days with a babysitter (either his grandmother or a neighbor) while his mother attended graduate classes for the first half of the study, and he spent three mornings per week in a Montessori preschool for the second half of the study. While it is important to note that James spent time with others and in preschool, the focus of this study is on his storybook experiences at home. Also, home was the only place where James had access to CD-ROM storybooks or a computer during the study. The behaviors that occurred in the playroom, while James and his mother were at home, were recorded on videotape. A video camera was situated in the playroom (on a tripod) to capture any behavior that occurred during playtime. Therefore, a variety of activities
were videotaped based on what James chose to do and the amount of time he and his mother had together in the playroom. On average, two videotapes were recorded each week over the course of the year.

The Data

The data for this study includes prompted summaries, parent diary entries, and data sheets. For the purpose of this study, a prompted summary includes miscue analysis of text reading, descriptions of subject's actions, and description of recorded talk including some transcription of video segments. Storybook activities were videotaped and include talk that accompanies action. Prompted summaries were written while viewing the videotape, following the actual session.

Experiences that occurred, outside of the playroom and range of the video camera, were recorded in the parent diary. Actions and talk that occurred in the car, living room, playground, kitchen, etc. were summarized and recorded in the parent diary. Each diary entry was given a title, which was a type of memoing (Miles & Huberman, 1994). The memos were an immediate reaction upon recording the experience and helped to categorize and code the data. A running account of the traditional storybooks read to James was also kept as part of the parent diary. Because the traditional storybook sharing activities were so numerous (occurring several times daily and not always in the playroom), James's mother kept a record of the books shared.

Data sheets were completed after reviewing the prompted summaries and memos and reviewing the videotapes extensively. Data sheets include four categories of data: setting/tape location, action, talk, and interpretation. The setting and tape location section of the data sheet includes location of participants and relationship to each other during the
activity, as well as, the location on the videotape where the action and talk occur. Therefore, looking left to right across the data sheet, one would be able to see the numeric tape location where an action and its accompanying talk occurred, a description of the action, a transcription of the talk, and an analysis of each (See Appendix A). The actions listed are described and include James's and his parent's actions. The talk listed on the data sheet is a direct transcription from the videotape. Nearly all talk is transcribed, including nonsense talk that was audible. The exceptions, talk that was not transcribed, are mostly inaudible utterances. The interpretation column was used for analysis, memoing, and coding.

The storybook sharing activities were included in the study, because they occurred naturally in the setting and so that a variety of storybook activities could be examined. For the first five weeks of the study, CD-ROMs and the related traditional storybook sharing experiences were the only data videotaped. Once each CD-ROM and accompanying storybook was introduced to James, the lens was widened to include a variety of activities and experiences based on what James chose to do during playtime, approximately two activities per week. Whether James and his mother read a traditional storybook, explored a CD-ROM storybook, or read a homemade LEA storybook, the experience was recorded.

Phases of Data Analysis

Data analysis was ongoing during data collection using the constant comparative method (Hutchinson, 1995; Stake, 1988) and continued after the end of data collection. The data analysis occurred in five phases. The first phase of data analysis included memoing, coding, and categorizing the data for the initial segment of the study. After
James was introduced to ten CD-ROM storybooks during the first five weeks of the study, an attempt was made to compare and describe behaviors that occurred. A constant comparative method was used, and categories of behavior emerged and were analyzed. The categories included learning about technology (how to use the computer and CD-ROM storybooks), responses to hypertext (such as, questions, singing, repeating), and playing and negotiating the routine (how to share the experience with another). The findings were written as a descriptive report and presented to a committee of four university professors in reading education, who were experienced qualitative researchers, for review. After the committee review, the study was expanded to include ongoing storybook activities in addition to the CD-ROM storybooks. The lens widened and included additional traditional storybook activities, LEA storybook experiences, and CD-ROM storybooks. The goal of the inquiry expanded from describing CD-ROM storybook experiences to describing multiple storybook literacy.

The second phase of data analysis included the expanded focus and long-term data collection. As additional data was collected, the constant comparative method was used to find similarities in categories between CD-ROM storybooks and other storybook media. Taking samplings of data sheets, James’s and his mother’s behavior and talk were labeled according to the focus of the talk or action and compared to prompted summaries. Every line of talk and each action were analyzed and compared to each other to integrate existing categories and identify new and subcategories. Questions were labeled and divided into specific types of questions. Comments were analyzed and labeled according to their focus. Actions were viewed and compared with talk to further identify the focus and reflective nature of the talk. When the new categories were identified and integrated
for identifying the focus and reflective nature of the talk and action, then all talk and action on the data sheets were coded according to the emergent categories.

Codes for actions and talk were listed in the interpretation column of the data sheet (see Figure 1 and Figure 2 for codes and code descriptions). This section of the data sheet was also used for memoing. Initial reactions and categories of recurring behaviors and talk were noted in this column during the subsequent viewing of the videotapes for ongoing constant comparative analysis.
<table>
<thead>
<tr>
<th>R</th>
<th>Repeat – text, hypertext, narration, or song</th>
</tr>
</thead>
</table>
| Pr | Predict – hypertext or story content  
*He will..., Will he...* |
| C | Control – about text not related to negotiating with other  
Deciding what to do, click on, etc.  
*I want to..., I make it...* |
| U | Understanding declarative – original statement or repeat parent  
Answer question of parent, telling what and why  
*That don’t do nothin. He went..., They..., I got to...* |
| Q1 | Question to clarify object/action – comprehension of text  
What is it? What is happening? |
| Q2 | Question to make sense – comprehension of text, social world  
Why did it happen? |
| S | Sharing – sharing feelings, creations, discoveries,  
show-and-tell type behavior.  
*I like..., I have..., I made..., Look Mommy...* |
| N | Negotiate behaviors and how to share experience with other  
*I don’t want to..., I do it..., Can I...* |
| Pl | Play – playing with materials during activity.  
Continuous clicking for play, not clarification  
Dramatic play during an activity |
| PT | Process talk – verbalize process to parent and to self  
Reading aloud, telling how he did it – or how to do it, telling what he did.  
*I’m gonna..., I did...* |
| PQ | Process questions/sometimes implied in tone of statement  
*Where's my arrow? Is it over? It went... why? It don’t do nothin’. (implied why)* |

Figure 1: James Behaviors/Statements– Coding Criteria and Examples
<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>R</td>
<td>Repeat - James's statements/questions</td>
</tr>
<tr>
<td>Pr</td>
<td>Responding to James's predictions, prompting prediction</td>
</tr>
<tr>
<td>C</td>
<td>Control - about text not related to negotiating with James</td>
</tr>
<tr>
<td></td>
<td><em>Let's see if... Mommy wants to...</em></td>
</tr>
<tr>
<td>U</td>
<td>Understanding - shared or declared to build new concepts</td>
</tr>
<tr>
<td></td>
<td>Responses to James's questions</td>
</tr>
<tr>
<td></td>
<td>Answers to what and why questions - related to comprehension and social world.</td>
</tr>
<tr>
<td></td>
<td><em>I think... That is a...</em></td>
</tr>
<tr>
<td>Q</td>
<td>Questions - to build story concepts and comprehension</td>
</tr>
<tr>
<td></td>
<td>What and why questions</td>
</tr>
<tr>
<td>S</td>
<td>Sharing with James</td>
</tr>
<tr>
<td></td>
<td><em>Do you see the... Look...</em></td>
</tr>
<tr>
<td>N</td>
<td>Negotiate - behaviors and how to share experience with another</td>
</tr>
<tr>
<td></td>
<td><em>Let's go on... Try something else... Here's your arrow...</em></td>
</tr>
<tr>
<td>TP</td>
<td>Teaching process - explaining/modeling concepts and process</td>
</tr>
<tr>
<td></td>
<td>Praise learning, explain and model how to do something, such as make words,</td>
</tr>
<tr>
<td></td>
<td>write letters, read</td>
</tr>
<tr>
<td></td>
<td><em>What do you do now? What next? What else? Ok, move the arrow... Push the...</em></td>
</tr>
<tr>
<td></td>
<td><em>Sometimes... Try...</em></td>
</tr>
</tbody>
</table>

Figure 2: Parent Behaviors/Statements – Coding Criteria and Examples

The third phase of data analysis involved finding natural clusters of codes. Natural boundaries occurred in which specific codes clustered. Described as pattern coding by Miles and Huberman (1994), the clusters of codes encompassed episodes that were defined by a specific function. Therefore, an episode is comprised of clusters of action and talk that have a common focus. An episode could be as brief as a few seconds or last several minutes. The focus of an episode could be on the use of artifacts of the medium.
(a mouse, a paper book), interaction with print, reading strategies, word meaning, story text, illustrations and hypertext, or sharing the activity with another. These episodes were compared and integrated with the initial categories that developed during the first phase of the study. The integrated categories helped frame the new clustered categories called, episodes. The initial technology category in which James was learning how to use technology became episodes involving artifacts, as he focused on how to use the artifacts of the various storybook media. The responses to hypertext category now included subcategories based on the focus of the interaction, such as, print, reading strategies, word meaning, story text, and illustrations and hypertext. The initial playing and negotiation category became episodes of sharing and negotiating the routine. Some interaction in this initial category was integrated into the newly emerging categories based on the focus of the exchanges, as James and his mother engaged in playful behavior and social interaction. Categories emerged in which James worked to comprehend various text and experiences and fit new concepts into his view of the social world. The newly integrated categories were called episodes involving artifacts, interaction with print, reading strategies, word meaning, story text, illustrations and hypertext, and sharing and negotiating the routine.

Episodes can be an interaction or exchange verbally and non-verbally between parent and child. The episodes are defined by the focus of the dialogue and behavior between parent and child during the storybook reading sessions. The focus of questions and statements were further analyzed, during this phase of analysis, to elicit more specific coding for each type of episode. For example, why questions that were coded (Q2) were
now further examined to determine their specific intent, whether relating to the illustrations or hypertext, the meaning of the text, or the graphic forms of print on the page.

This level of analysis was adapted from the work of Yaden, Smolkin, and Conlon (1989). Yaden, Smolkin, and Conlon (1989) adopted a Piagetian perspective when they studied two young boys engaged in storybook sharing with their parents at home. They believed that through examining the spontaneous questions of young children during storybook reading, the focus of the child would be revealed. They felt that the spontaneous questions provided insight into the child’s understandings because they represented a gap in the child’s knowledge base. Yaden, Smolkin, and Conlon used children’s spontaneous questions to reveal the child’s logic in construction of concepts about storybooks and literacy.

A Piagetian perspective did not seem satisfying in interpreting the focus of James’s questions for several reasons. What James understands and how he constructs his understandings are intricately related to the context in which understandings are developed. Isolating the spontaneous questions from the rest of the dialogue and interaction that occurs between mother and child during storybook reading and through the context of daily life, did not seem adequate to reveal the focus of this very young child. Yaden, Smolkin, and Conlon (1989) admit that even spontaneous questions do not occur in a vacuum.

The researchers studied Yaden’s two preschool children, Jon-Marc and David, during storybook reading sessions at home over the course of two years. Yaden, Smolkin, and
Conlon developed categories of questions that were asked spontaneously by the two boys. Their categories included (p. 198):

1. **Questions about graphic form** such as letter names, letter sounds, punctuation, single words, spelling, and phrases.

2. **Questions about word meanings** such as, meaning of single words and phrases.

3. **Questions about story text** such as, the meaning of book language and making meaning of the story text.

4. **Questions about pictures** such as, inquiring about the label name of pictures and the actions of pictorial events.

5. **Questions about book conventions** such as, requests for clarification of title, genre, and author, retelling, and reading strategies.

In this study, these categories were adapted to include not just the child’s questions, but the reflective nature of the interaction between the parent and child during episodes. The mother’s questions and comments were included in the analysis, as were nonverbal behaviors, which contributed to the assigning of episodic codes. In figure 3, an attempt is made to describe the episodic codes and compare them to Yaden, Smolkin, and Conlon’s (1989) categories.
Episodes - Clusters of Codes  
(for this study)

<table>
<thead>
<tr>
<th>Episodes involving artifacts – focus on how to use the artifacts of the media, such as, a mouse, paper book, or pencil.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Episodes involving interaction with print – focus on print, letters, sounds, single words, punctuation.</td>
</tr>
<tr>
<td>Episodes involving reading strategies – focus on talking about and demonstrating early reading strategies (Clay, 1993b).</td>
</tr>
<tr>
<td>Episodes involving word meaning – exchanges about word meaning in general.</td>
</tr>
<tr>
<td>Episodes involving story text – focus on constructing meaning and relating the text to life.</td>
</tr>
<tr>
<td>Episodes involving illustrations and hypertext – focus on exchanges about the action and meaning of supplementary text in the form of art and hypertext.</td>
</tr>
<tr>
<td>Episodes involving sharing and negotiating the routine - negotiating parameters of the activity, specific behaviors, control of the activity, and learning to share the activity with other.</td>
</tr>
</tbody>
</table>

Categories of Questions  
(Yaden, Smolkin, and Conlon)

<table>
<thead>
<tr>
<th>No comparable category.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Questions about graphic form - letter names, letter sounds, punctuation, single words, spelling, and phrases.</td>
</tr>
<tr>
<td>Questions about book conventions - requests for clarification of title, genre, and author, retelling, and reading strategies.</td>
</tr>
<tr>
<td>Questions about word meanings - meaning of single words and phrases.</td>
</tr>
<tr>
<td>Questions about story text - the meaning of book language and making meaning of the story text.</td>
</tr>
<tr>
<td>Questions about pictures - inquiring about the label name of pictures and the actions of pictorial events.</td>
</tr>
<tr>
<td>No comparable category.</td>
</tr>
</tbody>
</table>

Figure 3: Episode Descriptions and Comparison to Yaden, Smolkin, and Conlon (1989)
The fourth phase of data analysis involved the comparative coding of diary entries and the search for outliers. During this phase, diary entries were coded using the episodic codes, because most diary entries were narrative and did not contain transcriptions of talk and specific action. If direct quotes were included, they were coded using the codes for talk, but for the most part, diary entries were coded as episodes. The entries were compared to videotaped episodes and coded accordingly. All episodes were reviewed and compared to look for exchanges of talk and behavior that disconfirm the developed categories. The data analysis sheets were reviewed and compared for each activity in the study.

During the fifth and final phase of data analysis, the number and type of episodes that occurred in each activity were reexamined and compared across various storybook sharing activities (see Figure 4 and 5). A proportion of engagement for each type of episode is given for each type of storybook under investigation.
<table>
<thead>
<tr>
<th>Episodes</th>
<th>CD-ROM</th>
<th>Traditional</th>
<th>LEA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Artifacts</td>
<td>26%</td>
<td>1%</td>
<td>0%</td>
</tr>
<tr>
<td>Interaction with Print</td>
<td>1%</td>
<td>5%</td>
<td>33%</td>
</tr>
<tr>
<td>Reading Strategies</td>
<td>2%</td>
<td>13%</td>
<td>30%</td>
</tr>
<tr>
<td>Word Meaning</td>
<td>1%</td>
<td>4%</td>
<td>0%</td>
</tr>
<tr>
<td>Story Text</td>
<td>14%</td>
<td>50%</td>
<td>18%</td>
</tr>
<tr>
<td>Illustrations/Hypertext</td>
<td>28%</td>
<td>20%</td>
<td>15%</td>
</tr>
<tr>
<td>Sharing/Negotiating Routine</td>
<td>28%</td>
<td>8%</td>
<td>3%</td>
</tr>
</tbody>
</table>

Figure 4: Proportion of Engagement in Episodes According to Type of Storybook

Figure 5: Salient Features of Each Medium
Trustworthiness

Efforts were made in the research procedures and data analysis of this study to provide for trustworthiness (Lincoln & Guba, 1985) and confidence in results through various triangulation methods (Fielding & Fielding, 1986). The length of the study, one year, was meant to provide confidence in data collection through prolonged engagement (Lincoln & Guba, 1985). The prolonged engagement of one year allows for observation within various contexts and over a relatively long time period to provide for breadth and depth in data collection. The comparison of prompted summaries, data sheets, and diary entries creates a triangulation of methods (Fielding & Fielding, 1986). Persistent observation (Lincoln & Guba, 1985) is achieved by comparing various contexts, such as, playroom activities on videotape and daily routines from diary entries. Persistent observation is also achieved through the use of a variety of note-taking and summarizing methods.

Additionally, an attempt was made to utilize investigator triangulation (Fielding & Fielding, 1986). A professor of reading education, experienced in qualitative research, was asked to conduct an audit of the data and data analysis. The professor was not known by the researcher, was unfamiliar with this specific study, and could provide an unbiased look at the data. The audit was conducted by examining the pathways from raw data, to data sheets, to data reporting. The professor judged the reasonableness of the pathways and whether or not the findings were sufficiently supported by the data. The professor found that the pathways were reasonable and that the findings were supported by the data.
Checks and confirmation of data collection and analysis were instituted at each phase of the study. A committee of professors, experienced in qualitative research in reading education, reviewed the data collection and analysis techniques for the first five weeks of the study. During the second phase of data analysis, the additional data collection and analysis procedures were presented as an interim case summary (Miles & Huberman, 1994) to a separate committee that also included professors of reading education and a professor of early childhood education, who were experienced in qualitative research. The committee feedback allowed for disconfirming interpretations of the data and procedures and approval of the questions, procedures, and methods. During the third through fifth phase of data analysis, feedback was continually sought and received from committee professors on an individual basis as a type of peer debriefing.

Limitations

Regardless of the care taken to build the trustworthiness in the study, the researcher’s relationship to James creates trustworthiness issues. The researcher is James’s mother, and her participation in the study could have unpredictable impact on the data collection and analysis. However, attempts at triangulation and ongoing confidence and consistency checks with professionals in the field help to counteract the possible bias. A second issue is James’s mother’s role as a reading specialist and doctoral student. She could have influenced the ways in which James interacted with storybooks. Her special training in reading education techniques and experience with teaching reading allow her to teach and interact with James in ways that a typical parent may not be able to duplicate.
The number of participants is an obvious limitation of this study. However, the case study framework and relationship of participants allows for around the clock observation and study. This type of in-depth study creates the opportunity for greater description and deeper understanding of the experience and the child. James’s interaction and exploration are unique, but provide insight for continued toddler studies involving storybook sharing experiences.

Further research in the area of CD-ROM storybooks is necessary to create the normative data from which to draw conclusions about the experience. The observations in this study are unique to James’s experience, but categories would also emerge as larger numbers of dyads are observed participating in the same types of experiences. Given this is a new field of study, not only are more descriptive studies needed, but more in-depth long term studies are necessary to create a new body of research.
CHAPTER 2
TRADITIONAL STORYBOOKS

James (J) – Why she was crying?

Mother (M) – Because she was lost.

J – Where’s her Mommy and Daddy?

M – She’s lost, she doesn’t know where they are.

J – Where are they?

M – They are at home.

J – Who’s that?

M – Her sister.

J – Now, she happy?

M – Yes, you see the smile on her face?

(May 30, 1997, Tape 17, 445)

This dialogue is typical of the type of interaction between James and his mother during traditional storybook sharing experiences. This exchange occurred as James and his mother read the traditional print version of Shiela Rae, the Brave. James is focusing on making meaning from the text during this episode involving story text. He asks his mother questions to help him comprehend the events of the text and fit them into his conception of the social world. He seeks to understand why she would be crying and
where her parents are. He also expects the story to have a happy ending and seeks verification of the happy ending with his question, _Now, she happy?_ In addition to _episodes involving story text_, examples of _episodes involving artifacts, interaction with print, reading strategies, word meaning, illustrations/hypertext, and sharing and negotiating the routine_ will be presented in this chapter with respect to the traditional storybook medium. The majority of traditional storybook sharing focuses on story text (as evidenced in Figure 4), but each type of episode is present during James’s experience with traditional storybooks.

Episodes Involving Artifacts with Traditional Storybooks

James’s access to books in a literacy rich environment helped him to develop a special relationship with books. He chooses books as a playtime activity and is perfectly content to spend entire play periods looking at books independently and silently. Doake (1985) found that children, like James, who have access to a literacy rich environment, begin to see books as sources of personal pleasure and derive a type of satisfaction from books that they can secure in no other way. Additionally, Doake suggests that reading-like behavior, like James’s silent reading, can be facilitated or restricted by the nature of the experience children have with books.

During silent reading activities, James demonstrates his understanding of the artifacts of the traditional storybook medium – the paper book. He has explored paper books independently since he was less than a year old. His access to paper books as tools for his own pleasure, and his storybook sharing experiences from birth, allow him to easily manipulate the artifacts as a toddler. As he reads traditional storybooks independently, his ability to use the artifacts is evident. James demonstrates understanding of traditional
storybook concepts (Clay, 1993a), such as, left page before right page, location of the front of the book, and correct orientation of illustrations within the text, as he reads silently. Such evidence is noted as he orients books correctly, begins at the front of the book, looks left to right as he reads, and turns back (correcting himself) if he misses a page. A typical episode involving artifacts during independent silent reading follows (May 19, 1997, Diary entry):

James sits on his knees and picks through his crate of books to choose books for silent reading. He carries his selections in a haphazard stack to a comfy place in his reading corner. He decides to sit in his rocker today. The rocker is child-size and made of heavy plastic and canvas and has bright primary colors with a whimsical upside-down clown on the back. He plops into the rocker and begins reading his first book.

