PLAY IN MODIFIED LEARNING CENTERS ON THE DEVELOPMENT
AND TRANSFER OF PHONEMIC AWARENESS TO
KINDERGARTEN SPELLING

by

NICOLE REGUSH

B.A., The University of Alberta, 1990
B.Ed., The University of Alberta, 1992

A THESIS SUBMITTED IN PARTIAL FULFILLMENT
OF THE REQUIREMENTS FOR THE DEGREE OF
MASTER OF ARTS
in
THE FACULTY OF GRADUATE STUDIES
Center for the Study Curriculum and Instruction

We accept this thesis as conforming to the required standard

THE UNIVERSITY OF BRITISH COLUMBIA

August 2000

© Nicole Regush, 2000
In presenting this thesis in partial fulfilment of the requirements for an advanced degree at the University of British Columbia, I agree that the Library shall make it freely available for reference and study. I further agree that permission for extensive copying of this thesis for scholarly purposes may be granted by the head of my department or by his or her representatives. It is understood that copying or publication of this thesis for financial gain shall not be allowed without my written permission.

Department of Center for the Study of Curriculum and Instruction
The University of British Columbia
Vancouver, Canada

Date August 29, 1980
Abstract

As many as thirty percent of students graduating from high school today have poorly developed literacy skills. As recently as ten years ago, kindergarten teachers were discounting phonemic awareness as insignificant to the development of early literacy when research accredits phonemic facility as pivotal in the process. This study was designed to modify and assess the use of learning centers as a teaching strategy to develop phonemic awareness and conventional spelling in kindergarten children.

Sixteen kindergarten children served as the intervention class and fourteen children served as the control group (chronological age between 71.68 and 73.18 months, nonsignificant differences in ages). Over seven weeks, children in the intervention class interacted in three literacy-dependent learning centers. Children in the control group were not exposed to the learning centers.

Based on previous research, it was hypothesized that intervention would result in an increase in phonemic skills and would transfer to, and enhance, conventional spelling. Results revealed a significant effect on phonemic awareness skills, specifically blending, sound isolation and segmenting. No significant effect was noted in spelling performance, although the intervention group manifested the greatest increases in literacy-related play and use of phonemic awareness during free play. Comparison of high-literacy and low-literacy children suggests that the low-literacy intervention group children experienced the greatest gains (although not always significant) in phonemic skills, spelling, selection of literacy activities and use of phonemic skills during literacy activities.
Further investigations would require a modification of the teaching strategy to explicitly demonstrate the transfer and application of phonemic awareness to the context of conventional spelling, a longer period of observation, and a more detailed analysis of the graphophonemic skills of the participants.
Table of Contents

ABSTRACT.................................ii
TABLE OF CONTENTS..........................iv
LIST OF TABLES............................vi
LIST OF FIGURES............................vii
ACKNOWLEDGEMENTS..........................viii

CHAPTER
I. INTRODUCTION................................1

II. PHONEMIC AWARENESS AND LITERACY
    What is the Relationship of Phonemic awareness to Literacy?.......5
    Is Phonemic Awareness Teachable?...............................7
    Can Phonemic Awareness Training Support the Challenged Learner?...13
    How Does the Primary Teacher Apply Research to
    Classroom Learning? .........................................15
    Linking Literacy Research and Classroom Practice:
    The Modified Learning Center ................................16
    Statement of the Problem and Significance of the Study.............21

III. METHODOLOGY
    Participants..............................................24
    Demographic Information..................................25
    Measures....................................................26
    Observations...............................................28
    Justification for Test Selection...............................29
    Environment...............................................30
    Procedure..................................................31
    Measurement and Scoring of Phonemic and Dictation Activities ....33
    Data Analysis..............................................33