James notices the cover illustration and points to the title and reads aloud, “This is called, *Hop on Pop.*” He is imitating the process of shared book reading, when his mother points to the title and reads it aloud before opening the book. His intonation mirrors his mother’s reading of book titles.

Next, James begins to read the book silently, looking intently at each page for a few seconds, then turning to the next page. He uses both hands and most of his chubby, 2-year-old fingers to turn the page. He thumbs the pages to make sure he only turns one page at a time and sits back proudly as he manages the feat.
As he reads silently, he rocks to the beat of his latest Barney tape (*Happy Holiday's Love, Barney*) playing in the background. At the end of *Hop on Pop*, he confidently slaps the book closed, lays it to the side, picks up a second book, and places it in his lap. He is now ready to begin the process of independent silent reading with his second book choice.

This episode is defined as involving artifacts because James is demonstrating his ability to use the artifacts of the traditional storybook medium as he explores traditional storybooks. He clearly shows that he understands how books are handled, reading the title, carefully turning each page, and triumphant closure. This episode differs from other episodes, because he is not focusing on specific words or story text, but demonstrating his knowledge of the artifacts as he explores them. However, an episode involving story text can occur if he asks for verification or understanding of concepts within the book. For example, (May 20, 1997, Diary entry) during silent reading of *Hop on Pop*, he notices a character biting another character’s tail and asks, “Why he bite his tail? He mean?” Then, the focus of the episode is to understand why someone would bite. He is then seeking to make sense of the book and have it conform to his understanding of the social world, rather than silently demonstrating artifact use.

*Episodes involving artifacts* during silent reading also differ from episodes involving sharing and negotiating the routine. He is not sharing the book with another or learning how to negotiate the activity with another. He is reading to himself, and there is no need for sharing or negotiating the routine. And, even though he reads the title aloud, he is reading it for himself. While engaged in artifact use in this example, he does not look up or address his mother while reading.
James also demonstrates his ability to manipulate traditional storybooks that have artifacts other than simple paper pages to turn. He is able to lift flaps, push buttons, turn wheels, pull levers, and follow along with an audio tape. For example, (November 28, 1997, Tape 7, 4746) James was engaged in independent silent reading with the traditional storybook, *Papa, Please Get the Moon for Me*. The book has flaps that open, and one page has both a top and a bottom flap. On this page, the illustration of the moon becomes nearly triple the size of the book when the flaps are opened. This is a familiar book for James, and as he chooses it to read, he gets out of his child-size rocker and places the book on the floor. He verbalized the reason for his change in location when his mother glanced in his direction; “It’s too big of a book. I’m a sit on the floor.” James knew that when the flaps for the illustrations were opened, that the book would not fit on his lap. He is demonstrating his ability to manipulate the artifacts of the traditional storybook medium.

Similar behaviors were observed when James chose to read books on audio tape. As with independent silent reading, he demonstrated how to read books independently and his ability to manipulate paper books was evident. James demonstrates his understanding of the artifacts as he turns the pages and follows along with the audio tape. He is able to keep his place in the book, turning the pages on cue.

James demonstrates his ability to use the traditional storybook medium by easily manipulating the artifacts – paper books. His artifact use is evident when he engages in silent reading and reading books on audio tape. He is able to orient the book, turn pages,
and keep pace when the story is read to him on audio tape. James’s experience with the traditional storybook medium, both with his mother and independently, enables him to manipulate the artifacts with ease.

Episodes Involving Interaction with Print with Traditional Storybooks

Traditional storybook sharing experiences contain *episodes involving interaction with print* that occur as James focuses on print conventions, such as, letters, letter sounds, single words, and punctuation. Throughout the study, James and his mother are observed talking about the print and its connection to pictures, noticing letters and words within the text, and sharing print discoveries.

An *episodes involving interaction with print*, during traditional storybook reading, can be initiated by the parent to teach about the print or initiated by James to clarify his understanding of print concepts and share new print discoveries. The interactions focus on print concepts, such as letters, sounds, single words, and punctuation. During exchanges about print, his mother “takes stock” of what James understands about print and uses that information to increase his knowledge of print. Using strategies recommended by Clay (1993b), she prompts him to verbalize his understanding by asking questions, such as “Are you right?” and “How did you know?” In this example, James’s mother initiates specific conversation about the text and print concepts, and she prompts him to articulate the reason for his response.
James and his mother are sitting in the reading corner, sharing books that James has chosen. James is sitting half inside his clubhouse, his legs entangled with his mother’s, as she begins reading. They are sharing the traditional storybook, *All By Myself*. James’s mother asked him to read the book, knowing that he can successfully approximate the text based on the pictures and single lines of text.

(December 14, 1997, Tape 9, 660)

M - *What does this say?*

J - *I can draw a picture.*

M - *I can COLOR a picture.*

M - *I can put on my pajamas.* *(Reading text). Which word is pajamas?*

J - *(Successfully locates pajamas by pointing to the word).*

M - *How did you know that was pajamas?*

J - *Because it has a Puh, Puh, Puh.*

This segment is coded as an *episode involving interaction with print* because James and his mother are focusing on the letter sound for “P.” James’s mother asks him to locate the word “pajamas” and to explain how he was able to identify it. James is able to locate the word “pajamas” based on its initial sound, and he articulates the sound.

James can also initiate an *episode involving interaction with print.* He is observed verbalizing his print discoveries during independent reading activities and storybook sharing experiences. An example, of James sharing a print discovery, occurred as James focused on the title page of the traditional book, *Hop on Pop* (May 20, 1997, Diary entry). He was looking at books independently and silently when he made the following discovery aloud, “Big O and little Os. Big O and little Os.” He pointed to the “Os” in
the title and noticed that there was one capital “O” and two lower case “Os.” He is sharing a discovery about print that focuses on a specific letter. During traditional storybook experiences, both James and his mother initiate *episodes involving interaction with print* that focus on specific letters, sounds, single words, and punctuation.

**Episodes Involving Reading Strategies with Traditional Storybooks**

*Episodes involving reading strategies* occur when James reads traditional storybooks independently and with his mother. They focus on early reading strategies as described by Clay (1993b). Clay recommends that children gain control of directional movement, one-to-one matching, and locating known and unknown words within the text in the early stages of reading. Directional movement involves being able to move left to right across lines of print, demonstrate return sweep on multiple lines of print, and read the left page before the right page throughout storybooks. One-to-one matching involves using the index finger to match the printed words as each word is read aloud. The child points (once) below each word as each word is read. Throughout traditional storybook sharing experiences, James’s mother prompts James to focus on these early reading strategies to help him gain control of them, as Clay recommends. James’s mother demonstrates directionality and return sweep while reading to James. She prompts James to use his reading finger (index finger) to match the oral text, and she models one-to-one matching. She also prompts him to locate known words and unknown words during storybook sharing. As a result, James is observed demonstrating these strategies during independent reading aloud.

Independent reading aloud, for the purpose of this study, encompasses a continuum of reading-like behaviors. It begins with James’s ability to reproduce familiar stories with
ease, as Bissex (1980) and Gardner (1970) found in their work, that children accomplish after repeated readings. As James’s ability and exposure increased, he began to engage in deep level processes, as described by Doake (1985), such as generating meaningful written language “on the run.” At this point, he was no longer imitating or memorizing, but creating and composing, using written dialect and knowledge of story structure.

James’s independent reading aloud includes episodes involving reading strategies in which he demonstrates his understanding of the reading process using early reading strategies. He demonstrates early reading strategies (Clay, 1993b), such as, pointing to the text rather than the pictures as he reads, locating known words within the text, and approximating one-to-one correspondence. His ability to interact with traditional storybooks and demonstrate story reading behaviors is derived, in part, from his exposure to storybook reading with his mother (Sulzby, 1991). Sulzby indicates that children internalize a form of story reading that has been socially created during parent and child storybook reading situations. Sulzby and Teale (1991) also believe that reading-like behaviors enhance literacy development and are an integral part of learning to read.

James is observed demonstrating early reading strategies during independent reading aloud, using a traditional storybook, in the following example:

After visiting the library, James looked through his library books, and chose one to read. In the meantime, his mother stepped into the shower. When she emerged from the shower, she heard James reading aloud independently (February 26, 1998, Diary entry). James was seated on the floor amongst the many library books he chose during a recent visit. He had the book, My Sister and Me, At the Beach, open on the floor and was leaning over the second page pointing to the text. “We s-a-i…,” was his
approximation for sail. He was making the long “A” and “T” sounds and checking the picture for cues. His mother, thrilled that he was attempting to read on his own, offered some help. “The I is silent, sa…. “ James slid his finger under the word "sail," and after checking the picture one more time, confidently read, “We sail boats.” He moved on to the next line, reading, “We catch cupcakes” for “We catch food.” He slid his finger under catch and obviously and slowly sounded-out the word to read it correctly, but used the picture cue for cupcakes rather than visual cue for the “T” in food (Clay, 1993b). He read the last two lines accurately, “We eat ice cream” and “We have fun.” His mother listened during the reading process, but he did not turn to her for help, or look up at her after reading each page. He was obviously reading the book for himself, but reading it aloud. Perhaps, if his mother had not showered quickly, the episode would have been missed entirely.

This episode is coded as an episode involving reading strategies because James is demonstrating a combination of learned strategies in the process of book reading. He is using his reading finger and matching one-to-one, he is using known words (“We” is a known word for James), and he is integrating meaning (picture) and visual (print) cues to read the text. If he were working to understand the meaning of the text or actively negotiating the process with his parent, then the episode would be coded differently. What makes this an episode involving reading strategies is that he is demonstrating reading strategies, rather than learning concepts in isolation or negotiating the activity with another.
Episodes Involving Word Meaning with Traditional Storybooks

Storybook sharing is commonly believed to enhance the development of literacy and improve vocabulary. Heath (1983) found that some ways of reading have more positive effects on vocabulary development than do others. The best way to increase results, according to Heath, is to interact with the child and help him learn concepts of reading by linking information from books, book reading, and other experiences to the child's life. The social interaction has a strong impact on literacy development, and Heath suggests that parents mediate the book for the child. Holdaway (1979) studied independent reenactments and his analyses demonstrate convincingly that children learn the vocabulary and syntax of written language as a result of being read to. Sulzby and Teale (1991) also found a significant positive relationship between being read to at home and vocabulary development. James's vocabulary development occurs during episodes involving word meaning as he constructs meaning with his mother's assistance.

During episodes involving word meaning, James focuses on constructing meaning of single words within storybooks. He asks his mother specific questions about word meanings and how they are related to the text. Episodes involving word meaning do not include James's attempts to decode specific words during the reading process; instead, he is simply working to understand the meaning of new and unfamiliar words. In the following examples, he seeks clarification from his mother for specific word meanings.

James sat in his mother's lap (May 20, 1997, Tape 16, 3645) as they shared the traditional print version of the storybook, Just Grandma and Me. During the story, the Grandma "critter" takes the young "critter" to the beach. They engage in various beach activities together, one of which is snorkeling. The text reads "I put on my fins and mask
and showed Grandma how I can snorkel.” When James’s mother read the word snorkel, James responded, “Snorkel? What that mean?” His mother then explained what a snorkel was and showed him that little “critter” was wearing a snorkel in the picture.

In a similar example (June 6, 1997, Tape 19, 330), James and his mother were sharing the traditional storybook, The Polar Express. As the Polar Express pulled into the North Pole, the elves were not yet clearly visible in the illustration; however, the text read, “Outside we saw hundreds of elves.” James asked, “What is elves?” His mother turned the page and showed him the picture of the elves, while explaining to James what an elf is.

In each example, James is asking for clarification of an unfamiliar word. He is focusing on the meaning of the specific words: snorkel and elves, during these episodes involving word meaning.

Episodes Involving Story Text with Traditional Storybooks

Sulzby and Teale (1991) describe storybook sharing as an act of construction, where the parent and child construct meaning together. James is observed sharing storybooks and co-constructing meaning of story text with his mother throughout the study. His mother began reading to him prior to his birth and continues to read to him today. Typically, James is sitting in his mother’s lap and there is much talk that surrounds the text reading. Their experience together is a routine, social process of co-constructing meaning. The example given in the introduction of this chapter using the traditional storybook, Sheila Rae, the Brave, is a typical example of an episode involving story text. In this example, James is asking his mother questions to clarify his understanding of the story. He asks why Shiela Rae is crying and where her parents are, to make sense of the
story and fit it into his notion of the social world. By responding to his questions and explaining the events in the story, his mother is constructing meaning with James. Together, they are focusing on making meaning of the text.

During a similar exchange, James and his mother are co-constructing meaning of the traditional print version of the storybook, *Little Monster at School*. During the story, the children are growing plants at school. The text reads, “Yally’s plant won’t grow. He says the plant is mad at him.” James questions his mother to construct meaning from the text.

(December 14, 1997, Tape 9, 130)

\[ J – Do Yally want his plant to grow? Why did it get mad at him? \]

\[ M – He’s just saying that, cause his won’t grow. \]

*Episodes involving story text* also include exchanges where James’s mother initiates questions to facilitate co-construction of meaning. For example, after sharing the traditional storybook, *Five Little Monkeys Jumping on the Bed*, James’s mother initiates talk about the story text. The monkeys in the story jump on the bed, and one falls off and bumps his head, until all have fallen off the bed. Then, the mother goes to her room and jumps on the bed.

(December 15, 1997, Tape 9, 2690)

\[ M – What is she doing? (Indicating the mother.) \]

\[ J – Jumpin’ on the bed. She might fall and bump her head! \]

James’s mother questions James to determine if he understands the paradox at the end of the story. During traditional storybook reading, she also relates the text to James’s social
world by talking about issues within text. In the following example, James asks a question, and his mother uses the opportunity to discuss good eating habits.

James is sitting in his mother’s lap as they share the traditional storybook, Little Monster at School. In the story, a central character, Yally brought lots of candy for his lunch. The text reads, “I have a sandwich and a tango, but Yally always brings lots of candy.”

(May 12, 1997, Tape 13, 350)

J – Why he wanna eat so much candy?

M – He’s not gonna grow big is he? You have to eat right to grow strong.

J – He not grow strong. Like a little pinkie. (Holding up his pinkie finger.)

James used this analogy previously to illustrate what could happen if you do not eat properly. His mother often tries to persuade him to eat better so that he can grow strong “like his Daddy.” James created the analogy of his pinkie finger being weak as compared to his Daddy who is strong. James identified with the story text by using his analogy in discussing the text.

Episodes involving story text include questions initiated by James and his mother to co-construct meaning from the text. They occur during, and immediately after, storybook sharing experiences. The discussions are centered on making meaning from the text and include links to James’s understanding of the social world.

Episodes Involving Illustrations and Hypertext with Traditional Storybooks

Traditional storybooks contain illustrations that are a form of supplementary text. During episodes involving illustrations and hypertext, James focuses on making meaning from the supplementary text. He asks questions and makes statements about the label
name of pictures and the actions of pictorial events. As with episodes involving story text, James and his mother are co-constructing meaning. They are co-constructing meaning of the supplementary text through dialogue about the illustrations, as they share traditional storybooks together.

In the following example, James asked a question about the label name of an item in an illustration while sharing the traditional storybook, The Polar Express. (June 6, 1997, Tape I9, 525)

James sat in his mother’s lap as they read The Polar Express together. They came to an illustration that showed Santa holding a whip high above his head as the reindeer began to fly. James studied the picture, then pointed to the whip and asked:

J – What is that?

M – That’s his whip. He whips the whip and the reindeer go. (Mom demonstrated the motion of cracking the whip.)

This exchange occurred prior to reading the text on the page. The text included a statement about the whip, “Santa shouted out the reindeer’s names and cracked his whip.” James often asks questions about illustrations prior to his mother reading the text or interrupts text reading to ask questions. This is part of their storybook sharing routine and necessary to co-construct meaning from the illustrations and text. James is seeking the label name of the whip prior to text reading in this example of an episode involving illustrations and hypertext.

James’s mother also initiates talk about the illustrations during traditional storybook sharing. Because she is aware of the new concepts he is focusing on during storybook sharing and throughout his daily life, she is able to reinforce new concepts and relate
them to his developing understandings. In the following example, James's mother is aware that James is beginning to notice school busses in his environment, and that he recently received a school bus as a toy to play with. The storybook they are sharing is *Little Monster at School*. The illustration they are discussing includes a school bus, and the text reads, "Mom walks me to school. Some of my friends come on a bus."

(May 12, 1997, Tape 13, 123)

J – (*Looking at picture of bus.*)

M – *See that school bus?*

J – *That's a school bus right there?*

M – *Yea.*

James also initiates discussion about the illustrations that are related to his daily life. He understands that bandages help a wound to heal and knows that when he gets a "boo-boo," Mommy puts a bandage on it. He seeks verification of this concept through use of an illustration, during traditional storybook sharing of the book, *Five Little Monkeys Jumping on the Bed.*

(December 15, 1997, Tape 9, 2800)

J – (*Pointing to the bandages on the monkeys' heads.*) *These things will help their boo-boos get better?*

M – *Yea.*

The text does not talk about boo-boos or bandages, but the supplementary text (the illustrations) show bandages on the monkeys' heads. In this example, he is focusing on constructing meaning of the supplementary text.
James also focuses on constructing meaning of the pictorial action in the illustrations during traditional storybook sharing experiences. When reading, *Green Eggs and Ham*, James notices that the characters fall into the water. The text does not mention the water or what the characters are doing in the water. The text reads, "Would you, could you on a boat?" Then, the characters fall into the water. The text continues as if their being in the water is insignificant. As they fall into the water the text reads, "I do not like green eggs and ham!" James indicated that he was unsure of the pictorial action by asking:

(May 5, 1997, Tape II, 454)

*J* - What he in?

*M* - The water.

*J* - What he doin' in the water?

*M* - Well, let's see. Let's go back and look. (*She turned back to the page where the boat was pictured and pointed out to James that they seemed to miss the boat and the boat sank.*)

*J* - What they doin' in the water?

*M* - Looks like they are trying to swim.

In this exchange, James asked what the characters were doing in the water and his mother assumed he meant - how did they get into the water? She used the illustrations to explain the events of the supplementary text. This answer did not satisfy James. He asked again what they were doing in the water. His mother responded with her interpretation of the pictorial action – swimming.

Another example of making meaning of the pictorial action occurred when James and his mother were sharing the traditional storybook, *Arthur's Teacher Trouble*. The teacher
in the story, Mr. Ratburn, was known for being very strict and assigning a great deal of homework to his students. At the end of the story, he announced that he would be teaching kindergarten next year. The illustration showed Arthur’s sister, D.W. with her hand on her forehead. D.W. will be entering kindergarten next year, and she was showing her distress at the possibility of having Mr. Ratburn as a teacher. The text reads, “But next year I look forward to a new challenge…teaching kindergarten.” There is no mention of D.W.’s feelings or actions. The illustration is supplementary to the text.

(December 14, 1997, Tape 9, 1290)

J – (Holding his hand on his forehead.) Why is she doin’ this?

M – Because, she is going to have Mr. Ratburn next year.

In this example, James asks a question to make meaning of the pictorial action. He and his mother co-construct meaning of the supplementary text together. James asks questions and makes statements about the label name of pictures and the actions of pictorial events during episodes involving illustrations and hypertext, and James or his mother can initiate the episodes.

Episodes Involving Sharing and Negotiating the Routine with Traditional Storybooks

After studying numerous parent and child dyads, Sulzby and Teale (1991) conclude that storybook reading is a socially created, interactive activity that is routinized in dialogue cycles. Additionally, patterns of storybook reading change over time with age, knowledge, and experience. Snow and Ninio (1986) also note the patterns of storybook reading discovered by Sulzby and Teale. Snow and Ninio studied across cultures, and found that parents negotiate social contracts with children that move them through stages.
of storybook sharing. This negotiation of storybook sharing routines for James and his mother occur during *episodes involving sharing and negotiating the routine* in this study.

When this study began, James and his mother had a previously established routine for sharing storybooks. Typically, they sit together on the floor in the reading corner, or James sits in his mother’s lap in a nearby chair. The routine includes talk that surrounds the text reading and interruptions of text reading to talk about the illustrations, relate events to daily life, share feelings, etc. James sometimes participates in the reading process with his mother during storybook sharing by approximating familiar text. In the following example, his mother is working to change the storybook reading routine to include increased approximation of the text and the use of his reading finger to match one-to-one with the text. The discussion that typically occurs, during the study, focuses on changing the established routine. The negotiations include invitations for James to assist in reading the story aloud.