IV. RESULTS
    Chronological Age........................................35
    Phonemic Awareness........................................35
    Spelling Analysis- The Dictation Activity........................36
    Incidence of Literacy-Related Free Play: Observational Field Notes ....37
    Phonemic Awareness Usage During Literacy Activities ..............41
    Changes in Frequency of Behaviors Across Intervention............43
    Modified Learning Centers and the Challenged Learner...............44
    Assessment of Teaching Strategy on Phonemic Awareness
    and Literacy............................................46

iv
List of Tables

Table 1. Means, Standard Deviations and Ranges of Phonemic Awareness and Dictation Tasks ...........................................37
Table 2a. Summary of Free Play Observations: Literacy-Related Activity ........39
Table 2b. Summary of Free Play Observations: Activities Unrelated to Literacy ..39
Table 3. Comparisons of Observed Free Play Behaviors ..............................................40
Table 4. Chronological Representations of Children’s Free Play Choices .............42
Table 5. Mean Pretest-Posttest Changes .................................................................44
Table 6. Changes in Literacy-Related Activity .......................................................45
Table 7. Changes in Use of Phonemic Awareness During Literacy-Related Activity .................................................................46
List of Figures

Figure 1. Developmental Literacy Map.................................52
Acknowledgements

Many people must be thanked for their contributions which resulted in the successful completion of this study. Foremost are the members of my thesis committee, Dr. Jim Anderson, Dr. Elizabeth Lee and Dr. John Shapiro to whom I would like to offer my gratitude for their patience, assistance and continued interest. Additionally, I would like to acknowledge Dr. Jacquelyn Baker-Sennett for her encouragement and advice and Dr. Chuck Paltiel for his statistical expertise and professionalism during this learning process. An enormous debt of gratitude is owed to the principal of Saint Catherine’s Elementary School, whose enthusiasm for educational excellence is unsurpassed. Without his time and understanding of the importance of classroom investigation, this study could never have been realized. I would also like to thank the kindergarten teacher at St. Catherine’s, for welcoming me so graciously into her dynamic classroom and for her many insights and interpretations over the course of the study. My sincere thanks is extended to the children and their families who participated in this study; I wish them many successes and happiness in their futures. I would also like to acknowledge my family for their constant support, encouragement and understanding throughout the many years of study. Most importantly, I would like to thank God for granting me the opportunity, perseverance and strength required to realize this goal.
Chapter I

Introduction

The process of becoming literate, that is learning to read and write conventionally, has been described by some as a natural extension of learning to speak (Goodman, 1972; Smith, 1971). However, as many as 30% of children in North American schools possess poorly developed literacy skills (Vellutino, Scanlon, Sipray, Small, Pratt, Chen, & Denckla, 1996), evidence that learning to become literate is not as “natural” as whole language proponents argue. For a significant number of children then, learning to read and write must be more directly supported. In an effort to improve the literacy rates of children graduating from public schools, educators are urged to reexamine literacy models provided by research and to renew efforts to implement more fully all components of the literacy process, from the very first days of formal education. Such a preventative approach anticipates literacy obstacles early on before they manifest and begin compounding.

Given the societal value ascribed to literacy, teachers have a professional responsibility to ensure that language arts programs are balanced and that children are provided with opportunities to acquire all requisite literacy knowledge. One aspect of literacy learning, deserving of such consideration, is phonemic awareness, which is defined as an understanding that spoken words are composed of smaller units of sound (Yopp, 1992). Phonemic awareness allows children to analyze and/or manipulate units of speech, or phonemes. Although phonemic awareness is recognized as an essential ingredient in early literacy acquisition as a result of thirty years of research (Bradley & Bryant, 1983, 1985; Fox & Routh, 1975; Malicky & Norman, 1999; Tunmer, Herriman,
& Nesdale, 1988), it has received relatively little consideration in public education until recently. Only a decade ago, two-thirds of kindergarten teachers believed that "the acquisition of the phonemic segmentation skill [was] not important to later reading success" (Troyer & Yopp, 1990). Programs designed to assist children in gaining control of the mechanics of written language more commonly involve phonics, or sound-to-letter mappings, which is perceived as more relevant. Ironically, however, an overwhelming majority of researchers agree that the absence of phonemic awareness is often the very source of numerous problems in literacy (Ball & Blachman, 1991; Rack, Snowling, & Olson, 1992; Stanovich, Siegel, & Gottardo, 1997; Swank & Catts, 1994). Phonemic awareness has even been identified as the most problematic feature of literacy for individuals labeled learning disabled in later childhood (Chall, 1983; Gough & Tunmer, 1986).

Phonemic awareness tasks require the individual to focus on the form of communication, which is sound, as opposed to meaning. Unique obstacles exist, however, in attempting to locate individual sounds in the speech stream, because phonemes tend to be co-articulated or merged into larger units in words. Without articulatory distortion, it is often impossible to isolate phonemes (Liberman, Shankweiler, Liberman, Fowler, & Fischer, 1977). Furthermore, to a young child, a dog, for example, simply is a fuzzy barking creature. Young children are typically unaware that the spoken word may be broken into a series of sounds or phonemes (Adams, 1990). Educators, therefore, cannot assume that every child will become phonemically aware without explicit instruction.
Although developing sensitivity to sounds in speech may seem to be simple enough, the implementation of this skill into the context of the written word presents several additional challenges for a young child during first attempts at spelling or reading. This is because emergent reading and spelling require many steps to be executed and connected. As a beginning writer says, thinks or hears a word to be written, she/he must be able to 1) break apart the spoken word into constituent sounds (phonemic segmentation) 2) say or think each sound individually (isolate), 3) locate in memory the symbol corresponding to the sound (grapheme-phoneme association), and 4) correctly transcribe the symbol onto the page and in the correct order (memory and fine motor skills).

A child who cannot phonemically segment at step one will be challenged when he or she is expected to move on to step two, requiring graphophonemic knowledge. The crossover from the spoken to the written occurs where the child has isolated the desired sounds and is transcribing the associated symbols onto the page. It is important to note that this process is not necessarily unidirectional, but more likely bi-directional and such back-and-forth thinking may occur several times in the process of writing one word. Given the complexity of this process, it seems logical to assist children in the automation of some of these steps, so that the entire process is less cumbersome.

The automation of phonemic awareness supports early reading and spelling processes in that one of the steps in this multifaceted process no longer requires the same magnitude of working memory to execute. Phonemic awareness has a significant but specific and limited value during early reading and spelling acquisition, as the precursor
to phonics. However, just as phonics *alone* cannot produce functional literates, neither can phonemic awareness.
What is the Relationship of Phonemic Awareness to Literacy?

Thirty years of inquiry have indicated that phonemic awareness is indeed correlated to literacy, specifically to successes in early reading and spelling (Blachman, 1983; Blachman, 1984a; Blachman, 1984b; Blachman and James, 1985; Bradley & Bryant 1983, 1985; Fox & Routh, 1975; Lundberg, Olofsson & Wall, 1980; Liberman, Shankweiler, Fischer, & Carter, 1974; Mann & Liberman, 1984; Stanovich, Cunningham & Cramer, 1984). While some researchers have assigned a more direct, predictive power in phonemic awareness to bring about reading successes (Juel, Griffin & Gough, 1986; Muter, Hulme, Snowling, & Taylor, 1997; Nation & Hulme, 1997), such sweeping generalizations are increasingly rare.

Predictive conclusions have been challenged by findings that have assisted in developing a deeper understanding of the multifaceted relationship between literacy acquisition and phonemic awareness. There are incidences, for example, of individual children, who possess extensive phonemic awareness skills, superior to skilled readers of the same age, but who could not read as well as children several years younger (Malicky & Norman, 1999). Such findings led researchers to question the importance assigned to phonemic awareness as the pivotal factor which alone, could impact so significantly on literacy. Furthermore, at a certain level of proficiency, phonemic awareness seems to reach a maximum utility in facilitating literacy and after that point, the impact on further literacy growth diminishes dramatically (Olofsson and Lundberg, 1985; Torneus, 1984).
During the 1980s, theorists proposed that phonemic awareness might be an outcome rather than a causal factor of literacy (Juel et al., 1986; Nation & Hulme, 1997; Tunmer et al., 1988). More specifically, it was postulated that phonemic segmentation, the measure of phonological awareness most highly related to reading, may be an outcome of, rather than a causal factor in learning to read (Byrne & Fielding-Barnsley; 1993, Wagner, 1988). Good readers tend to outperform poor readers on a variety of phonemic awareness tasks without phonemic training, when differences in intelligence and socioeconomic status are controlled (Torneus, 1984; Zifcak, 1981).