James and his mother were sitting in the reading corner on the floor. They were situated between a stack of traditional books they were going to share and the reading corner clubhouse. James sat half inside the clubhouse, with his legs entangled with his mother’s. James’s mother invites him to participate in reading the text, *All By Myself*. (December 14, 1997, Tape 9, 555)

\[ M - \text{Want to help me read this?} \]
\[ J - \text{Nope.} \]
\[ M - \text{You don’t? (Pause.) You can read it. Let’s try.} \]
\[ J - \text{I can brush my fur all by myself. (Correct reading of the text.)} \]
This example illustrates the newly developing role for James during traditional storybook sharing. Sulzby and Teale (1991) found that storybook sharing between parent and child changes over time and allows for the child to take more control of the experience and move toward independent reading of storybooks. James’s mother not only invites him to participate, but encourages him to read the text. She chooses books that contain single lines of print and picture support, so that he can read them by himself with ease, and she encourages him to read along with her. James’s mother adopts a Vygotskian approach to change the storybook routine. She is using the storybook experience to scaffold (Vygotsky, 1978) James’s reading attempts. By using books that he can read with ease and encouraging his attempts, James’s mother is moving James toward independent functioning with storybooks. She continually “ups the ante” and expects James to offer more in the form of text reading to the storybook sharing experience. Additionally, because she knows how he interacts with print and where his Zone of Proximal Development (Vygotsky, 1978) lies, she can encourage him to go beyond passively listening to the story. She expects him to participate and encourages him to do so.

Summary

James’s traditional storybook experiences, throughout this study, include various types of exchanges that are discussed as episodes. Examples of each type of episode are intended to provide deeper understanding of the dialogue that occurs between James and his mother during traditional storybook experiences. Following is a list of the episodes that are discussed in this chapter along with brief explanations.
• Episodes involving artifacts – James is able to manipulate the artifacts of the traditional storybook medium with ease, during independent silent reading and when using books on audio tape.

• Episodes involving interaction with print – James initiates these episodes to share new discoveries and his mother initiates them to “take stock” of James’s knowledge of print.

• Episodes involving reading strategies – James demonstrates early reading strategies during independent reading aloud, and his mother prompts and models their use during shared storybook reading.

• Episodes involving word meaning – James questions his mother to construct meaning of new and unfamiliar words.

• Episodes involving story text – James and his mother co-constructing meaning of text during storybook sharing.

• Episodes involving illustrations and hypertext – James and his mother co-constructing meaning of the supplementary text that includes label names and pictorial action.

• Episodes involving sharing and negotiating the routine – James’s mother initiates changes in the routine using a Vygotskian frame to scaffold his attempts and move him toward independent functioning with storybooks.
CHAPTER 3
CD-ROM STORYBOOKS

M – Okay, do you want to just have the story read to you, or do you want to click on things in the story?

J – I want to click on everything.

(James’s mother selects the icon that says “Read and Play” and the first page of the story is narrated to them. Then, the narration stops and an arrow appears.)

M – Okay, there’s your arrow. Do you want to click on something or go to the next page?

J – I wanna click on him and see what he dos. (Clicks an item but there is no hypertext response.)

M – Did you get it all the way on him? (Modeled with James’s mouse - clicked the item and successfully engaged the hypertext.)

J – A bone. A bone come out. I wanna click him. (Clicks a bathtub.) What did it do? What is that?

M – Looks like a submarine.

J – I move it up here to the big ol’ tree. (Clicks tree twice, then notices a duck.) It’s a duck, quack, quack, quack. That duck’ll go quack, quack.
This exchange occurred during the CD-ROM storybook, *Ruff's Bone* (May 8, 1997, Tape 12, 000). James and his mother are beginning a new CD-ROM storybook and discussing the type of engagement necessary to use the artifacts. James is also responding to the supplementary text in the form of hypertext. This example is typical of the types of episodes that occur during interaction and exploration with the CD-ROM storybook medium. CD-ROM storybooks, like *Ruff's Bone*, are a new type of storybook experience for James and his mother.

The publication of CD-ROM storybooks has emerged within the last five years. Although the storybook market is now becoming inundated with this new storybook experience, prior to 1994 few titles were available to the general public. Due to the novelty of CD-ROM storybooks, there is little research that focuses on the impact of CD-ROM storybook use. Of the studies that examine CD-ROM storybooks specifically, significant positive results are reported. Matthew (1996) found that comprehension was higher for dyads of third graders who used CD-ROM storybooks than those who used the traditional print versions of the same story. Johnston (1995) found that kindergartners significantly increased their verbal abilities when using CD-ROM storybooks for 42 minutes per week for at least seven weeks. Glasglow (1996-97) indicates that CD-ROM storybooks can motivate students to read. Given that studies of CD-ROM storybook use are just emerging as an area of study, some historical perspective is relevant. What follows, is a brief review of the literature focusing on computers as a tool in the field of education.

The use of computers in education is a relatively new field of study. The early literature includes reviews of software programs, development of curricula, and
instructional applications. During the 1960's and 1970's, computers emerged as a possible quick fix for improving reading test scores. Federal grants were used to fund computer-based reading curricula that supported the development of skill and drill programs. These computer-assisted instruction programs were supported by research and found to increase student achievement at least as much as conventional modes of instruction (Reinking & Bidwell-Bowles, 1991). Many of the effectiveness studies were criticized, however, because computer-assisted instruction was an additional instructional component, and not used to supplant traditional instruction. Computer-assisted instruction was used as a supplement to classroom instruction; therefore, the increased achievement may have been due to its additive nature.

Much of the research that followed focused on the comparison of electronic and conventional texts. Researchers assumed that differences in electronic and conventional texts affected the reading process or performance. According to Reinking and Bidwell-Bowles (1991), there is no evidence that comprehension varies between the two types of texts, even though some researchers noted that reading time varied. However, Reinking and Bidwell-Bowles, also indicate that if the computer is used to expand or control the way the text is presented to the reader, then reading comprehension might increase.

Because learners can use computers as a tool to increase their understanding of the text, more recent research focuses on how computers can aid learning for target groups of children. Researchers (Johnston, 1995; Reeves, 1989; Sartorio, 1993; Talley, 1994) found computers to be an effective tool for preschoolers in the following categories: Head Start, Low Socio-Economic Status, Language Disordered, and special education students. These studies focused primarily on increased language and emergent literacy
development. There are conflicting studies, however. Kay (1993) found no significant
difference when using computers to increase receptive vocabulary acquisition for
language disordered preschool children. Schetz (1991) also found no significant
difference for treatments designed to improve discourse skills of Head Start preschool
children.

also found that computers can increase preschoolers school readiness. Although some
researchers (Lawrence, 1992; Sherman, 1990) questioned the appropriateness of using
computers with preschoolers, this argument may be inconsequential, because
investigations of home environments (McKinley, 1992) indicate that regardless of socio-
economic factors, a large number of students have been exposed to high numbers of
components of technology.

The research regarding student attitude and motivation to use computers is mixed.
Some studies (Glasglow, 1996-97; Levine & Dontia-Schmidt, 1997) revealed a positive
attitude and increased motivation due to computer use. Other studies (Lawrence, 1992;
Sherman, 1990) indicated that no difference in attitude or motivation existed in the data
or that young children preferred traditional activities involving hands-on manipulatives.
It is possible that studies involving CD-ROM storybooks (Johnston, 1995; Matthew,
1996) do not conform to previous computer studies, because CD-ROM storybooks are a
unique form of computer usage.

The power of CD-ROM storybooks to improve comprehension, attitudes, and
emergent literacy lies within the nature of the programs. CD-ROM storybooks have a
video component. Sherwood, Kinzer, Hasselbring, and Bransford (1987) found that
using a computer to combine video and text improved comprehension. The effects of the video component may be due, in part, to the familiarity with visual media. Long before children begin formal schooling, they are exposed to visual media (Soule, 1988). In addition, preschoolers are able to recall vocabulary associated with visual media during television viewing (Perez, 1990). Therefore, the combination of visual media and text found in CD-ROM storybooks may enhance comprehension, emergent literacy skills, and motivation.

Episodes Involving Artifacts with CD-ROM Storybooks

The first time James experienced a CD-ROM storybook, he watched his father interact with the text. He was unable to manipulate the mouse on his own, so he spent the time watching and giggling as his father made various characters and things “come to life.” He soon requested to see things again, “Do again, Daddy.” Or, his father would show a specific part over, because it elicited a loud giggle.

At the beginning of this study, James focused on gaining control of the mouse (with assistance) and began taking a more active role in the interaction. By the close of the study, he had complete control of the mouse and rarely needed instruction in mouse skills. His learning path of CD-ROM storybook artifact use occurred during the course of this study. His mother, using a Vygotskian approach, scaffolded his attempts by modeling correct arrow placement, giving him verbal instructions, and reinforcing his attempts. As James’s motor skills progressed and his attempts were scaffolded, he was able to explore hypertext on his own, because he had internalized the process necessary for artifact use.
James’s first attempts at controlling the mouse (EasyBall by Microsoft) were haphazard and impulsive. The mouse consists of a large, softball-size yellow ball that rolls within a holder and moves the pointing devise (arrow) on the screen. Below the large yellow ball is a blue bar that is pushed to select items on the screen. James initially touched the mouse and looked for the arrow as it careened across the screen. His movements were too large and fast, even for the specially designed mouse. He could move the mouse, but he couldn’t stop it on the objects that he wanted to select. He had to learn to slow his movements, while learning directionality with respect to the mouse on the screen. Once he gained enough motor control to stop and start the movement of the mouse, the directionality came easily, and he learned how to move the mouse in the direction he intended. He began to intently watch the mouse and sometimes played with it across the screen to see how it moved and where it would stop. The ability to stop the mouse on the object he wanted to click took longer to master. At the age of 2½, he could effectively interact with the hypertext, but needed step by step instructions to scaffold his attempts and “click" items on the screen.

J – I want to click on the doggie.

M – Okay James, move the yellow ball to the dog. Now, push the blue button.

It wasn’t long, approximately a week from the scaffolded prompts, however, that James began to say, “I can do it myself!” And, by age 3, he was gaining more control of the mouse and could use it independently.
During the initial sessions, James would verbally discuss what he was doing as he moved the mouse.

J – What's that doggie's name? I'm going to move it on this [the dog] and see what it does. (Clicks on the dog.) That's a silly dance.

Later, as he moved the mouse and clicked on objects intentionally, he did so without verbal descriptions of his intentions. The ability to "click" on desired objects became an in-the-head strategy. His learning about technology was a scaffolded process, and his talk and actions were interpreted using a Vygotskian framework. He began by moving the mouse and experimenting with results, he received verbal directions from his mother, he verbalized his mother's instructions and his intentions, and finally, as the strategy became known, he operated the mouse in silence using an in-the-head process.

The initial phase of the study was marked by interactions between James and his mother that focus on mouse use and arrow placement. Exchanges between James and his mother in the following examples illustrate James's focus on artifact use.

(May 5, 1997, Tape I1, 800)

James's mother explains that he can begin to select items on the screen. James indicates which items he wants to "click."

J – I wanna click on him and see if he talk.

M – Well, you gotta push it up there. (She demonstrated how to roll the ball and moved the arrow to the item James wanted to "click.")

J – (Pushed the blue button to select the item.)

M – What do you want to do now?

J – Click on him and see if he talk.
**M** - *(Demonstrated how to move the arrow again.)*

Throughout the first few pages of this CD-ROM storybook, James’s mother modeled and demonstrated arrow placement on the screen. James indicated which items he wanted to click and pushed the blue button to select the items. Then, James’s mother supported his attempts verbally, while he focused on arrow placement.

(May 5, 1997, Tape II, 1050)

*J* - *I wanna click on that.*

*M* - *Well, move your arrow.*

*J* - *(James moved the arrow to the icon that turns the page.)*

*M* - *Okay. That's going to take us to the next page. Is that where you want to click?*

*J* - *Yea.*

*J* - *(James positioned the arrow on the next page icon.)*

*M* - *Okay. You are in the right place, just click the blue button.*

*J* - *(He pushed the blue button.)*

As James learned to move the yellow ball and position his arrow, his mother talked him through the process and, at times, even held his arm to help him. He was able to roll the ball and move the mouse across the screen, but had difficulty stopping the arrow on items he wanted to click. In the following examples, his mother models and assists him in learning exact arrow placement.

(May 8, 1997, Tape I2, 297)
J - (James has both hands on the yellow ball and is trying to click on Ruff, a dog in the CD-ROM storybook, Ruff's Bone. He is not able to get a hypertext response.)

M - You must not have it all the way on him.

J - (James decides to try a new item, a car.) I'll move it right, right, right, right on the Corvette. (As he said each "right" he rolled the yellow ball to move his arrow.)

J - (He successfully elicits a hypertext response and clicks the car numerous times.)

During the CD-ROM storybook, Little Monster at School, another exchange occurs where James and his mother are focusing on arrow placement.

(May 12, 1997, Tape 13, 1631)

J - Click on this apple. (James is verbalizing the process rather than directing his comment to his mother.)

J - It doesn't do anything. These crayons...

M - They don't do anything? I bet those crayons do something. (Mom uses her mouse to select the crayons and elicits a hypertext response.)

M - You had your arrow too high.

J - (James moves his arrow to the crayons.)

M - Go down a little bit more.

J - (Successfully clicks the crayons.)

James had to learn detailed clicking behavior that would create the responses he wanted from the hypertext. Throughout the observations, he attempted to learn precise
placement of the arrow for efficient exploration of the hypertext. At first, his mother reminded him when his arrow would appear on the screen, indicating that he could begin selecting objects to click. In most cases, he immediately moved the arrow to the object he wanted to click. James learned to watch for the arrow to appear to begin clicking. He noted, “I got to wait on my arrow.” If the object didn’t respond and the hypertext was not engaged, James initially clicked the item repeatedly without success. Later, he discovered that some items did not have hypertext and he would comment on them.

J – *That house don't do anything.*

M – *Yea, sometimes things don't do anything.*

At this point, he had to learn if the object actually lacked hypertext, or if he was pointing to the object imprecisely, like the previous example (the crayons) where he positioned his arrow too high. He eventually learned to move the arrow and click in a more precise manner, before judging the object to lack hypertext.

James’s learning was a scaffolded process. The strategy needed to click precisely on objects began with repeated attempts to click the object without success. From this point, his mother explained that some objects lacked hypertext, and James repeated the discovery that some items “don’t do anything.” Then, she taught James precise pointing skills to check for hypertext, through modeling and verbal instructions, and he began to verbalize the appropriate clicking behavior. “I have to put it right on there.” Finally, the strategy became an in-the-head process as he clicked and moved his arrow to try another location before clicking again on the object. He learned to judge whether the object lacked hypertext, or if he had to be more precise with his arrow placement.
For example, while engaged with the CD-ROM storybook *The Tortoise and the Hare*, (May 15, 1997, Tape I4, 560) James clicked on several objects then tried to click on a tree. He tried the tree in three different locations, pointing the arrow more precisely with each click and then declared, “That tree don’t do anything.” He immediately moved on to clicking other objects. He did not ask for assistance, because he determined (on his own) that the tree lacked hypertext. He knew that trying to click on the object in different locations and in a precise manner would elicit a hypertext response, if hypertext existed for the object. James determined that giving it three tries was adequate for him to judge whether or not the object lacked hypertext.

James focused on how to move and stop the mouse and precise arrow placement during these *episodes involving artifacts*. Over time, he gained control of the CD-ROM storybook medium and was able to manipulate the artifacts using an in-the-head strategy. As indicated previously, his mother scaffolded his attempts. She modeled and assisted physically, talked him through the process, and supported his attempts. James imitated her physical movements and verbal instructions, and he eventually internalized the process. By the close of the study, James was able to operate a regular adult-size mouse independently and with ease.

**Episodes Involving Interaction with Print with CD-ROM Storybooks**

The CD-ROM storybooks used in this study include a print component - the text is visible on the screen. The text is presented in a unique manner, however, because during the narration of the text, phrases are highlighted as they are read. The CD-ROM storybooks are designed to read the text prior to the engagement of hypertext. In other words, James cannot click on items during the narration of the text. He waits until the
text is read, then his arrow appears, and he can begin selecting hypertext or continue to
the next page. He can also choose an icon that will cause the text to be reread to him or
click on (highlight) specific words to hear them again. During CD-ROM storybook
experiences, episodes involving interaction with print occur as James notices letters,
experiments with highlighting specific words, and indicates his knowledge of letter
sounds.

For example, during the CD-ROM storybook, Stellaluna (October 21, 1997, Tape 3,
1107), James noticed the word Stellaluna. He and his mother previously engaged in an
activity where they generated a list of “S” words. James recognized that Stellaluna was
an “S” word and commented, “We didn’t do that S…S…S…Stellaluna.” James was
repeating the letter sound for “S” and indicating that they did not write Stellaluna on their
list of “S” words. James’s mother understood the comment and could put it into context,
because of her previous interaction with James. This example is an episode involving
interaction with print, because James is focusing on the letter “S.”

A second way that James focuses on print during CD-ROM storybooks is through the
realization that he can interact with the print on the page. While exploring the CD-ROM
storybook, The Tortoise and the Hare, James began to click the words on the page.
(October 4, 1997, Tape 1, 2300)

\[ J \rightarrow (James\ \text{clicks\ the\ words: } \text{the,\ tortoise,\ the,\ tortoise.}\ \text{As\ he\ clicks\ the\ words,}\]

\[ \text{they\ are\ highlighted\ and\ the\ narrator\ rereads\ the\ words.})\]

\[ M \rightarrow \text{What\ did\ you\ figure\ out\ there,\ James?}\]

\[ J \rightarrow \text{These\ letters.}\]
James realized that he could interact with the print on the page and explored the print by clicking on various words. He was not clicking the words in sequence, but simply exploring various words on the page. James was exploring single words during this episode involving interaction with print. This type of print interaction is unique to the CD-ROM storybook medium. There are no similar examples of this type of exploration when James engages with other storybook media, because it is not possible for him to explore the text in a similar fashion (independently) with traditional storybooks or with LEA storybooks.

A third type of interaction with print occurred as James focused on turning off the CD-ROM when he was finished the activity. At the end of the CD-ROM storybook, icons appear with choices to select for either exiting the program or beginning again. For each CD-ROM the icons look slightly different, but all include one icon with the word “quit.” Choosing this icon allows James to exit the program. Two examples follow that illustrate James’s growing competence and independence with CD-ROMs. In the first example, he discovers which icon to select to exit, and in the second example he verbalizes the reason for choosing the icon independently.

(November 21, 1997, Tape 6, 5066)

J - Which one do I have to click? This one or that one? (Pointing to the icons on the screen.)

M - There should be one that says, "Quit."
J – Quit...quit...does the “Q” say quit?

M – That one - that's closest to your arrow. Right there. (Showing James the Q and sliding her finger under Quit.) Quit.

In the next example, James had already chosen the icon to “Quit” and was exiting the CD-ROM.

(January 29, 1998, Tape 15, 4880)

M – How did you know where “Quit” was?

J – kwu, kwu, kwu (making the letter sound for Q).

During CD-ROM storybook experiences, episodes involving interaction with print involve James noticing letters (like the “S” in Stellaluna), exploring the print by highlighting specific words (by clicking on them), and indicating his knowledge of letter sounds (“Q” for quit). Like his experiences with the traditional storybook medium, James interacts with print by noticing letters and verbalizing letter sounds. However, exploring specific words independently is a print activity that is unique to the CD-ROM storybook medium.

Episodes Involving Reading Strategies with CD-ROM Storybooks

Also unique, is the way that James demonstrates reading strategies when engaged with the CD-ROM storybook medium. The early reading strategies recommended by Clay (1993b) of directionality, one-to-one matching, and location of known and unknown words are evident, but they occur in ways that are unique to the CD-ROM storybook medium. James uses his arrow, rather than his reading finger, when following along with the text. He reveals his understanding of directionality by which words he highlights in sequence. He demonstrates one-to-one matching, by controlling the narration of the text
and selecting words with his mouse to be read. He selects known and unknown words using his arrow rather than his finger, which subsequently changes the interaction between he and his mother. James does not have to ask his mother to reread a word, because when he selects the word with his mouse, the narrator reads it. He selects words that he knows, and he selects words that are unknown, during his independent exploration and demonstration of reading strategies.

James’s stages of understanding with respect to directionality and one-to-one matching are evident as he engages with CD-ROM storybooks. Using his mouse to point to words, rather than his reading finger, he demonstrates his focus on reading strategies in the following examples.

During the CD-ROM storybook, *Green Eggs and Ham* (December 22, 1997, Tape 10, 1000), James selected words along the first line of print left to right. He “clicked” on each word and the narrator read the words, “Do you like.” Then, James selected words along the second line of print, but this time he “clicked” the words right to left and the narrator read, “ham and eggs green.” James’s choice to select words left to right on the first line of print, but to move right to left on the second line was consistent with his understanding of return sweep at this stage of the study. He could easily demonstrate directionality with single lines of text, but often needed assistance with multiple lines of print during both traditional and LEA storybook experiences. In this example of an *episode involving reading strategies*, James is able to match one-to-one using the mouse to select individual words across single lines of text, but is still developing an understanding of directionality with respect to return sweep on multiple lines of text.
Nearly a month later (January 14, 1998, Tape 13, 24<sup>o</sup>), during the CD-ROM storybook, *Arthur's Reading Race*, James demonstrates his new understanding of directionality and return sweep across multiple lines of text. He also explores known and unknown words.

Rather than begin by exploring the hypertext as he usually does, during this CD-ROM storybook, James focuses on reading strategies. He begins by clicking words in a random fashion, then settles in to “read” the text by clicking each word and matching one-to-one across lines of text. He “clicks” the words left to right and top to bottom with return sweep for an entire page of text. As he clicks each word, the narrator reads the text. Next, he notices the alphabet on the screen and “clicks” the alphabet from “A” to “Z,” again demonstrating left to right and top to bottom with return sweep. He continues this exploration and demonstration of reading strategies throughout the CD-ROM storybook.

At times, he stops on a favorite word and “clicks” it multiple times. Sometimes the word is known and sometimes it is unknown. For example, he clicks the word “zoo” multiple times when he comes to it during his “reading.” “Zoo” is a known word for James; he recognizes it during traditional storybook reading experiences. He also clicks the word, “D. W.” multiple times during “reading.” “D. W.” may be a word that he can read, but he has not read it independently during traditional or LEA storybook experiences. When he continued to click “D. W.” multiple times, his mother gave him a puzzling look. James responded, “Well, I like to click D. W.” In this example, James demonstrates his understanding of reading strategies, using his mouse to exhibit one-to-one matching,
directionality and return sweep, and exploration of known and unknown words. He is engaged in an *episode involving reading strategies* as he focuses on Clay's (1993b) early reading strategies during this CD-ROM storybook experience.

**Episodes Involving Word Meaning with CD-ROM Storybooks**

*Episodes involving word meaning* during CD-ROM storybook experiences consist of exchanges where James asks for clarification of words within the text and hypertext. He focuses on developing an understanding of unfamiliar words. Because the text is read to him by a narrator rather than his mother, the exchanges also involve James seeking to clarify what the narrator has read to him.

In the following example, James explored the words on the screen by clicking them. He was not clicking words in sequence, but simply exploring words as he did during *episodes involving interaction with print*. During the CD-ROM storybook, the *Tortoise and the Hare* (October 4, 1997, Tape 1, 2410), he came to the word, “afternoon.” He clicked the word quickly several times, so that it resembled a “rap” rendition of the word: “after – after - after – after – afternoon.”

\[J – Afternoon, afternoon...what?\]

\[M – What word comes next?\]

\[J – Hare. Afternoon hare?\]

\[M – (Reading text.) They met again that afternoon. Hare... That means after lunchtime.\]
In this example, James reveals his confusion with a single word within the text. He seeks clarification of the word by asking his mother. She explains the meaning of the word, initially trying to use the context of the story, but then relating it to his daily life to give him a context in which to understand the word.

James also seeks clarification of the narrated words during CD-ROM storybook experiences. In the following examples, James asks his mother for clarification of words within the text and hypertext.

(November 12, 1997, Tape 5, 1405)

J - *Let me click on that dog bowl.* (Clicks the dog bowl and the name on the bowl is highlighted and read aloud: Capone. James clicks the dog bowl six times.) 

J - *He telling him to come home?*

M - He said, "Capone." That's the doggies name.

A similar exchange occurred when James explored the CD-ROM storybook, *Arthur's Reading Race.*

(January 14, 1998, Tape 13, 3326)

J - *(Clicking continuously on Arthur as he says, "Trolls.")*

J - *Did Arthur say wolves? Wolves? Wolves, then what?*

M - Trolls, I think.

J - *(James continued to click Arthur and listened to the oral hypertext.)*

In this example, James asks for clarification of the oral hypertext. During episodes involving word meaning, James focuses on the meaning of words within the text and hypertext. He asks his mother for clarification of narrated words, oral hypertext, and specific word meanings.
Episodes Involving Story Text with CD-ROM Storybooks

According to Sulzby and Teale (1991), the social interactions that surround storybook reading are critical to the act of constructing. They believe the act of constructing, made possible by social interaction, is powerful and necessary for young children to develop literacy. In this study, talk also surrounded the text and hypertext of CD-ROM storybooks, making it a socially created, interactive activity of co-constructing meaning. James and his mother discuss the events of the story together, and either one can initiate an *episode involving story text*.

For example, during the CD-ROM storybook, *The Tortoise and the Hare*, James's mother initiates an *episode involving story text* by asking James to answer a comprehension question at the end of the story.

(October 4, 1997, Tape 1, 4422)

*M* - Who won?

*J* - The tortoise, the slow guy. (*James then clicks the Hare who responds, “Hey, I was supposed to win.”* James clicks the Hare eight times, then repeats the oral hypertext.) Hey, I was supposed to win.

*J* - (Responding to the Hare.) Well, he already wonned!

In this example, James responds to his mother’s questions about story text, and then engages the hypertext as part of his response. He then responds directly to the oral hypertext, while looking at the Hare on the screen. James also initiates *episodes involving story text* through retelling events in the story and relating the text to his own life. The following examples illustrate these types of exchanges.
In the following example, James retells an event in the story and makes predictions about the story text based on his understanding of the social world.

(May 8, 1997, Tape 12, 1179) CD-ROM storybook, Ruff's Bone:

    J – See what he do's. He was starting to eat his bone. He was starting to eat his bone! He may cry about his bone.

James retells an event in the story; a character in the story has Ruff's bone and is starting to eat it. James realizes that the bone belongs to Ruff and that it might make him sad if someone else eats it. In James's conception of the social world, an event like that could make someone cry.

A similar example occurred as James engaged with the CD-ROM storybook, Little Monster at School. In this example, James hears the text of the story read by the narrator, “Yally won't play with anyone. He says games are stupid.” James responds to the story text:

(May 12, 1997, Tape 13, 2900)

    J – That's not nice. Maybe he will go away. That's not very nice to say stupid.

James is responding to the story text in this example. He makes a judgement about the character's actions based on his conception of the social world. James knows that it is not nice to say "stupid" and reveals his understanding in his response.

Later in the study, James begins to retell larger portions of the story and make judgements about characters' actions. During the CD-ROM storybook, The Berenstain Bears Get in a Fight, James retells a large portion of the story to his mother without prompting.

(February 3, 1998, Tape 16, 3875)
The brother is sorry for taking the toys away from her. The sister is sorry for wrecking his dinosaurs. They are just special for him to take to school.

In a similar manner, James retells a portion of the CD-ROM storybook, The Berenstain Bears in the Dark.

(January 30, 1998, Tape 16, 2100)

Those guys are having not a very good... those guys in the bed are not having a very good time sleeping. They're just cutting the light on and off, on and off.

James also relates the content of the story text to his own life during CD-ROM storybook experiences. While engaged with the CD-ROM storybook, Just Grandma and Me, James relates the story text to his life and even begins to role-play during the storybook experience.

(May 20, 1997, 16, 629)

I have a grandma too.

You do have a grandma.

I'm James. I'm a be me and my grandma. Me and James's grandma. Me and my grandma. I'm a wear a white hat and be him.

James verbalizes his desire to relate to the story through dramatic play. He conveys his intent to make the story about him (James) and his grandma. Then, he decides to pretend that he is the character in the story wearing the white hat. He is relating the text to his own life in this example of an episode involving story text. During episodes involving story text for CD-ROM storybooks, James is observed retelling portions of the story, relating the story to his own life, engaging in dramatic play, and answering comprehension questions initiated by his mother.
Episodes Involving Illustrations and Hypertext with CD-ROM Storybooks

A unique component of the CD-ROM storyboard medium is the hypertext. According to Reinking and Bidwell-Bowles (1991), information in hypertext is designed to encourage individual readers to flexibly explore the relations among interrelated textual segments. The hypertext is not a sequential representation of text, which allows it to respond to the needs of the individual reader. For example, the reader chooses to activate the hypertext by clicking on various objects on the screen. In this manner, the reader can change the presentation of the hypertext. The reader can choose to click one object several times, click a series of objects, or a combination of the two. The reader also has the choice not to engage hypertext.

While engaging the hypertext does not change the primary text, the hypertext can elicit various forms of supplementary text. Depending on the programming of the hypertext, it can be in the form of song, oral text, simple movement, or an elaborate video segment. For example, the reader can click on a character within the storyboard and the character might sing a song, utter a phrase or sentence, dance, or serve as a link to a video segment complete with song, oral text, and movement. The hypertext can also contain one response, a series of responses, or an initial response followed by limited additional responses. For example, “clicking” on a character within the storyboard could produce the same song each time the character is clicked. The character might also produce two different phrases in an X-Y-X-Y pattern as it is clicked continuously. The hypertext could be programmed to include more than two responses in this type of series. The character may produce one movement on the initial click, but produce a different movement for subsequent clicks in an X-Y-Y pattern.
Hypertext creates a literal interaction versus a figurative interaction between the reader and text. A study by Pellerin (1984) illustrates this point. The students in Pellerin’s study conceptualized a world of power where they had control, because they could get the computer to do what they wanted it to do. Due to its complex nature, researchers (Reinking & Bidwell-Bowles, 1991) believe that hypertext will necessitate the development of new metacognitive strategies for locating and comprehending textual information.

Also relevant to this discussion of hypertext is Sulzby and Teale’s (1991) notion of independent functioning with traditional storybooks. It is noted that children often reenact familiar storybooks in ways that are not yet conventional readings of the books. Also called, “emergent storybook reading” by Sulzby and Teale, the behaviors involved in reenacting storybooks are an integral part in the process of learning to read. The emergent storybook reading typical of two year olds involves speech that is consistent with the act of reading and consists of “labeling and commenting on items in discrete pictures” (Sulzby & Teale, 1991, p. 735). From this initial form of reading, children give an oral account using forms of the written language and eventually create a more conventional reading of the story.

The stages of independent functioning observed in James’s interactions with CD-ROM storybooks follow a similar path, yet allow for more complex interactions with pictures and supplementary text due to the hypertext component. James began by labeling things in the pictures and commenting on hypertext, and he soon began to predict what individual items would do as part of the story. His comments included statements like, “Look Mommy! That baby drops his food” and “That sister will say
‘Good morning’.” He commented on the action of the hypertext and made predictions about what the hypertext items would do. For James, story became something that you do as well as read.

James’s experience with CD-ROM storybooks is multidimensional due to the hypertext component. He listens, responds, and repeats text as the narrator reads the story, but also responds to hypertext and can predict what characters will say when you “click” them. In essence, he is using written text and oral hypertext to construct meaning as the storybook characters virtually come to life. It is possible that experiences with more complex interactive text, which involve multidimensional reenactments, will facilitate multiple storybook literacy for James.

As described above, the hypertext is complex and can be programmed to elicit various responses when clicked by the reader. James’s response to hypertext is also complex. He is not just requesting label names or explanations of pictorial action, as he did during traditional storybooks. When engaged in the CD-ROM storybook medium, he responds based on the form of the supplementary text. James is observed repeating the oral hypertext and sharing it with his mother, co-constructing meaning of the hypertext, and trying to control the hypertext.

James revealed his focus on the hypertext by repeating the oral hypertext during episodes involving illustrations and hypertext. The oral hypertext could be in the form of a word or phrase, a song, or a simple “silly” noise. The language and music of the hypertext makes CD-ROM storybooks a unique media experience. Throughout the study, James repeated single word utterances of objects that he selected. He also responded to the songs that characters sang during hypertext engagement.
(May 30, 1997, Tape 17, 1360) **Shiela Rae, the Brave**

*J* - *What he doing?*

*M* - *Just singing a song.*

*J* - *(clicked the character again and began singing along)*

The song was not a previously known song, but by the third click James knew the tune and the majority of the words. He also bounced up and down and swayed, dancing to the music when music was part of the hypertext. His enjoyment of the hypertext was evident. He often shared his excitement with his mother.

(May 5, 1997, Tape Il, 1500) **Green Eggs and Ham**

*J* - *Look! They’re going rrrr.* *(Responding to the wheels turning and engine sounds, clicked the wheels again.)* *You hear that sound?*

Typically, he turned and smiled at his mother when the character would begin singing or say something that he found amusing or “silly.” An integral part of responding to the hypertext was sharing it with his mother. He shared the hypertext through repeating the oral hypertext and also by questioning, evaluating, and summarizing the movements and language of the hypertext. James relied on his mother for explanations of hypertext. They co-constructed meaning of hypertext actions and events.

(May 12, 1997, Tape 13, 1155) **Little Monster at School**

*J* - *Why he crying?* *(Responding to a baby crying in the hypertext.)*

*M* - *Cause he knocked his food off.* *(The baby knocked his food off the tray of his highchair.)*

*J* - *Well, he don’t supposed to cry.*
During another session, Papa Bear and Baby Bear were waiting at the finish line to see who would win the race between the Tortoise and the Hare.

(May 15, 1997, Tape 14, 1585) The Tortoise and the Hare

J – (clicked on Papa Bear. Baby Bear pulled Papa Bear's ears and he responded “Take it easy.”) Why do he want to take it easy?

M – He was pulling his Daddy's ears.

Again, questioning and evaluating:

(May 19, 1997, Tape 15, 1730) Stellaluna

J – What's Stellaluna doing? Where's her Mommy? Is she a come back?

M – Do you remember? She comes back at the very end. (Referring to the traditional print version of the story.)

J – I want to see if Stellaluna's Mommy comes. (clicks on a bug then on Stellaluna twice.) What she say? I don't know what she say.

M – She said she was scared.

J – He want to go with his Mommy. He dropped on the tree. Where's her Mommy?

James questioned his mother to reaffirm his assumptions about the social world. He engaged in questioning, summarizing, and evaluating the hypertext occurrences. His evaluations reinforced his sense of what constitutes good and bad behavior. He made judgements, for example, “He don't supposed to cry” based on his view of acceptable behavior in his social world. He also wanted the dynamics of the story to fit his conception of the social world. In his view of the social world, the Mommy doesn’t leave
the baby. James questioned his mother several times about the whereabouts of
Stellaluna’s Mommy, reaffirming his understanding and revealing his concern.

James indicated on several occasions his desire to control the hypertext. He wanted to
make the objects *do* certain things according to his view of the social world.

(May 5, 1997, Tape II, 2251) *Green Eggs and Ham*

\[ J - I make him eat a bite. (Responding to a reluctant eater.) \]

\[ M - How are you going to do that? \]

\[ J - Eat a bite! (Yells at the character in the story, then goes on to next page.) \]

\[ M - Let's see if he tried a bite. \]

\[ J - (clicks on reluctant eater to make him eat it, and he tried a bite.) \]

\[ M - (Patting James's back.) You made him eat it. \]

In a similar exchange, he was again indicating his desire to control the hypertext:

(May 12, 1997, Tape I3, 1860) *Little Monster at School*

\[ J - I want the bus to come. \]

\[ M - I don't know how to make it come back. \]

\[ J - (Clicks on several items in the road including a manhole, but the bus does not return.) \]

In a third example, James is again indicating his desire to control the hypertext:

(May 30, 1997, Tape I7, 1170) *Shiela Rae, the Brave*

\[ J - Who's him? \]

\[ M - Wendall. He's mean. He took her jump rope. \]
James's desire to be in control of the hypertext goes beyond his desire to choose and click objects. He likes to see objects again once they leave the screen, but he also wants to be able to make them do certain things in accordance with his beliefs about the social world. He believes that you should try a bite of new things, and when you take something you should return it. These are assumptions about the social world that are tested in the CD-ROM experience, and he wants them to conform to his beliefs. Throughout the study, James is observed repeating the oral hypertext and sharing it with his mother, co-constructing meaning of the hypertext, and trying to control the hypertext during episodes involving illustrations and hypertext.

Episodes Involving Sharing and Negotiating the Routine with CD-ROM Storybooks

Although traditional storybook readings occur within the framework of a routine that defines the activity for the child, CD-ROM storybooks were new to both James and his mother in this study. As a result, there was not an established routine for sharing CD-ROM storybooks. James and his mother learned how to participate in the activity together, over time. This interaction led to negotiations and the development of expectations for the activity.

James and his mother had to define and negotiate goals, such as, his mother's goal to finish the CD-ROM and James's goal to engage in play by exploring a single hypertext event numerous times. James's mother wanted the CD-ROM storybook experience to be complete in one sitting, as a traditional storybook experience would be for James. She
felt it would be difficult for him to construct meaning from the story in segments, and encouraged James to move to the next page when he spent prolonged periods on one page. James wanted to explore each page fully and felt he had to “click on everything.” He also clicked numerous times on single objects. James engaged in play-type behavior when he clicked on the same object consecutive times producing the same hypertext response. A routine eventually developed, and he learned to request multiple explorations of the same hypertext event. He would ask his mother for permission or say, “I want to click it again.”

If you’ve watched a toddler dump out a container of blocks only to return them to the container and dump them out again, you have witnessed how toddlers use repetition in play. For James, the hypertext created the perfect opportunity for this type of play. He could click on an object an infinite number of times and create the exact same result. If the result was especially pleasing, like the sound blocks make as they crash to the floor, he was motivated to repeat it again and again. For James, the hypertext proved even more fun than blocks crashing together, because the objects would dance, sing, make faces, say “silly” things, etc. He quickly learned how to play with the hypertext aspect of the CD-ROM storybooks.

At times, James would click an object in excess of twenty times without tiring of the repetitive response. He clicked enough times to memorize the text contained in the hypertext and could even hum or sing along if music was involved. Soon, his play behaviors became more organizational in response. He would click on various objects on the page until he found one that he especially liked, then choose it to click numerous times. Other times, he would click on several objects in a sequence and repeat the
sequence. His goal was to explore everything, in effect, “click” on everything. He stated this goal during a session when his mother prompted him to go on to the next page, he stated, “But, I have to click on everything.”

Although the play behavior was fun for James, it made the activity an independent play activity, and not a shared storybook experience. There is a distinctive difference between the behaviors children exhibit when exploring books independently, and the behaviors they exhibit during a shared reading experience. This experience was a shared activity, not an independent play activity, so the procedure for sharing CD-ROM storybooks had to be developed. James and his mother needed to create a routine for sharing CD-ROM storybooks that was compatible with their goals. And, through interaction, they learned how to share the CD-ROM experience together. At times, it was a difficult lesson for James and desires were negotiated with his mother.

(May 8, 1997, Tape 12, 785) Ruff’s Bone

M – You about ready? You’ve done that shirt and pants a bunch of times.

J – I wanna see this one more time. (Clicked shirt again.)

M – Let’s go to the next page. We’re gonna find out what the story’s about. (She moved to the next page.)

There were several stages of this type of interaction. At first, James’s mother limited exploration due to concerns about the length of the activity and James’s attention span.

(May 15, 1997, Tape 14, 690) The Tortoise and the Hare

M – Okay, about time to go to the next page.

J – I click one more thing, then go to the next page.

M – Okay, that’s a good idea.
Next, because she did not want to decrease James’s excitement with CD-ROM storybooks while learning to share the experience, his mother tried not to intervene and allowed multiple clicking on single objects. James clicked on a bucket and watched a fish flip out of the bucket in excess of twenty times. Realizing that James was engaged in independent play, she again placed limits on multiple clicking and various explorations on a single page. “Okay, one more thing, then let’s go on and see what happens next.” James responded by verbalizing the limit, “I want to click on one more thing.” He also negotiated multiple clicking on single objects. The negotiations continued through several sessions.

(May 12, 1997, Tape 13, 1960) Little Monster at School

J - (After clicking twice on a bird.) Can I do it the last time, then click something else?

M - Yea.

J - Click the Mom again. (Verbalizing his actions.)

J - (Grabs his mother's mouse.)

M - Here use yours.

J - I want to use woos.

The struggle was evident as James negotiated the power to click on objects repeatedly and to click on many objects on each page. He even realized the power of his mother’s mouse to override his, and he wanted to use it rather than his own. Later in the same
session, James reverted to playing with his mouse rather than using it for intentional purposes. Then, just as a mother negotiates proper use of books and crayons, James’s mother taught James the acceptable way to use his mouse so that it wasn’t damaged and the CD-ROM storybook could be completed before he tired of the activity.

James’s mother conducted an experiment a few sessions later. About halfway through the CD-ROM storybook, she left the room to see if James would continue to click repeatedly on one item in her absence. After he clicked on a calf on the screen fourteen times, she left the room.

(May 20, 1997, Tape 16, 2347) Just Grandma and Me

J – Mommy!

M – I’ll be right back.

J – (Sat up and began clicking various items on the page rather than repeated clicking of the calf.)

M – (returned)

J – (began looking to his mother for approval between clicking objects)

James’s behavior could be explained as a power struggle with his mother, because he stopped the repeated clicking when she left the room. He may have also viewed her absence as a punishment and learned to discontinue the behavior that caused her to leave the room. Later in the same session, James offered a compromise for the number of times that he would click on a single object.

J – I do it five times? I want to click on him two times.

M – That’s okay.

J – Let me click him again.
M - One more time.

J - Two?

M - One. Let's go on to the next page. Mommy will help.

J - I can help. I do it.

James learned how to interact with the CD-ROM storybook as a social experience. He learned appropriate behaviors and his mother's expectations through negotiations. This was a difficult lesson, because his mother was also learning to negotiate routines for the activity. The expectations for play behavior changed as she struggled with the idea of free exploration and using the CD-ROM storybook as a shared parent-child activity. The negotiations led to limits set for play behaviors within the shared experience. It was a difficult process for James's mother as well, because she did not want to intervene too much. However, knowing James and his limits, she wanted to successfully engage in the CD-ROM storybook medium in a way that allowed him to complete the storybook in one sitting. Together, James and his mother explored boundaries of social behavior during a shared CD-ROM storybook experience. What seemed like fun playtime activities for him (clicking an item multiple times) made the activity independent play, rather than a shared storybook experience. James's mother had to define her limits, through trial and error, and set goals for non-intervention that were compatible with completion of the CD-ROM experience. James also had goals and verbalized his desires. A routine was established where clicking a few times was okay, but the repeated clicking should not exceed three.

The ongoing negotiations that defined the routine for CD-ROM storybook sharing occurred during episodes involving sharing and negotiating the routine. The negotiations
were complex, and both James and his mother had individual goals for the experience. They worked to define goals and accomplish the task of sharing CD-ROM storybooks together. They negotiated "clicking" behavior and movement to the next page in a timely fashion. CD-ROM storybooks eventually became a routine, social activity shared by James and his mother.

Summary

James's CD-ROM storybook experiences, throughout this study, include various types of exchanges that are discussed as episodes. Examples of each type of episode are intended to provide deeper understanding of the dialogue that occurs between James and his mother during CD-ROM storybook experiences. Following is a list of the episodes that are discussed in this chapter along with brief explanations.

• Episodes involving artifacts – James demonstrates his ability to manipulate the artifacts of the CD-ROM storybook medium (the mouse) over time. He begins by learning how the mouse functions (moving the yellow ball and pushing the blue button) and eventually learns directionality on the screen and precise arrow placement through scaffolding. By the end of the study, James operates the mouse with ease.

• Episode involving interaction with print – James notices letters, experiments with highlighting specific words, and indicates his knowledge of letter sounds.

• Episodes involving reading strategies – James demonstrates early reading strategies, one-to-one matching, directionality and return sweep, and locating (highlighting) known and unknown words.

• Episodes involving word meaning – James asks for clarification of words within the text and hypertext that are read by the narrator.
• Episodes involving story text – James and his mother co-constructing meaning of text. James’s mother asks comprehension questions. James retells segments of the story, makes judgments, relates events to his notion of the social world, and uses dramatic play to construct meaning.

• Episodes involving illustrations and hypertext – James and his mother co-construct meaning of the supplementary text in the form of hypertext. James responds by repeating the oral hypertext, questioning and evaluating the hypertext events, and trying to control the hypertext outcomes.

• Episodes involving sharing and negotiating the routine – James and his mother actively negotiate a routine for CD-ROM storybook sharing. It eventually becomes a routine, social activity.
CHAPTER 4
LANGUAGE-EXPERIENCE APPROACH STORYBOOKS

James was sitting in the table work area at his child-size table, swinging his foot as he
drew a picture of himself with a "boo-boo" on his head. In the center of his forehead was
a bright Band-Aid with Elmo and Cookie Monster smiling at each other. Around the
edge of the Band-Aid, you could see a faint hint of redness from his recent stitches. His
mother noticed that he was showing an interest in expressing the experience of getting his
first stitches, and asked if he wanted to make a book about it. James agreed and the
making of a new Language-Experience Approach (LEA) storybook began.

James decided to draw the illustrations for this book, because he wanted to use the
picture he was drawing. Sometimes, his mother assists in drawing and coloring
illustrations during the book-making process. Here is some of the dialogue that ensued:

(January 19, 1998, Tape 14, 1720)

\( M \) – What are we gonna call this book?

\( J \) – James has a boo-boo. H...H...Has. \((\text{Sounding out "has" as his mother writes it.})\)

\( M \) – Boo-Boo. \((\text{Saying it slowly and looking toward James.})\)

\( J \) – "B" \((\text{Pointing to where to write the b.})\)

\( M \) – What do you want to tell about your boo-boo? What are we gonna write?
(Holding his self-portrait with a boo-boo.)

J – Daddy's face.

M – Well, what are we gonna WRITE?

J – I got three stitches.

This exchange occurred during the making of an LEA storybook. James was learning the process of book making and the connections between language, illustrations, and text. When he responded that he wanted to write “Daddy’s face,” there was an obvious confusion between the conventional notion of drawing versus writing. He was able to demonstrate his understanding that text is writing, not pictures, with his next response, “I got three stitches.” I got three stitches, became the text for the first page of the LEA storybook. He is learning to connect oral language with written text when making this LEA storybook. He also demonstrates his ability to hear sounds in words, by readily giving letter sounds as his mother is writing the book title. This type of interaction with print, while creating text, is unique to LEA storybooks in this study. James does not, during CD-ROM or traditional storybook experiences, interact with print conventions at this level. This makes LEA storybooks a powerful tool that is used to fill the gaps in his knowledge about print.

The Language-Experience Approach (LEA) advocated by Stauffer (1970) involves student-created dictated stories in response to a stimulus. Stauffer recommends presenting students with a stimulus they can talk about and using their talk as dictation to write stories that they can read. The approach is based on two assumptions: (1) that interests and life experiences are valuable and meaningful to children and (2) that learning to read is easiest when reading materials match the language patterns and
speaking vocabularies of the readers (Nessel & Jones, 1981). The approach is recommended for beginning readers as a way to take advantage of their knowledge about language and connect it to the process of reading and writing. LEA theorists emphasize the importance of children understanding that real people, like themselves, compose print. The use of LEA storybooks is powerful for James, because it creates a connection between spoken language and written text and is used as a tool to call his attention to specific aspects of print.

A typical interaction between adult and child during an LEA activity would include a stimulus, the child’s reaction to the stimulus, and the adult writing the child’s dictated reaction. For example, a child is given a seashell as a stimulus. The seashell is a conch shell and large enough that the child must hold it in both hands. The child holds the seashell and begins to talk about it. The child dictates, “It have bumps. It yellow.” The adult writes the child’s language in its dictated form, without correcting for grammar or usage. The dictated story reads, “It have bumps. It yellow.” By using the child’s dictated speech, the adult can help the child to make a connection between oral language and written text. The child can easily read the text, because it is his own language.

James and his mother have adapted this strategy to create LEA storybooks. The stimulus for James’s LEA storybooks could be a trip to the emergency room for stitches, a vacation, or a concrete object (like the seashell). James also uses stickers, pictures cut out of newspapers and magazines, his own illustrations, and actual photographs of himself as the stimulus for dictation in LEA storybooks. In a typical session, James’s
mother glues a picture or illustration to each page, and James dictates the text for the page. The pages are then put together to form a small book, approximately 6-8 pages, that James can read independently.

Clay (1993b) recommends a strategy similar to the language-experience approach for use during Reading Recovery lessons. During one portion of the lesson, the child is invited to write a story. The teacher, in the early stages, writes most of the story for the child, although the child is encouraged to participate and write as much as he can. The adult prompts the child to tell what he wants to write about, and the child dictates a sentence or two. The adult is discouraged from altering the child’s story in any way. According to Clay, “If the teacher alters the child’s sentence he is very likely to become confused and to not remember her alteration” (p. 29). The use of the child’s language is key in developing an understanding of the link between oral and written language and learning to read print.

Writing stories, according to Clay (1993b), is a co-construction task. James’s mother writes James’s dictated sentences, using strategies recommended by Clay and following a language-experience approach. As James dictates each sentence, his mother slowly and purposefully sounds each word, emphasizing the initial sounds. In doing so, she invites James to give letter names for the sounds and participate in the writing. James is still learning letter formation, so he does not actually put pen to paper, but assists his mother by giving known letter sounds or predicting what he would expect to see at the beginning of words. Clay recommends this approach for beginning readers in early Reading Recovery lessons.
During the reading of LEA storybooks, James demonstrates learned reading strategies, such as Clay’s (1993b) early reading strategies. He uses his index finger (reading finger as he calls it) to demonstrate one-to-one correspondence, directionality across text, and return sweep. He locates known and unknown words within the text. He is able to “get his mouth ready” (Clay, 1993b) for unknown words and use his own language structure and pictures as cues to meaning within the text.

In a study of early reading behavior, Doake (1985) found that children exhibited arrhythmic reading-like behavior. The arrhythmic behavior was marked by voice matching or finger matching, as children began to attend to cues in print, language, and meaning sources. During this stage of reading development, according to Doake, children lose their fluency as they attend more to print and may even read syllabically. For example, he was sitting, becomes he-was-sit-ting. The dashes represent pauses and purposeful voice pointing during reading. This type of arrhythmic reading is observed when James reads LEA storybooks, as he finger-matches and uses meaning, structure and visual cues to read (Clay, 1993b).

LEA storybook experiences are comprised mostly of episodes involving reading strategies and episodes involving interaction with print (see Figure 4). However, as with traditional storybooks and CD-ROM storybooks, each type of episode will be described and discussed in this chapter as it pertains to LEA storybooks. During LEA storybook experiences, James focuses on the process of learning about language and its connection to text and text reading. The making of LEA storybooks is a process that teaches James about the connection between text, language, and illustrations. The use of LEA storybooks fills the gaps in his knowledge about print.
Episodes Involving Artifacts with LEA Storybooks

The artifacts of the LEA storybook medium are homemade paper books. James's mother using a felt tip marker hand-writes the majority of the text. The text is written on card stock quality paper, and the manila card stock is cut in half to form pages that are 5 1/2 inches high by 8 1/2 inches wide. The pages are then stapled together to form a binding along one edge. The books are small and easily manipulated independently by James. The card stock makes it easy for James to turn the pages, and the size of the books is compatible with his toddler hands.

Just as James demonstrates his competence and ease with manipulating the artifacts of traditional storybooks, James easily manipulates the artifacts of LEA storybooks. He holds the books and orients them correctly, turns the pages and looks at the text and illustrations from left to right, and works his way through the LEA storybooks from front to back. He accomplishes this, with ease, while engaged in episodes where he attends to print, reading strategies, word meaning, story text, illustrations, and negotiating the routine with his mother.

Throughout the study, James engages in artifact use while manipulating LEA books independently. At times, his interest in reading these homemade books is great. On July 29, 1997 (Diary entry) his mother noted, "He wants to read his books again – usually all of them each night." During this time period, James brought his stack of LEA storybooks upstairs for bedtime reading, rather than keeping them in the crate in his playroom. Each night, after his parents read him a few traditional storybooks, he selected books to read to them. He picked books from the stack and sat either in his mother's or father's lap in a
large chair. He held the books and turned the pages on his own as he read. He not only demonstrated his competence with the artifacts, but could also read the text on his own. This became a routine that lasted for several weeks.

In contrast, James may not pick up an LEA book or request to make one for weeks at a time. James’s mother follows his lead. She believes that his focus and interest in LEA storybooks will facilitate opportunities for teaching James about reading strategies and print. She also believes that he needs to focus on a variety of storybook experiences and does not plan daily LEA activities. James chooses which type of storybook experience he wants to engage in with his mother’s support.

Episodes Involving Interaction with Print with LEA Storybooks

LEA storybooks were designed and used by James’s mother to call his attention to print. It is not surprising then, that the majority of interaction between James and his mother during LEA activities centers on print concepts (see Figure 4). Episodes involving interaction with print include James’s print discoveries and focus on letters, sounds, single words, and punctuation.

An example of James’s focus on punctuation occurred when he began to notice periods (June 4, 1997, Diary entry). While he was working on the early reading strategy of one-to-one correspondence, he began pointing to the period on each page, but not saying anything. Then he related, “That don’t say anything,” as he pointed to the period. His mother responded, “You’re right. That doesn’t say anything. That tells us when to stop reading. It’s called a period.” James noticed and labeled the periods on the following few pages of the LEA storybook.
This type of exchange is typical and illustrates the power of LEA storybooks. Because the writing is large and written using a felt tip pen, the print conventions are easily noticeable. The words and punctuation are large and are spaced widely apart. James notices the periods in LEA books, even though he had not noticed them in traditional storybooks. Perhaps because the periods are larger and more noticeable, James focused on them during this episode involving interaction with print.

James also makes connections and discoveries about letters when engaged with LEA storybooks. James and his mother made an LEA storybook, I Can Too! (July 27, 1997, Diary entry). For this LEA storybook, James and his mother selected stickers of children engaged in activities. James dictated the text according to the pictorial action. For example, one sticker showed a boy climbing a ladder and James dictated, “He can climb a ladder.” Then, James said, “I can too.” So, his mother added the text, “I can too” on the opposite page with no illustration. This format continued throughout the book. When they finished making the book and James was reading it independently, his mother asked him to locate the word “can,” which he was able to do with ease. He pointed to the word “can” and added, “C for can is like C for cookie.” James made this discovery without prompting from his mother. The connection he made was to a Sesame Street video where Cookie Monster sings a song entitled, “C is for Cookie.” James’s mother understood the context of his connection, because she knew he enjoys the song and had watched the video with him. The context of the exchange is revealed, due to her relationship with James. Later that afternoon, James made an additional link to his letter discovery when having a snack. He noticed that his juice cup had the word “Crayola” on it and was made to look like a crayon. He commented, “This is like C for can” as he
pointed to the “C” in “Crayola.” This *episode involving interaction with print* went beyond the pages of the LEA storybook as James made links and discoveries throughout his daily life.

James reveals his letter sound knowledge while making LEA storybooks with his mother. She purposefully writes his dictated sentences slowly, giving him the opportunity to add letter sounds. For example, when creating a book about his father entitled, *My Dad is Awesome,* James gave letter sounds as his mother wrote the dictated text. He offered initial sounds “P” for “play” and “R” for “rough” when his mother wrote, “My Daddy plays rough.” He did so without prompting from his mother in this case, but James’s mother also asks him questions to encourage him to participate in the writing. For example, she asked, “What do you hear at the beginning of *me*?” And, James responded with the letter name, “M.” She also asks for final and medial consonant sounds. He was able to give the letter name for “K” when his mother wrote “truck” and “P” for “airport.” The dictated text read, “My Daddy rides on his truck to the airport.”

To assist him in developing the ability to hear sounds in words, his mother articulates the words slowly and emphasizes the letter sounds. For example, when asking him for the letter “P” in airport, his mother repeats the word slowly, “airPort.” She also encourages James to say the word, so that he can hear the medial sound. At times, (January 5, 1998, Tape 12, 1611) she also prompted with, “What else do you hear?” This technique is recommended by Clay (1993b) so that children can make the connections necessary to hear sounds in words.

This exchange is typical during the making of LEA storybooks. Although James’s mother is doing the actual writing because James is unable to form letters on his own, he
still participates in the writing by adding what he knows about letter sounds. Throughout the study, during episodes involving interaction with print when making and reading LEA storybooks, James’s mother encourages him to participate. Using a Vygotskian framework and the prompts recommended by Clay (1993b), she invites and encourages him to participate — taking stock of his knowledge of letter sounds and his developing knowledge of print.

James’s focus on letter learning is most evident during LEA storybook experiences. It is also important to note that he had another vehicle for demonstrating and developing his knowledge of letter sounds. James began to show an interest in learning letter-sounds, and his interest developed into a game that he and his mother play. One day, (February 17, 1998, Diary entry) while riding in the family car, a Jeep Cherokee, James asked, “What’s at the beginning of Jeep?” His mother responded, “J.” Then she followed with, “What’s at the beginning of street?” James responded, “S.” Catching on to the game, James asked, “What’s at the beginning of mailbox?” To which his mother responded, “M.” The game continued each asking the other, in turn, for initial sounds. The items that were visible outside the car windows fueled the game. When James was not sure of an answer, his mother modeled how to say the word slowly, emphasizing the initial sound, to make it easier for him to hear. This technique was an adaptation of the strategies for hearing sounds in words that James’s mother learned during her Reading Recovery training (Clay, 1993b). The game expanded over the next few days, and they played in the house also. In order to use all the letters of the alphabet, James decided to use his wooden ABC puzzle as a way of keeping track. Each time a letter was used in a word, he removed the letter from the puzzle frame and sat it aside. They would play until
all the letters of the alphabet had been removed from the puzzle and lined up on the floor. Later, the game continued to expand, and they played, “What’s at the end of?” and “What’s in the middle of?” The game continues to be a way to pass the time, while learning to hear sounds in words, during car trips.

James’s learning of letters and letter-sounds occurred in the context of words, both during the game “What’s at the Beginning Of?” and during LEA storybooks. He initiated the activities that enabled him to practice his strategies. These exchanges are episodes involving interaction with print, because their focus is on understanding how to hear sounds within words. His mother is teaching and prompting, and James is demonstrating his understanding of letter-sounds. He is not learning letters in isolation as concepts, but how they work within the process of hearing sounds in words. The game developed as a way to demonstrate letter learning. The prompts his mother used were evident in the context of LEA storybooks, prior to the development of the game. James may have initiated the game as a way to practice what he had learned within the context of LEA storybooks.

Episodes Involving Reading Strategies with LEA Storybooks

LEA storybooks are also used to facilitate the development of reading strategies. During the reading of LEA storybooks, James demonstrates learned strategies that encompass the process of book reading, such as Clay’s (1993b) early reading strategies. He uses his index finger to demonstrate one-to-one correspondence, directionality across text, and return sweep. He is able to “get his mouth ready” (Clay, 1993b) for unknown words and use structure and pictures as cues to meaning within the text.
The parent's role in reading LEA storybooks is to prompt for reading strategies. James's mother may prompt him to look at the picture, go back to the beginning of the line of text, locate a known word in text, predict and locate a word using its initial sound, and "get his mouth ready" to sound out an unknown word. These prompts are recommended by Clay (1993b) and used as needed (and according to her Reading Recovery training) by James's mother to teach early reading strategies during LEA storybook reading. Running Records, also devised and recommended by Clay (1993a), were taken for each LEA storybook that James read and are analyzed and coded as part of the data set.

James demonstrated his focus on one-to-one matching when reading the LEA storybook, *My Counting Book* (July 30, 1997, Diary entry). He began reading and became frustrated, because he could not match the text with his reading finger as he read. This happened as a result of James noticing the known word "is" within the text. The counting book has a number on each page and the text reads, "This is one. This is two." (See figure 6.) The counting book includes the numbers one through five.
As James read, he noticed the word “is” within the word “This.” He subsequently pointed twice to the word “this.” He pointed to the “TH” and said “this,” and he pointed to the “IS” in “This” and said, “is.” He was unable to match the words one-to-one, because he was pointing twice to “this” and then had to skip the word “is” to match the number word “one.” His mother prompted him to find the word “is” and discussed that “is” is also part of the word “this.” She then prompted him to “hop over” to “is” when he...
saw it in the text. He tried to read the text again, and did so successfully matching one-to-one. He was then using a known word to match one-to-one during this *episode involving reading strategies*. Later that day, as he read his counting book to his father, he explained, “I need to hop over.”

James also focused on one-to-one correspondence when reading the LEA storybook, *My Barney Book* (June 4, 1997, Diary entry). This book was made using Barney stickers as the stimuli. James dictated text for each page based on what Barney was wearing on the sticker. For example, one sticker showed Barney wearing a top hat, and James dictated the text, “Barney has a hat.” When reading this text, James demonstrated some confusion with one-to-one matching, but was able to correct himself using the known word, “has.” He pointed twice to the word Barney and said, “Barney has.” He looked intently at the word “Barney” and said, “That not has.” He started reading again at the beginning of the line and correctly matched one-to-one for “Barney has a hat.” In this *episode involving reading strategies*, James is using known words to correct one-to-one correspondence.

Being able to locate known words within the text is an early reading strategy recommended by Clay (1993b). James’s mother prompts James to locate known words while reading the LEA storybook, *Toy Story Book*.

(December 14, 1997, Tape 9, 2070)

*J* – (Reading text.) This, this is Buzz, Buzz Lightyear. *(Repeated this and Buzz.)*

This one has his whole name, Buzz Lightyear.

*J* – (Reading text.) This, this is a boy and Woody. *(Repeated this.)*

*M* – I noticed you were really looking at those words. Where’s the word, “a?”
Another example of James's focus on known words occurred as James read the LEA storybook, *My Easter Book*.

(December 14, 1997, Tape 9, 1500)

*J* - *The Easter Bunny.* The E...it don't say Easter. *(Recognizing that the second line does not include the word Easter.)* The moon. *(Reading the second line.)*

*M* - What is that? *(referring to a picture of candy.)*

*J* - The Easter...

*M* - candy.

*J* - The flowers. It don't say Easter flowers. This says Easter. The Easter...

*M* - baskets. You are noticing that word Easter. I like how you are using your finger to read.

As James moves in and out of reading text and makes comments about the process of reading, his use of reading strategies is evident. He is using his reading finger to match the words one-to-one. He also notices the word "Easter" and uses it to read the text. His mother reinforces these strategies, and encourages him to use meaning (picture) cues along with the visual (print) cues. James focuses on early reading strategies,
demonstrating one-to-one matching, directionality, and the use of known words during these episodes involving reading strategies.

Episodes Involving Word Meaning with LEA Storybooks

Traditional and CD-ROM storybooks contain words that are unfamiliar to James. During these storybook experiences, he focuses on the meaning of unfamiliar words. He questions his mother and she explains the meaning of single words within the text. However, LEA storybooks contain text that is dictated by James. The words are his own, and therefore, very familiar to him. Hence, no episodes of word meaning were observed during LEA storybook experiences.

Episodes Involving Story Text with LEA Storybooks

LEA storybooks create a unique type of storybook sharing experience because James and his mother co-construct the text. They create the meaning of the story text. Episodes involving story text focus on James and his mother co-constructing meaning as they create the text together. They are not constructing meaning of text when they share LEA storybooks together in the same manner as they do with traditional and CD-ROM storybooks, because they already know the meaning and context of the text.

James focuses on story text when making LEA storybooks with his mother. He discusses how to illustrate the text and what he wants the text to say. While making the LEA storybook, _My Dad is Awesome_, James indicates what he wants the text to say and what he wants in the illustrations. He and his mother are drawing the illustrations together as they create this book (see figure 7).
My Daddy calls me on the telephone.

Figure 7: LEA Storybook, *My Dad is Awesome*, Page 5

(January 13, 1998, Tape 13, 1314)

J – I’m making him calling me on the telephone. (James begins drawing a picture of his father.) My Daddy calls me on the telephone.

M – (Writes the dictated text, My Daddy calls me on the telephone.)

J – (Still drawing his father.) Big hair.

M – (Completes the illustration by adding a telephone receiver to James’s picture of his Daddy.)
J - (Dictates text.) I love my Daddy.

J - I need to draw a picture of me hugging Daddy. There's Daddy. Now, draw me up there. (James drew himself - he is talking to himself as he draws.) I made it. Daddy hugging me. James is a come over there to hug Daddy.

This exchange illustrates how James and his mother create text and illustrations for LEA storybooks. Their focus is on creating story text and drawings that illustrate the text, during this episode involving story text.

James also demonstrates his focus on story text by relating the content of LEA storybooks to his life. Episodes involving story text that occur during the reading of LEA storybooks include instances where James is sharing as he is reading. They occur within the talk that surrounds the book-reading experience. The talk is distinguishable from other story text episodes during traditional and CD-ROM storybooks, because James is not trying to comprehend the text by questioning his mother or by making comparisons to his view of the social world. He is sharing his feelings and concerns, while relating the content of the book to his life.

(December 14, 1997, Tape 9, 2240)

J - (Reading text.) I love my Daddy.

J - I might cry today, because I don't see my Daddy. He is flying on an airplane.

J - (Reading text.) I love my Mommy.

J - (Stands up and gives his Mother a hug and kiss.)

J - (Reading text.) I love my Grandma.

J - I'm worried that my Grandma is not a come here.

J - (Reading text.) I love my Pop-pops.

106
J - I really want my Pop-pops to come here.

J - (Reading text.) I love my Papa T.

J - I really want my Papa T to come here any day.

In this example, James is using the text to share his feelings and concerns with his mother. He is not working to understand the text concepts; he is going beyond relating the text to his daily life by attaching feelings to the text. He is expressing concern about life events that are separate from the text, not working to understand the text. This type of expression during LEA storybooks, and the way the text is co-constructed, makes them unique with respect to episodes involving story text.

Episodes Involving Illustrations and Hypertext with LEA Storybooks

The illustrations for LEA storybooks can be stickers, cutouts from the newspaper, or drawings created by James and his mother. When James and his mother create illustrations, they are co-constructing meaning of the illustrations in relation to the story text. The example, given above (see figure 7), of James drawing his Daddy calling him on the telephone, illustrates his focus on the meaning of supplementary text. It is difficult to separate the construction of text and the construction of meaning of supplementary text during LEA storybook experiences, because they are created together. The text can be the stimulus for the drawing, or the drawing can be the stimulus for the text. The creation of story text and illustration occurs simultaneously in many instances. For example, James creates the idea for the text and begins drawing a picture of his father as he dictates the text, “My Daddy calls me on the telephone.”

In some cases, the drawings follow the creation of the text, as when he dictated the text, “I love my Daddy,” and then decided to draw a picture of himself hugging his
father. A second example of a drawing that was supplementary to the text occurred when James and his mother created the LEA storybook, *James Has a Boo-Boo* (see figure 8).

![Drawing](image)

-The doctor did it too hard.

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Figure 8: LEA Storybook, *James Has a Boo-Boo*, Page 3.

(January 19, 1998, Tape 14, 2042)

*M* – *What about the Doctor?*

*J* – *(Dictating text.)* The doctor did it too hard.

*M* – *(Wrote the text, saying the words slowly as she wrote.)*

*J* – *(Began drawing the doctor.)* Let’s make the doctor green. I’m a draw the doctor’s head.
These examples are episodes involving illustrations and hypertext when the discussion centers on drawing, but they are episodes involving story text when the text is created and dictated. It is difficult to discuss them separately, because at times James is creating the illustrations and text simultaneously.

James's focus on illustrations also occurs with the use of stickers and newspaper cutouts. In these cases, it is easier to discern the episodes involving illustrations from the episodes involving story text. For example, when reading the LEA storybook, Toy Story Book (December 14, 1997, Tape 9, 2070), (See figure 9.) James noticed a sticker used as an illustration and commented on the pictorial action that is not represented in the text.

Figure 9: LEA Storybook, Toy Story Book, Page 2
J - (Reading text.) This is Buzz and Woody.

J - Buzz is standin' here. Woody is standin' here. (Pointing to illustration.) Why do they look scared?

M - They do look scared, don't they? The dog was after them.

The text dictated by James does not discuss why they look scared in the picture. James notices that they look scared and questions his mother about the pictorial action that is not explained in the text. A similar exchange occurs between James and his mother when reading the LEA storybook, The Funnies. This LEA storybook was created using pictures that were cut out from the Sunday comics. During this particular reading, James read a line, then asked a question, read a line, then asked a question, etc. In this episode involving illustrations and hypertext, James asks questions about the supplementary text in order to construct meaning.

(December 14, 1997, Tape 9, 2380)

J - (Reading text.) He is crying.

J - Why is he crying?

J - (Reading text.) He is saying, "whoa."

J - Why he drop his coffee? (The character in the picture slipped and dropped his cup of coffee as he said, "whoa.")

M - Because he is falling down.

J - (Reading text.) She is mad.

J - Why is she mad?

M - I don’t remember.
J – Cause he's late. She is going –. *(Imitated the illustration by folding his arms and making a mad face.)*

J – *(Reading text.)* He is throwing.

J – Why is he throwing? *(The baby in the picture is throwing food off of his tray, see figure 10.)*

M – That's what babies do.

J – Is he a catch them in his mouth?

![Image of baby throwing food]

He is throwing.

Figure 10: LEA Storybook, *The Funnies*, Page 4.
James asks questions to construct meaning of the supplementary text and make
comparisons to his notion of the social world. He wants to know why someone is mad or
crying. He is curious as to why the baby is throwing its food. In this example, he seeks
answers to his questions about the meaning of the illustrations. He is engaged in *episodes
involving illustrations and hypertext* as he focuses on the meaning of pictorial events.

**Episodes Involving Sharing and Negotiating the Routine with LEA Storybooks**

An important part of the routine for making an LEA storybook is re-reading the book. Throughout the activity, as James dictates the text, he is then asked to read the text aloud. Also, at the end of the activity, James is asked to read the entire book aloud with his mother’s assistance. This is the established routine for the activity. James’s mother, combining the principles of the Language-Experience Approach (Stauffer, 1970) and a new book attempt (Clay, 1993b), requests that James attempt the new LEA storybook after the story is complete. This allows him to practice reading strategies on easy text and make the connection between spoken language and written text. An *episode involving negotiation* occurred when James decided to change the routine of the activity:

(October 6, 1997, Tape 2, 2323)

\[M\] – *Here’s our funny page book. (Indicating the book was finished.) Let’s read it.*

\[J\] – *No.*

\[M\] – *C’mon you can read it, and I’ll help.*

\[J\] – *(Begins to whine — but agrees to read the book.)*

\[J\] – *(Reads the text with help from mother.)*
During this *episode involving sharing and negotiating the routine*, James is trying to change the pre-established routine for making LEA storybooks. He does not want to reread the book, but his mother believes rereading is necessary for him to make the connection from oral language to written words and to practice reading strategies. She sticks to her philosophy, knowing James can complete the task, and James eventually agrees to read the book. Interestingly, later that evening during his bedtime routine (October 6, 1997, Diary entry), James chose this book to read to his father. He read it eagerly and with only one miscue.

**Summary**

James’s LEA storybook experiences, throughout this study, include various types of exchanges that are discussed as episodes. Examples of each type of episode are intended to provide deeper understanding of the dialogue that occurs between James and his mother during LEA storybook experiences. Following is a list of the episodes that are discussed in this chapter along with brief explanations.

- **Episodes involving artifacts** – James demonstrates his ability to manipulate the homemade paper books that are the artifacts of the LEA storybook medium.
- **Episode involving interaction with print** – James makes print discoveries and notices punctuation and individual letters. He also demonstrates his knowledge of letter sounds.
- **Episodes involving reading strategies** – James demonstrates early reading strategies: one-to-one matching, directionality, and the use of known words.
• Episodes involving word meaning – No episodes involving word meaning were observed during LEA storybook experiences, because James creates the text using his own words.

• Episodes involving story text – James and his mother co-construct the text. They work together to create story text and illustrations. James uses the familiarity with the story text to share emotions on a deeper level.

• Episodes involving illustrations and hypertext – James and his mother co-constructing the supplementary text when drawing the illustrations. James seeks to make meaning of illustrations that are in the form of stickers and newspaper cutouts.

• Episodes involving sharing and negotiating the routine – James and his mother negotiate a portion of the pre-established routine for LEA storybook experiences.
CHAPTER 5
MULTIPLE STORYBOOK LITERACY

The use of technology concurrently with more traditional media and handmade child-constructed storybooks creates the context for multiple storybook literacy. James is engaged with multiple types of text, each providing a unique way of knowing and pathway to literacy. The storybooks described in this study are situated in different contexts based on the artifacts used and the types of interaction that are inherent in each medium. The episodes involving artifacts, interaction with print, reading strategies, word meaning, story text, illustrations and hypertext, and sharing and negotiating the routine are evident across storybook media experiences. However, the context of participation and what each offers to James’s literacy development is unique. Hence, our way of interpreting what he is conceptualizing also needs to be unique for each medium. The conception of multiple literacies, as defined by recent research, provides insight into James’s experience with multiple storybook media.

The conception of literacy and what it means to be literate is expanding and changing. Researchers (Dyson & Genishi, 1993; Greene, 1998; Kelder, 1996; Kellner, 1998a; Newman & Roskos, 1997; The New London Group, 1996; Tierney, 1991; Voss, 1996) are calling for a more expanded view of literacy, one that reflects the sociocultural and technological aspects of today’s society. With this changing perspective comes the conception of multiple literacies. The changing perspective of literacy, in terms of
multiple literacies, calls for an examination of the situatedness of literacy with respect to
cultural and linguistic diversity and exposure to technologies. The literacy inherent in
various contexts (social situations, cultural experiences, and exposure to technology),
therefore, establishes the construct of multiple literacies. Some theorists (Kellner, 1998a;
The New London Group, 1996) are calling the development and use of multiple literacies
in today’s classrooms a necessity for participation in a democratic society.

It is relevant, at this stage, to discuss the development of multiple literacies in terms of
the research currently conducted in the field. A sampling of research that focuses on the
use of the term multiple literacies helps to provide a framework for examining the use of
the term *multiple storybook literacy* in this study.

The genesis of multiple literacies was a shift from conventional reading theory to
emergent literacy research, where reading and writing were treated as interrelated
phenomena. The term emergent literacy began to shape the field in the early 1980’s.
Children were viewed as learning literacy from birth and the focus of research shifted to
younger children. With this shift came the realization that literacy learning involved
reading, writing, and oral language development (Sulzby & Teale, 1991), and the
domains began to converge. Children were studied more in their natural settings and
various activities were evaluated for their impact on literacy learning. The view of
literacy was expanded as researchers began to focus their attention on younger children
who were not demonstrating conventional literate behaviors, such as reading and writing.

The not-yet-conventional literate behaviors of younger children led to studies in which
children were viewed as constructors of meaning. Some seminal studies that helped
frame this new way of viewing emergent literacy include Clay’s (1979) work with
emergent readers and writers and Sulzby and Teale's (1991) studies of emergent reading of storybooks. Research in the field of emergent literacy substantiates that children are active meaning makers (Wells, 1986), using their environment to construct meaning and become literate (Clay, 1991).

Recently, researchers recognized that emergent literacy includes not only reading and writing, but various other domains in which literate behaviors can be observed as well. An expanded view of literacy is necessary if an accurate account of emergent literacy is to be described. According to Tierney (1991):

What seems most promising are those studies that have adopted a more expansive, differentiated view of literacy which is situation-based – namely, studies that have been willing to address the complex configurations of variables which constitute literacy events (p. 180).

Tierney cites noteworthy examples, Rowe and Dyson, who are working to expand the conventional view of literacy. Rowe’s (1994) and Dyson’s (1985, 1986) work with preschool writers moves beyond the typical and examines children across literacy situations. Purcell-Gates (1996) also used an expanded definition of literacy to conduct her study of young children’s home literacy experiences. She studied emergent literacy for 2-4 year olds at home, and documented more than traditional reading and writing activities. She observed daily activities and considered various domains: entertainment, daily living routines, literacy for the sake of teaching, learning literacy, school-related, storybook time, interpersonal communication, religion, information networks, and work. Teale (1986) used these same domains in an earlier study to compare the amount of storybook reading in homes. Similarly, Labbo (1996), in her analysis of kindergartners' symbol use with computers, indicates that the conception of literacy from reading and
writing of printed materials should expand to include multimedia and computer-based
text. She indicates that broader notions of what it means to be literate are needed to
describe and explain emergent literacy for young children.

Researchers are now focusing on play and its connection to emergent literacy.

Neuman and Roskos (1997) conducted a study of three and four year olds emergent
literacy and used daily activities as the frame for examining literate behavior. They
considered literacy to be part of play activities and created environments within the
preschool setting in which to observe ongoing daily play activities. They recognized that
literate behaviors occur in play and during interaction with others. Researchers are also
recognizing the connections between book-related sociodramatic play and emergent
literacy. Russell (1987) suggests that a connection exists between play and traditional
literate concepts in her study of kindergarten students. She found that students who
engaged in role-play were better able to compose narrative stories. More recently, Rowe
(1998) found that book-related dramatic play was more than a context for literacy
learning. Her study of preschoolers suggests that book-related dramatic play is part of
the process of story comprehension. In Rowe’s (1998) study, play was connected to
reading acts in ways not previously seen in emergent literacy research.

Research in emergent literacy has begun to uncover the relationships between the
daily activities of children and literacy learning, and researchers are beginning to
recognize the multifaceted aspect of emergent literacy across domains. For example,
Kantor, Miller, and Fernie (1992) studied a preschool classroom and looked for literate
activities that occurred throughout the day, whether planned or spontaneous, storybook reading or play. They found that there is no one path to literacy, and described the various paths as multiple literacies within the classroom.

Previous researchers have also used the term multiple literacies to varying degrees and toward various ends. Crawford et al. (1995) use the term multiple literacies to describe different ways of knowing. They theorize that written language is not the only way of knowing, and they define multiple literacies as multiple ways of knowing, including oral traditions and stories, music, mathematics, and visual image. Crawford et al. further suggest that, “Children need multiple literacies to create meaning about the world and to share their thinking with others” (p. 606).

In a recent issue of the Harvard Educational Review (1996), the New London Group presented the idea of a new pedagogy involving multiliteracies. The authors argue for a broader view of literacy, one that takes into account various linguistic and cultural backgrounds of students and multimedia technology. They believe students need opportunities for various discourses with a variety of texts to reach their literate potential.

A second view of multiple discourse is presented by Hollingsworth and Gallego (1996) using the term, multiple literacies. The authors of this article define multiple literacies as the combination of various discourses, such as, school literacy, community literacy, and personal literacy. They “initiate” the term multiple literacies to include practices in these multiple discourse settings, and admittedly do not intend multiple literacies to include various other literacies, such as, computer literacy, mathematical literacy, etc.
Noll (1995) used the term multiple literacies in her study to describe how young adolescents use literacy. She used multiple literacies to describe the construction of meaning in reading, writing, visual art, music, and movement or dance. She emphasized how American Indian students in her study used literacy as a means of expression in the various domains.

Kellner (1998a) theorizes about the importance of multiple literacies in postmodern society. He argues that multiple literacies should include both traditional print literacy and literacies to engage new technologies. His conception of multiple literacies includes critical media literacy, print literacy, computer literacy, cultural literacy, social literacy, and ecoliteracy. Each of these literacies, as defined by Kellner, is necessary to promote multicultural views and fuller participation in a democratic society. He suggests that students should be taught multiple literacies in order to learn and look critically at print, media, computers, culture, social behaviors and communication, and our natural environment (ecoliteracy).

In summary, the term multiple literacies, in previous research, was used to describe several expanded views of literacy. What differentiates them is the ideas and concepts assigned to the word multiple. Multiple was used to describe pathways to literacy, ways of knowing, cultures, texts, discourses, and experiences. Multiple literacies in a classroom was used to describe multiple paths to literacy by various students (Kantor, Miller, & Fernie, 1992). Multiple was used to describe ways of knowing, including oral, music, visual, and mathematical, which led to multiple literacies (Crawford et al., 1995). Pedagogy of multiliteracies (The New London Group, 1996) describes multiple cultures and multiple texts needed to promote literacy. Multiple literacies was used to describe
multiple discourse, such as, school literacy and community literacy (Hollingsworth & Gallego, 1996). Multiple literacies was used to define literacy within multiple experiences, such as, visual art, music, and dance (Noll, 1995). Multiple literacy was also used to describe the combination of domains of literacy needed to thrive in a multicultural, democratic society (Kellner, 1998a).

While educators are defining multiple literacies in unique ways and continually debating what literacy actually is - there is no doubt that our view of literacy is expanding and changing. We can no longer ignore the sociocultural and technological impacts on literacy, or in this case, storybooks. Because James is engaged with multiple types of texts, each situated in unique contexts, our way of interpreting each also needs to be unique. His ways of exploring and interacting with storybook media vary according to the characteristics of each medium. Each provides a unique way of knowing story and pathway to literacy. Consequently, the episodes involving artifacts, interaction with print, reading strategies, word meaning, story text, illustrations and hypertext, and sharing and negotiating the routine, vary within and across storybook sharing experiences (see figure 11).
Comparison of Storybook Sharing

Figure 11: Comparison of Storybook Sharing - Proportion of Episode Occurrence
Figure 11 is a visual comparison of the three types of storybook sharing experiences in this study. It indicates the proportion of occurrence of episodes within storybook sharing experiences. The experiences, which were included in compiling the data for this graph, include storybook sharing experiences for CD-ROM storybooks (blue), traditional storybooks (violet), and LEA storybooks (yellow). The salient features of each type of storybook experience are dependent on the context in which the interaction, between James and his mother, occurs. The context was described in the discussion of each type of storybook in their perspective chapters, but needs further comparison and examination to reveal the development of multiple storybook literacy.

Episodes Involving Artifacts across Storybook Media

The proportion of engagement in episodes involving artifacts varies significantly across storybook sharing experiences. The proportion of engagement in artifact use during CD-ROM storybooks is 26%, as compared to 1% for traditional storybooks and 0% for LEA storybooks. The factors that contribute to the differences can be explained in terms of context. CD-ROM storybooks, unlike traditional and LEA storybooks, are a new type of medium for James and his mother. When the study began, James already had control of the artifacts of traditional and LEA storybooks (paper books and pencils); however, he was just beginning to engage with the artifacts of CD-ROM storybooks (mouse and computer screen).

His focus during CD-ROM storybooks is largely on developing the ability to control the artifacts. The newness of the activity contributes to the overwhelming proportion (26%) of engagement with artifact use. This study is bound by James's first attempts to use the artifacts of CD-ROM storybooks and his eventual control of them. Throughout
the study, his attempts are scaffolded by his mother to move him toward independent functioning with CD-ROM storybooks, which marks the close of this study. As James learns to operate the mouse, control arrow placement on the screen, and move within the CD-ROM, he is engaged in *episodes involving artifacts*. Because this is a new experience for James, he spends large amounts of time focusing on gaining control of the artifacts.

Conversely, because the artifacts of traditional and LEA storybooks are within his control, he spends less time (1% and 0% respectively) demonstrating his ability to manipulate these artifacts. While he demonstrates his ability to manipulate a variety of paper books, his focus during traditional and LEA storybook sharing experiences lies elsewhere. For example, he does not verbalize his attempts to turn the pages of paper books as he does when learning to turn the pages of CD-ROM storybooks. Instead, his focus, when interacting with the traditional and LEA storybooks, is on gaining control of other aspects of the experience. Aspects in which he is gaining control in these media, such as print, reading strategies, and constructing meaning from text and illustrations are the foci.

*Episodes Involving Interaction with Print across Storybook Media*

*Episodes involving interaction with print* also vary significantly across storybook sharing experiences, due to the context in which they occur. The proportion of engagement with print for LEA storybooks is 33%, as compared to 5% for traditional storybooks and 1% for CD-ROM storybooks. The nature of the experience and the overall purpose of the LEA storybook experiences facilitate James’s attention to print in ways that are not duplicable with CD-ROM or traditional storybooks. The LEA format is
used to help James make connections between spoken language and written text. LEA storybooks are a tool, used by James’s mother, to call his attention to print. They provide a vehicle for exploring and interacting with print. Therefore, James and his mother’s focus on print conventions during LEA storybook sharing is expected and anticipated.

The characteristics of LEA storybooks also help to explain the significant focus on print conventions. They are purposefully made and used as a tool to call James’s attention to print. The features, which make it easier for James to notice print, and his mother to teach print conventions are: the size of the words, spaces between words, single lines of print, and enlarged punctuation. The writing within LEA books is either typed in large font with large spaces between words or written with a felt tip pen in the same manner. The largeness of the print, the spaces, and the punctuation allow for increased focus on print conventions. Single lines of print are used that are compatible with James’s level of competence with print. James is able to use his reading finger along with his eyes to point to the words and features of print in LEA storybooks.

The characteristics of CD-ROM and traditional storybooks allow for some attention to print conventions, but not to the same degree that the characteristics of LEA storybooks do. The print in CD-ROM and traditional storybooks is relatively small in comparison to LEA storybooks. CD-ROM and traditional storybooks also contain multiple lines of print in most cases. James’s focus when engaged with CD-ROM and traditional storybooks is predominantly on episodes involving interaction other than print conventions. For example, he focuses primarily on story text during traditional storybook sharing experiences and on the technological features of CD-ROM storybooks.
Episodes Involving Reading Strategies across Storybook Media

Differences are also noticeable in James’s focus on reading strategies across types of storybook sharing experiences. LEA storybooks are the most predominant, with a 30% proportion of engagement. James’s focus on reading strategies is also substantial during traditional storybook reading, with a 13% proportion of engagement. Least substantial is his focus on reading strategies during CD-ROM storybook sharing, at only 2%. Again, the differences can be explained in terms of the context of participation and the features of the various storybook media.

As discussed in the previous section, LEA storybooks are designed to intentionally call James’s attention to print. The design of LEA storybooks makes them a natural vehicle for teaching and learning reading strategies. James is better able to use his reading finger, due to the size of the print. The use of his reading finger on the large print better facilitates his practice of one-to-one correspondence and directionality across single lines of print. Using his reading finger also provides the opportunity to teach reading strategies that go beyond the initial early strategies. James can use his finger, his eyes, and his voice to read. He is observed pointing to initial letters and “getting his mouth ready” (Clay, 1993b) for unknown words. His mother prompts him to integrate the strategies that promote independent functioning with books: meaning, structure, and visual cues. For example, she tells him to check the picture (meaning cue), make a good guess (structure cue), and get his mouth ready (visual cue). This type of interaction best occurs with familiar and easy reading material. The LEA storybooks are familiar, and James can read them with ease.
Traditional storybooks can also be familiar and easy, so as to facilitate episodes involving reading strategies. When James is sharing a traditional storybook with his mother (that she recognizes as within his ability to read with ease) she uses the book as a tool to facilitate the development of reading strategies. However, most of the traditional storybooks that James chooses to read with his mother are beyond his independent reading level. He chooses books that contain advanced vocabulary, multiple lines of print, and unpredictable text. This impacts his ability to focus on and demonstrate early reading strategies with traditional storybooks.

The CD-ROM storybooks used in this study also contain multiple lines of small print, advanced vocabulary, and unpredictable text. However, print features of CD-ROM storybooks enable James to interact with the print and demonstrate some early reading strategies. He is able to use his mouse to demonstrate his level of functioning with directionality and return sweep. He is also able to highlight known and unknown words by selecting them (clicking on them) with his mouse. His focus on reading strategies during CD-ROM storybooks is evident, but to a lesser degree than with the other storybook media experiences.

Episodes Involving Word Meaning across Storybook Media

The occurrence of episodes involving word meaning across storybook sharing experiences can also be explained in terms of context. There are no episodes involving word meaning observed for LEA storybooks. James dictates the text for LEA storybooks; therefore, they contain his language and structure. He does not seek to understand the words within the text, because they are his own words.
The most prominent occurrence of *episodes involving word meaning* (4%) is with traditional storybooks. During traditional storybook sharing experiences, James chooses books that contain advanced vocabulary, and he and his mother are observed co-constructing meaning from the text. Similar focus on word meaning occurs with CD-ROM storybooks as he and his mother co-construct meaning from the CD-ROM storybook text, but to a lesser degree (1%).

However, James's focus on word meaning is not as significant in occurrence as his focus on other episodes during CD-ROM and traditional storybook sharing. A possible reason for this is that James's level of functioning with storybooks is not at the individual word level. He focuses on making meaning from the story text and from illustrations and hypertext to a much larger degree. Because his focus is on making meaning of the overall text and using illustrations and hypertext to construct meaning, he is less able to focus at the individual word level. While he occasionally questions his mother about the meaning of specific words, he is predominately focused on constructing meaning of the story text as a whole.

**Episodes Involving Story Text across Storybook Media**

The most salient feature of the graph in figure 10 is James's focus on story text during traditional storybook sharing (50%). James focuses on making meaning from the story, and asks his mother why events happen, to fit them within his notion of the social world. His mother also initiates *episodes involving story text* to facilitate co-construction of meaning. There is much talk that surrounds the traditional storybook sharing experience.
that focuses on comprehending the story. This type of interaction also occurs during CD-ROM (14%) and LEA (18%) storybooks; however, the exchanges are different due to the context of participation in these media.

The differences in occurrence of episodes involving story text across storybook sharing experiences are due to the features inherent in each type of storybook medium. During LEA storybook sharing experiences, James and his mother focus more on relating the text to James's daily life. He created the story text, and therefore, does not focus on making meaning from another authors' text. Instead, the focus is on relating the text to James's daily life. James is more likely, during LEA storybook sharing, to discuss his feelings about the events that were the stimulus for the creation of the story text. He is also more likely to share his feelings and emotions about the stimulus. These types of interaction are still episodes involving story text, but occur on a different level. Since he created the story and already understands its meaning, he is able to relate to it on a deeper, more emotional level.

The type of interaction with CD-ROM storybooks is similar to traditional storybooks with respect to episodes involving story text, however, they occur to a lesser extent (14%). A possible explanation for this difference is due, in part, to James's focus on the technological features of CD-ROM storybooks. He focuses on gaining control of the artifacts and engages in exploration of the hypertext to a greater degree. His focus on construction of meaning, while still significant, is often overshadowed by his concentration on interacting with and exploring a medium that is new for him. He is, at times, observed waiting on his arrow to appear so he can begin engaging the hypertext, rather than on listening to the narrated text. He even talks over the narration on some
occasions by asking his mother, “Where’s my arrow?” or indicating to her, “I’m waiting on my arrow.” He cannot engage the hypertext while the narrator is reading the text on the page. After the narration is complete, his arrow appears and he can begin to engage the hypertext.

Episodes Involving Illustrations and Hypertext across Storybook Media

James’s focus on the illustrations and hypertext is fairly consistent with respect to proportion of occurrence across storybook sharing experiences, with 28% for CD-ROM storybooks, 20% for traditional storybooks, and 15% for LEA storybooks. He seeks to construct meaning of the various types of supplementary text with his mother across storybook sharing experiences. However, the ways he interacts with the supplementary text differ due to the features inherent in each type of storybook sharing experience.

During traditional storybook sharing experiences, James questions his mother about label names for pictures and the pictorial action. He relates the pictures to the text and uses them to further construct meaning of the story. He is observed asking questions about the pictorial action prior to the reading of the text and when the story text does not, in his view, adequately explain the pictorial action. For example, when the characters are immersed in water during the traditional storybook, Green Eggs and Ham, he seeks to understand what they are doing in the water. Their immersion in the water is not explained in the story text, and James needs further explanation from his mother.

James’s focus on illustrations during LEA storybooks also relates to the disconnection of the pictorial action from the text. This type of interaction occurs when the illustrations for LEA storybooks are not created by James and his mother, but cut out from newspapers or magazines. He questions his mother to understand the picture in its
original context, rather than how it is used in his LEA storybooks. For example, during the LEA storybook, *The Funnies*, he questions his mother about the events that occurred in the complete comic strip that created the pictorial action. He asks why a character is mad, because the reason is not explained in his dictated version of the text. The text reads, “She is mad.” And, for James, this is not an adequate explanation. He focuses on why she is mad in the picture as it relates to the text of the comic strip from which it was cut. This type of disconnection of text and supplementary text is the focus of James’s questions during LEA storybook sharing.

James’s focus on supplementary text during CD-ROM storybook sharing is also unique. The hypertext is both new and exciting for James. He interacts with and explores hypertext throughout CD-ROM storybooks. His motivation to explore hypertext and share it with his mother is evidenced by the proportion of engagement in *episodes involving illustrations and hypertext* (28%). The hypertext can be connected to the story text and thereby a supplementary expression of meaning of the story, or it can stand alone as separate text. For example, the hypertext can be designed as additional oral text that relates to the story, or it can be a simple “silly” noise, phrase, or song. Because the hypertext is so complex and dynamic, it creates interaction between James and his mother that involves additional construction of meaning that may or may not be related to the story text. The focus on hypertext, unlike illustrations during traditional storybook experiences, is often not aimed at constructing meaning of the story text, but rather constructing meaning of a single hypertext event. For example, he “clicks” a frog during the CD-ROM storybook, *The Tortoise and the Hare*, and the frog does a “belly-smacker” into the water. This elicits a loud giggle from James, and he shares his excitement with
his mother, but the “belly-smacker” does not facilitate construction of meaning of the story text. As the characters and objects that James “clicks” come to life, he is presented with a new form of text. Therefore, he spends significant amounts of time (28% of occurrence) discussing the hypertext with his mother and seeking to construct meaning of hypertext events.

Episodes Involving Sharing and Negotiating the Routine across Storybook Media

Episodes involving sharing and negotiating the routine differ significantly across storybook sharing experiences: 28% for CD-ROM storybooks, 8% for traditional storybooks, and 3% for LEA storybooks. The differences can be explained in terms of context of participation. Prior to the beginning of this study, James and his mother had a previously established routine for interacting with and exploring both traditional and LEA storybooks. Therefore, they spend less time negotiating the routine for these types of interaction. However, CD-ROM storybooks are a new type of experience for both James and his mother, and a routine for sharing them is developed throughout the course of this study.

James and his mother focus on establishing a socially created routine for CD-ROM storybook sharing during episodes involving sharing and negotiating the routine. Together, they focus on creating a pattern of acceptable behaviors, such as, the length of time spent on each page and limits on repeated clicking of single items, which establish the routine for sharing CD-ROM storybooks. James and his mother have conflicting goals that must be reconciled to establish CD-ROM storybooks as a social activity of co-constructing meaning. They spend a great deal of time (28% of total episodes) negotiating roles and establishing the routine for sharing CD-ROM storybooks together.

132
These negotiations are noteworthy, because they preserve the activity as a storybook sharing experience rather than allowing it to become a game or independent play activity. The negotiation of storybook sharing routines also occurs with traditional and LEA storybooks, but the focus of negotiations is different. During traditional storybooks, James’s mother is observed trying to vary the routine to include James “reading” more of the text. She scaffolds his attempts as a way to move him toward independent functioning with storybooks. They are not focusing on developing a social routine or preserving the storybook sharing experience, but changing a routine that has been previously established in order to move James toward independent functioning with storybooks.

The least amount of negotiating, with respect to the routine, occurs with LEA storybooks (3%), because James’s mother is not purposefully trying to change the routine. The negations, during LEA storybook sharing, focus on preserving the established routine when James tries to "skip" parts of the routine. James’s mother encourages him to maintain the routine, and James does not initiate further episodes involving negotiation in this manner.

James and Multiple Storybook Literacy

What does this comparison (see figure 11) mean in terms of James’s development of multiple storybook literacy? James is interacting with multiple types of storybooks that include episodes involving interactions that are similar in terms of categorical explanation. For example, episodes involving artifacts are evident across storybook sharing experiences. However, the metalanguage that facilitates literacy during the
interactions, the sociocultural context, and the characteristics of each medium are unique for each type of storybook under investigation. These distinct interactions create multiple ways of knowing story for James and multiple pathways to literacy.

The language that facilitates literacy learning for James during each type of storybook sharing experience is unique. The language of traditional storybooks includes the authors' language or book language, as it is sometimes called, and the interactions focus on interpreting this language. James and his mother talk about “story” and “pictures” as they interact with and explore traditional storybooks. During LEA storybooks, their interaction occurs on a different level, because the story is created by James and often centers on his life events. This allows for interaction and exploration beyond constructing meaning of the text and creates more opportunities for talk about feelings and emotions. There is also more focus on print conventions and the talk includes discussions about his “reading finger” and the use of strategies, such as “getting his mouth ready.” CD-ROM storybooks differ, in that, the talk includes language that is specific to the CD-ROM storybook artifacts. Here, they discuss the mouse, the arrow, the screen, and “clicking” as they interact with and explore this new medium together.

The language used to interact with and explore the various storybook media reflects the sociocultural setting in which it occurs. The cultural uniqueness of each medium – the commercially prepared traditional storybook, the handmade LEA storybook, and the animated CD-ROM storybook – contributes to the sociocultural setting in which the mental functioning occurs. The various contexts are an implicit comparison of traditional and modern societies (Wertsch, 1989). Even though the participants do not change, there is variance in sociocultural setting due to the situatedness of the events they are
participating in, via the various storybook media. Because the language and artifacts used vary significantly, they actually shape the experience and reveal the situatedness of the mental functioning that occurs. For example, when interacting with CD-ROM storybooks, James and his mother use language specific to computer use, such as, *click, mouse, screen,* and, *arrow.* They also focus significantly on learning to use the modern artifacts that are unique to CD-ROM storybook media. The focus of the mental functioning is then shaped by the context, in which the mental functioning occurs, which is a modern-type social interaction. The type of interaction that occurs with CD-ROM storybooks is different from the traditional-type interaction, including language and artifacts, that occurs while sharing traditional and LEA storybooks.

The characteristics of each medium also contribute to their uniqueness. Traditional storybooks are commercially prepared, paper books that contain story text and illustrations that James and his mother interact with by co-constructing meaning of the authors' written language and the illustrators' supplementary text. CD-ROM storybooks are also commercially prepared, yet differ in their artifacts and the way that James and his mother interact with them to construct meaning of the authors' written language and the animated, programmed hypertext. LEA storybooks are handmade and created by James and his mother, rather than an outside author, but they sometimes contain commercially prepared illustrations that are used to supplement the text and construct meaning.

The sociocultural setting also affects the focus and proportion of occurrence of various aspects of mental functioning with respect to becoming literate (see figure 10). The tools for developing independent functioning with storybooks (literacy) across storybook media are unique, yet all contain text and supplementary text – and are
storybooks. Each also contains episodes of interaction (that emerge from an analysis of the data), but the episodes are unique because they are situated in different contexts.

The proportion of occurrence of episodes of interaction (see figure 5 and 11) differ not only in scope, but also in nature and context. While they are engaged in episodes involving interaction with print across storybook sharing experiences, the nature of the interaction differs due to the contexts in which they occur and the specific features of each medium. For example, LEA storybooks are specifically designed and have features, which facilitate James's attention to print. The print looks different and is used differently, by James and his mother, during LEA storybook sharing. James’s attention to print during traditional storybooks is secondary to other episodes and limited to those storybooks that have single lines of print that James can interact with at ease. His attention to print during CD-ROM storybooks involves using his mouse rather than his finger and has unique features, which create a type of interaction with print that cannot be duplicated with the other storybook media. For example, he can engage with print independently by “clicking” on words and having them read to him repeatedly (or in rap fashion) and in any sequence that he chooses. Therefore, while each type of storybook contributes to James’s development of literacy, the nature and context of each type of storybook media reflects the interaction and exploration that occurs within the unique sociocultural settings.

Bakhtin’s notion of reflective utterances is revealed by examining the context of James’s constructed understandings and the socially constructed understandings of James and his mother. Their social interaction during storybook sharing experiences can be reflective of the immediate experience of the paper book or animated storybook or of a
previous experience that they shared together. For example, when James focuses on the letter “S” when reading Stellaluna, he makes a link to a previous activity in which he and his mother made a list of “S” words. Without engaging in detailed discussion of the previous event, both James and his mother understood the context and the reflective nature of James’s utterance.

The reflective nature of their utterances is also evident as James’s mother identifies his Zone of Proximal Development (Vygotsky, 1934/1986) and moves him toward independent functioning with storybooks. The prompts she chooses to scaffold his learning about print and reading strategies reflect previous interactions and facilitate his becoming literate. For example, as he notices the “S” in Stellaluna and relates it to a previous activity, his mother discovers that James knows the letter sound for “S”. She can then request the sound when writing the text of LEA storybooks or ask him to locate words beginning with the “S” sound during traditional or CD-ROM storybooks. In this manner, she can connect his focus on the sound for the letter “S” across storybook media experiences and use this multiple framework to further promote literacy. In other words, he is developing literacy using multiple types of storybooks while concurrently developing multiple storybook literacy. James is becoming literate through his interaction with multiple types of text and developing multiple ways of knowing story. Story has become something that he reads (traditional), creates (LEA), and does (CD-ROM).
Ruthie's demonstration of her experience with technology, in this comic interpretation of storybook media, illustrates the importance of examining multiple storybook literacy. While this interpretation is meant to be humorous, it touches on the issues that surround today's children as they interact with storybooks. We can no longer consider technology to be separate from literacy and storybooks. Today, technology is part of children's lives. They carry their conception of technology to school, and in Ruthie's case, to story hour. Technology is part of their understanding about how the world works. It is not a separate
entity for them; it is part of who they are and what they understand about their environment. James, like Ruthie, has incorporated his experience with technology into his daily life. It has become part of his play and a way to express his feelings; it shapes how he understands story. Activities of his daily life, including play, reveal how he internalized his experience with technology, and they reveal his attempts to generalize what he learned.

Since we know that play is an integral part of a child’s development and a window into the child’s way of knowing, it is important to examine James’s play behavior as it relates to his concept of technology. Of key importance is the way he uses play to generalize what he learned about the CD-ROM storybook medium throughout his daily life. During play, James practices the process of engaging hypertext and demonstrates how to use a “pretend” mouse to click objects.

James demonstrated his conception of technology, outside of the CD-ROM storybook experience, very early in the study (May 1997). He used dramatic play (or CD-ROM dramatic play) to express his growing competence with the CD-ROM storybook medium.

On the afternoon of May 12, 1997 (Diary entry), James was lying in bed awakening from his nap when his mother arrived. He usually jumps up out of bed and hugs her upon waking, but this time he laid still. He was lying on his back with both knees bent and was surrounded by stuffed animals and pillows. He explained to his mother that his left knee was the ball (his mouse) and said, “Here, Mama click on something.” His mother chose to click on his stuffed monkey, and as she did, James picked up the monkey and
made it fly around their heads. Next, James clicked on Burt (a stuffed version of the Sesame Street character) and he flew too. A pillow was clicked next, but it just fell down, because according to James, “Pillows can’t fly.”

Later in the study, James developed a game using his knowledge of technology, similar to Ruthie’s experience in the comic strip. He called this game, “Click on me!” (November 23, 1997, Diary entry)

James and his father were seated at the kitchen table having lunch. James looked at his father and exclaimed, “Daddy, click on me!” Then, his father joined in the game and pointed at James and said, “Click.” James immediately pretended to come to life as a hypertext item might do when “clicked,” and he began singing a nonsense song. When he finished, he pretend “clicked” on his father. His father took a bite of his sandwich and said, “Yum, yum!” They continued to take turns clicking on each other throughout their lunch together. Sometimes, the “click” elicited the patterned response of X-Y-X-Y as James switched between two responses when his father “clicked” on him. Other times, the “clicks” elicited the same response in an X-X-X pattern as James did the same thing each time he was “clicked.” James’s understanding of the patterns of hypertext and the range of hypertext responses was revealed through this play behavior.

After this initial experience, James began to play “Click on me!” throughout the events of his daily life. When his mother asked him to get dressed for preschool, he responded, “If you click on me, I’ll put my shirt on” (February 2, 1998, Diary entry). In this example, James revealed his understanding of the properties of hypertext. He sat very still and waited on his mother to “click” on him, and when she did, he jumped up and put on his shirt.
During another exchange (February 5, 1998, Diary entry), James revealed his understanding of the way icons are used to make choices on the computer screen. His mother asked him if he was finished with his breakfast, and he responded by using his knowledge of icon use in a decontextualized way. "Mommy, if you click this (pointing to a number on a digital clock), it means yes." Then, he got out of his chair, walked over to the clock, "clicked" the number, and said, "Yes."

James's CD-ROM dramatic play grew more elaborate over the next few weeks. A sequence of episodes of CD-ROM dramatic play occurred in February of 1998 (February 10-15, 1998, Diary entries). James played what he called, "CD-ROM," every day both alone and with his parents. He perfected the game and expanded it to include his increasing knowledge of the CD-ROM storybook medium.

James found a mirror in his sister's room low enough for him to see himself. The mirror was shaped like the rectangular computer screen. He began each game in front of the mirror.

(February 12, 1998, Diary entry)

J – Click here if you want me to read you the story and click here if you want to play in the story. (He held up his hands to show where to click in the mirror.)

James acted out the storybook chosen, switching between the part of the narrator and hypertext characters that were being clicked. He even moved from room to room in the house each time he "pretend" clicked to turn the page. Each room of the house was a new page, complete with story text and new hypertext objects to click (February 14, 1998, Diary entry).
James also used his experience with technology as an outlet for sharing his feelings. In this example, he incorporates CD-ROM storybooks with drawing to express his emotions. James's sister, Molly, was born during the midst of this study. James and his mother read traditional storybooks about new siblings and talked about having a new baby and the feelings it creates. James used his knowledge of technology and drawing as a way to express his feelings about his mother having to nurse the baby, rather than do a CD-ROM storybook with him on the computer.

(February 9, 1998, Diary entry)

James drew a picture of a computer on his Magna Doodle. (A Magna Doodle is a writing implement that can be written on, erased, and reused.) He drew a large rectangular-shaped screen and two figures on the screen.

\[ J - Mommy, it says if you don't nurse the baby, you can play with this computer. \]

\[ M - Well, I have to nurse the baby. She is hungry. But that is a nice-looking computer. \]

James used his knowledge of CD-ROM storybooks to persuade his mother to stop nursing the baby. James enjoys CD-ROM storybooks and feels that the opportunity to do a CD-ROM would be a good incentive for his mother to stop nursing the baby. His mother understood that he was feeling “left out.” Technology, in this example, is a vehicle for expressing those feelings.

James also demonstrated an expanded view of book concepts and story, due to his experience with technology. In the following example, he made a discovery that reveals his new understandings.
During an evening meal, James’s parents were watching the news. James watched the television screen intently as it went “black” before a commercial began to play. Then, he pointed to the screen and announced, “Mommy, they turned the page!” (Diary entry).

These examples illustrate not only the impact that technology has on James’s daily life, but how he internalized technology in a decontextualized way. Eating lunch, getting dressed, playing, and watching the news with his parents are different experiences for him, due to his relationship with technology. For James, his knowledge of the CD-ROM storybook medium is not a separate part of his daily experiences, but an integral part of how he interprets the world around him. He approaches daily life in new ways and the incorporation of technology is evident whether expressing his feelings or engaging in dramatic interpretation of story text.

James’s experience with technology, while unique to him, raises questions about how technology is viewed in relation to teaching and learning in today’s society. The impact of technology on today’s youth and the way they are incorporating and internalizing it into their understandings of the world necessitates the inclusion of technology in literacy research. We can no longer separate literacy from technology, because children, regardless of socioeconomic factors, are inundated with technology from a young age (McKinley, 1992). It has already become part of who they are and how they come to understand the world.

In addition, research indicates that literacy pedagogy should expand to include technology. The New London Group (1996) argues that literacy pedagogy must account for the vast variety of textual forms made possible by multimedia technologies. They
contend that a “metalanguage” must be developed that includes the textual and visual
meaning-making processes that are inherent in electronic texts. Scollon and Scollon
(1984) indicate that the use of microcomputers by young children fosters new literacy
insights. Davis (1991) suggests that teachers who have an expanded view of literacy
pedagogy, which includes technology, allow for new visions of young children as
sophisticated meaning makers. Talley (1994) found that it is useful to integrate
computers with emergent literacy for Head Start children. Labbo (1996) found that using
a computer enhances young children’s symbol-making ability.

This synthesis of studies suggests that technology impacts literacy development and
should be included in an expanded view of literacy pedagogy. Kellner (1998a) takes the
findings one step further and theorizes:

The challenge for education today is thus to promote multiple literacies to
empower students and citizens to use the new technologies to enhance their lives
and create better culture and society based on respect for multicultural differences
and aiming at fuller democratic participation of individuals and groups largely
excluded from wealth and power in the previous modern society (p. 11).

James’s journey, with CD-ROM storybooks, supports the view in previous research
that calls for the inclusion of technology in an expanded view of literacy. The computer
is part of his daily life. He seeks to build understandings from activities in ways that
would not be possible without his experience with CD-ROM storybooks. For James,
texts are both written and electronic. Story is something you do, as well as, see and hear.
His experiences with texts are broad and elaborate. His view of literacy is expanded,
complex, and interactive.

James and his peers have the opportunity for a vastly different experience with
literacy: one that includes technology. Unlike James, his parents (like most thirty-
something parents) came to understand computer technology as adults. The majority of today's students, however, have been inundated with technology from an early age. This necessitates developing an expanded view of literacy and what it means to be literate.

While this study seeks to describe James's experience with CD-ROM storybooks as he develops multiple storybook literacy, the total impact of his experience with technology is yet to be discovered. The way his experience with multiple storybook media frames his continued literacy development is an area worth exploring. Also important is how technology impacts his development of multiple literacies in conjunction with formal schooling. It is a logical next step in examining his development of multiple literacies. Multiple storybook literacy is just a piece of the multiple literacy pie. Depending on James's experiences, he has the capability of developing numerous literacies. More studies are needed, that examine the impact of technology using longitudinal case studies (like James's continued development) and groups of young children, in order to better understand this expanded literacy phenomenon. For example, as children begin formal schooling, what are their experiences with multiple storybook media? How does multiple storybook media impact their becoming literate? How do experiences with technology in the home compare to or supplement what today's children receive in school? Will students, who engage with electronic texts and write using electronic media at home, read and write differently in school? What will the effects be on literacy development as students are inundated with electronic texts and writing programs both in school and at home?
In light of this discussion, and James's experience with technology, there are issues that arise and need consideration.

- Should CD-ROM storybooks become part of the emergent literacy curriculum?
- What does technology mean for the future of storybooks?

In recent studies, researchers found CD-ROM storybooks to be an effective classroom tool for improving aspects of literacy, such as verbal ability and comprehension (Johnston, 1995; Matthew, 1996). Although the empirical base for making a curricular decision about the inclusion of CD-ROM storybooks is limited, the findings thus far present CD-ROMs as an effective classroom tool. Add to that, the various researchers who recognize technology as an aspect of literacy that must be included in literacy pedagogy (Davis, 1991; Kellner, 1998a; Labbo, 1996; Scollon and Scollon, 1984; Talley, 1994; The New London Group, 1996) and CD-ROM storybooks become a choice worth considering.

Maxine Greene, a notable curriculum theorist, discusses the inclusion of technology in this way:

The process of speaking, writing, and reading must be attended to; there must be reflectiveness with regard to the languages in use – the language of images, of technology, of ordinary communication grounded in everyday life (1998, p. 5).

It is clear that we cannot ignore technology in today's classrooms, because whether or not there are computers in the room, students bring with them their understanding of technology and its integration with their daily lives. Luke and Elkins (1998) compare new technologies to the invention of the printing press and anticipate it will reinvent literacy in our "New Times" at an extremely rapid rate:

The development of the practices and artifacts of the printing press spread unevenly across Europe over a 300-year period. In less than 40 years, television
has become a principal global technology of human communication, commerce, political life, and public education. In 2 decades, the computer has gone from an exclusive, specialized business and research tool to common household appliance (p. 6).

The decisions of how to incorporate technology and various storybook media are complicated. A recent issue of *Reading Today* (February/March, 1998) was dedicated to describing how teachers from around the continent of North America are integrating technology into their classrooms. What was revealed from the article is that: (1) computers are either in classrooms or on their way, (2) educators must work to avoid making technology separate from other activities, (3) technology is an excellent entry to books for reluctant and poor readers, and (4) staff development is an important part of the process. However, schools implemented and teachers incorporated technology to widely varying degrees. Educators will continue to battle over what type of technology to choose, how to integrate technology into the existing curriculum, and what benefits technology offers students. Considering technology in our classrooms will require new kinds of critical literacy in us all (Luke & Elkins, 1998). The debate goes to the root of the curriculum and to the basic curricular dilemma – What knowledge is of most worth? While I cannot begin to answer that question within the scope of this paper, I can offer that the development of multiple storybook literacy is powerful.

The use of a variety of storybook media, especially the ones described in this study, create a type of interaction and dialogue that could not exist with traditional storybooks alone. Due to the context in which each storybook medium is situated, they each offer unique contributions to James’s literacy development. CD-ROM storybooks expand his conception of story and facilitate increased construction of meaning through hypertext, LEA storybooks call his attention to print in ways not possible with other storybook
media, and traditional storybooks allow him to focus heavily on co-constructing story text. Together, these three storybook media experiences complement each other and fill gaps in his literacy knowledge. They have a powerful impact on James's literacy development.

The second issue raised about the future of storybooks is also complicated. There are those that would argue that storybooks must be paper and held in one's lap to be a true storybook experience. They would argue that the development of electronic and animated storybooks takes away from, rather than adds to, the traditional storybook experience. However, taking this stance against the new technologies presumes that literacy and technology are indeed, separate. According to Luke and Elkins (1998), "The word and the book are here to stay, but are being transformed in relation to new technologies, new cultures, and new forms of life" (p. 7).

Today's books are written using sophisticated word processors, mass produced using new technologies, marketed on the World Wide Web, and sold with the click of a button either using the telephone or through internet connections using a mouse. Technology is already part of storybooks and perhaps contributes to keeping the paper book alive rather than "killing it." Today, there is unprecedented access to information that can help students locate and use paper books. Students can search for books in electronic card catalogues at their local library, they can search the World Wide Web for literature, and they can read abstracts and reviews "on-line" to assist them in making book choices. Considering these factors, one can conclude that technology assists and promotes storybook reading.
For example, I recently bought paper storybooks for my nephews who live hundreds of miles away. Sitting in my pajamas, holding my infant daughter in my lap, I visited an on-line bookstore. I searched for children’s book within their age ranges, read reviews from parents and the Horn Book, looked at book covers, illustrations, and text, analyzed statistical information about previous purchases, and added my selections to a virtual shopping cart. Within minutes, using my personal computer, I bought several books, had them gift wrapped, wrote personal notes, and with the click of a mouse button, had them shipped within 24 hours to their home. Was I using technology to promote literacy and the paper storybook? You bet!

There is more to consider, however, as technology increases. A simple search of the World Wide Web brings information to your fingertips about the growing connection between technology and storybooks. A search (October 7, 1998) of “electronic books,” using the search engine “Yahoo,” revealed thirty-three on-line companies that are currently producing electronic books. These e-books, as they are called, differ slightly in design and use. E-books are comprised of electronic text as opposed to typographic text. They exist as digital information seen as dots on monitors rather than as printed words on a page. This allows the electronic text to be malleable and adaptable to many functions (Anderson-Inman, 1998). They can also be instantaneously sent around the world via the Internet to an infinite number of readers.

Most of the companies publishing e-books produce software (floppies, CD-ROMs, or shareware) containing complete books that can be used on your personal or laptop computer. The use of a computer allows the reader to manipulate the text in ways not possible with traditional paper versions. For example, e-books can be fully hypertexted,
can include full text search capability, can allow for annotation and setting of bookmarks, and can modify the appearance of the book to suit the reader's needs. These features allow readers to engage in pop-up hypertext, search the text for words and phrases while adding notes, highlight and set bookmarks throughout the text, interact with full color images, and use automatic line wrapping using video settings. The automatic line wrapping can be customized for the individual reader and creates a flow of text that occurs without the necessity of scrolling or the use of a mouse or keyboard. According to Anderson-Inman (1998), "Ease of access, combined with flexibility of use, has given electronic text a prominence that will not disappear - it is the literacy medium of the future" (p. 682).

The features of e-books across companies are similar, and each promises the capability of soon releasing their version of e-book readers. E-book readers utilize a very high-resolution, flat screen display, which makes them small in comparison to traditional paper books and capable of storing thousands of books. E-book readers can also be waterproof and shockproof, and they can contain all the features that e-books currently have when used on a personal or laptop computer. E-book readers have been featured in news segments as lightweight, easily slipped into a briefcase or school backpack, and about the size of a sandwich. They can be held in your hand, as a traditional storybook would be, while you snuggle into your favorite reading chair. There is little doubt that e-book readers will be revolutionary in the field of literacy. Students will be able to carry thousands of books in the palm of their hand, and will be able to interact with the text in ways not possible with paper book versions.
Imagine, James placing his e-book reader next to his peanut butter and honey sandwich in his backpack as he heads off to school. He climbs onto the bus and uses his e-book reader to play his favorite electronic game on the way to school. When he arrives at school, he walks into his classroom and downloads his homework from his e-book reader onto the teacher’s personal computer. Then, the teacher passes out book cards, about the size of a domino, for students to load onto their e-book readers that contain the day’s schedule and assignments.

Throughout the school day, he accesses his e-book reader by pushing large colorful hypertext pop-up buttons. He reads his school texts, does assignments, writes in his journal, and reads his favorite storybooks during free time using his e-book reader. If juice gets spilled on it during lunch, or it gets too close to his peanut butter and honey sandwich, it can be wiped clean without worry.

Is this scenario possible given today’s technology? Of course it is. Will it happen anytime soon? Who knows? What else is possible for storybooks? Consider what is currently being proposed for electronic encyclopedias, and you have a window into the possibilities to come.

In more than one proposal for the encyclopedia of the future, the pictures, and even the smells and tastes seem to overwhelm and replace verbal text. The result would be not principally a hypertext, but instead a multimedia presentation in which the computer addresses all the reader’s senses and puts the reader into the situation described (Reagles, 1998).

Imagine again, James using an encyclopedia to look up the solar system (a current fascination of his). He is able to stand within the galaxy, touch the planets, smell the gasses, and feel the warmth of the sun. We previously read books about the planets, sang songs about their features, and even built a model solar system, however, we cannot
duplicate the virtual reality of "nearly being there" and using your senses to experience space. The three-dimensional virtual reality would surely enhance his understanding.

Suppose this technology was used to enhance traditional storybooks. What would the experience of storybook then be? If James were reading one of his favorite storybooks, Green Eggs and Ham, could he take a bite? Could he smell the eggs and ham? Could he touch them? Could he talk to Sam-I-Am? Could he swim in the water with the book characters? Could he ask them what they are doing in the water, rather than rely solely on his mother’s interpretation? It’s possible. Our question then becomes, is this how we want our children to come to know story? I would want it for James, and I would want it for myself. I envision holding my grandson in my lap, and reading his father’s (James’s) favorite storybook to him, the one with the dog-eared pages and scotch-taped binding. We would talk about the beautiful pictures and silly characters, and I would point out the “S” sound in the text, that also begins his last name. Then, also holding my grandson in my lap, we would enter a virtual storybook. We would talk about the three-dimensional images, listen as the characters talk to us, smell, taste, and feel the story as we experience the storybook together. That would be multiple storybook literacy, indeed!
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Children’s CD-ROM Storybooks


## APPENDIX A

### DATA SHEET

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<th>Setting / Tape location</th>
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171
APPENDIX B

TEST #1 - LETTER IDENTIFICATION

TEST #1 LETTER IDENTIFICATION SCORE SHEET

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TOTALS

Confusions:
Letters Unknown:
Comments:
Recording:

A Alphabet name response:
checkmark

S Letter sound response:
checkmark

WORD Record the word
the child gives

IR Incorrect response:
Record what the child
says

Date: 2/4/99
Name: James
Recorder: O. Griffiths
School:
Classroom Teacher:

TEST SCORE 98/100

172
APPENDIX C

TEST #2 – WORD TEST

#2
James

Word Test

Attempts

the
am

Yes
## APPENDIX D

### TEST #3 – CONCEPTS ABOUT PRINT

**TEST #3 CONCEPTS ABOUT PRINT SCORE SHEET**

<table>
<thead>
<tr>
<th>PAGE</th>
<th>SCORE</th>
<th>ITEM</th>
<th>COMMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cover</td>
<td>✓</td>
<td>1. Front of book</td>
<td></td>
</tr>
<tr>
<td>2/3</td>
<td>✓</td>
<td>2. Print contains message</td>
<td></td>
</tr>
</tbody>
</table>
| 4/5 | ✓ | 3. Where to start  
  4. Which way to go  
  5. Return sweep to left  
  6. Word by word matching | Put to reading |
| 6 | ✓ | 7. First and last concept |         |
| 7 | ✓ | 8. Bottom of picture | Where the head is on the road (standing in front) |
| 9/9 | | 9. Begin 'The' (Sand) or 'T' (Stones) bottom line, top OR turn book |         |
| 10/11 | ✓ | 10. Line order altered | How it's upside down |
| 12/13 | ✓ | 11. Left page before right  
  12. One change in word order  
  13. One change in letter order |         |
| 14/15 | ✓ | 14. One change in letter order  
  15. Meaning of ? |         |
| 16/17 | ✓ | 16. Meaning of period/full stop  
  17. Meaning of comma  
  18. Meaning of quotation marks  
  19. Locate H in H H (Sand)  
  OR Ti So (Stones) |         |
| 19/19 | | 20. Reversible words [TlSb, No] |         |
| 20 | ✓ | 21. One letter, two letters  
  22. One letter: two words  
  23. First and last letter of word  
  24. Capital letter |         |
APPENDIX E

TEST #4 - WRITING VOCABULARY

Date: 2/6/98
Name: Jannes
Recorder: C. Griffiths

Circle Form Used: A, B, C, D or E:

Test Score: 4

(Fold heading under before child uses sheet)
APPENDIX F

TEST #5 - HEARING SOUNDS IN WORDS

TEST #5

DATE: 2/6/98

Name: Jamie
School: 
Recorder: C. Griffiths
Classroom Teacher: 

(Writing Vocabulary Test Sheet)

Test Score: 13/37

bs
bus

coming
it will
stop

here

to
let

me
get
on
**APPENDIX G**

**TEST #6 – RUNNING RECORD OF TEST READING**

<table>
<thead>
<tr>
<th>LEVEL</th>
<th>PAGE</th>
<th>E</th>
<th>SC</th>
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</thead>
<tbody>
<tr>
<td>A</td>
<td></td>
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<tr>
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<td></td>
<td></td>
</tr>
</tbody>
</table>
| B     | WHERE’S SPOT?  |   |    | **Acc %**
| 1     | "Spot is lost. His mother looks everywhere for him." |   |    |
| 2     | Read title and 7 pages |   |    |
| 3     | "You point and read." |   |    |
| 4     | No, no, no |   |    |
| 5     | A BIRD CAN FLY  |   |    | **Acc 89 %**
| 6     | "This book is about things people and animals can do. I’ll read the first two pages then you can help." |   |    |
| 7     | Teacher points and reads. |   |    |
| 8     | (A fish can swim. So can I.) |   |    |
| 9     | (A frog can hop. So can I.) |   |    |
| 10    | (A horse can run.) "You read it." |   |    |
| 11    | (A dog can dig.) |   |    |
| 12    | (A monkey can swing.) |   |    |
| 13    | "You read this page." A bird can fly. So can I. |   |    |
| 14    | HATS |   |    | **Acc 68 %**
| 15    | "This story is about people’s hats. The hats are different colors. I’ll read the first page, and then you can help." |   |    |
| 16    | Teacher points and reads. |   |    |
| 17    | (The firefighter has a red hat.) |   |    |
| 18    | (The pirate) "You read the rest." has a purple hat. |   |    |
| 19    | (The sailor) has a white hat. |   |    |
| 20    | (The witch) has a black hat. |   |    |
| 21    | (The woman) has a pretty hat. |   |    |
| 22    | (Now) the monkey has a yellow hat. |   |    |

*All three levels must be administered (B, 1, 2).*
APPENDIX G

TEST #6 - CONTINUED

TEST #6  RUNNING RECORD OF TEXT READING

Date:  2/6/98
Name:  James
Recorder:  C. Griffiths

<table>
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<th>Word</th>
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<tr>
<td></td>
<td>Can you find the monkey? (Blah; blah...)</td>
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<tr>
<td>4</td>
<td>boy</td>
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<tr>
<td></td>
<td>girl</td>
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<td>1</td>
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<tr>
<td></td>
<td>Can you find the elephant?</td>
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<td>5</td>
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<td>Can you find the giraffe?</td>
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<tr>
<td>6</td>
<td>boy</td>
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<tr>
<td></td>
<td>girl</td>
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<td>Can you find the hippo?</td>
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<td>7</td>
<td>(Read before page 6)</td>
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<td></td>
<td>The girl looked at</td>
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<td>You can find</td>
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<td>The boy looked at the elephant</td>
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