However, advocates of a reciprocal process are also plentiful (Bentin & Leshem, 1993). Phonological and word awareness are distinguished from normal language operations because they require control processing (Tunmer et al., 1988). Ehri (1979), suggests that "during middle childhood, children develop the capacity for becoming [phonemically] aware when confronted with certain kinds of tasks, such as learning to read” (p.137). Children may first need to attain a specific threshold level of cognitive development before they can perform the primary metalinguistic operations necessary for basic reading skills. In order to benefit from formal reading instruction, children must have, at least, a small measure of phonemic awareness (Tunmer et al., 1988). Reading instruction, however, may also develop a child’s awareness of language, and further heighten phonemic awareness. Thus, for average learners, it is becoming increasingly clear that phonemic awareness may be both a prerequisite for and a consequence of learning to read (Bentin & Leshem, 1993; Malicky & Norman, 1999; Wagner, 1988; Yopp, 1992).
Is Phonemic Awareness Teachable?

While some researchers have attempted to describe the relationship of literacy and phonemic awareness, others have concentrated on teaching young children phonemic awareness as isolated skills (Olofsson & Lundberg, 1983; Rosner, 1974). Conclusions of the more recent studies generally concur that with normal distributions of learners, phonemic awareness can be taught through explicit instruction (Blachman, 1989; Bradley & Bryant, 1985; Byrne & Fielding-Barnsley, 1993; Cunningham, 1990; Fox & Routh, 1984; Hurford et al., 1994; Tunmer & Hoover, 1993). Children who have received several months of direct phonemic training, generally out perform children of the same age or slightly older who had not received training on tasks requiring specific phonemic skills (Rosner, 1974). Predictably, phonemic awareness training, that takes place over several months in small, teacher-led groups of one to five children of average literacy ability, significantly improves specific phonemic awareness skills in young children.

Researchers have also attempted to quantify the effects of phonemic awareness on the reading and spelling of young children, without explicitly teaching connections between phonemic awareness and literacy (Lundberg, Frost & Peterson, 1988; Olofsson and Lundberg, 1985; Torneus, 1984). Researchers in these studies also taught a variety of phonemic awareness skills to young children in small, teacher-directed groups but found that while phonemic awareness skills improved, reading and spelling skills were generally not significantly influenced by phonemic training when connections were not clearly indicated and taught to children.

Rare exceptions to this conclusion are cited, however. For example, in isolated incidences, children with the lowest scores for spelling before training have been
observed to register the most significant effect following training (Torneus, 1984) although this occurrence is not commonplace. Others have found that although there was no immediate effect on the reading and spelling of kindergarten children who experience the greatest literacy difficulties, the following year, the trained children significantly outperformed the untrained students on measures of spelling skills (Lundberg et al., 1988). In grade two, these same children were again compared to their untrained counterparts on measures of reading and spelling. The advantage provided by the phonemic training was maintained over time and seems to be particularly important for children who experience literacy difficulties early on. The studies that assess the effects of phonemic awareness on the reading and spelling of young children, without explicitly teaching connections between phonemic awareness and literacy alert teachers to the importance of helping children to make such literacy connections.

While phonemic awareness is seen as essential to success in early spelling and reading, it should be pointed out that having phonemic awareness does not guarantee the child's ability to effectively transfer phonemic skills to the context of written language. If a child cannot deploy relevant literacy skills in the right context at the right time, such skills are of little or no use. Numerous studies (Malicky & Norman, 1999) reveal incidents of children who possess developed phonemic skills and cannot or do not implement them during reading or writing.

In the last decade, the inability to use phonemic skills during literacy tasks has been considered in depth. Theorists have suggested that “an unresolved issue concerns the mechanism that accounts for the relationship of phonological skills and learning to read” (Muter & Snowling, 1998, p. 320). The link between phonemic awareness, reading
and spelling ability defies simple explanation due to the fact that there are numerous tasks which demonstrate varying degrees of phonemic skill and knowledge. Several examples of these many tasks include: sound-to-word matching, isolation of a sound, phoneme counting, phoneme deletion and phoneme reversal. (see Table 1 of Yopp, 1988, for complete data). This set of tasks measures many diverse phonemic skills using differing tests which vary dramatically in reliability and validity (also see Table 2 of Yopp, 1988). Given these diversities, coupled with differences in the characteristics of subjects in studies such as age, socioeconomic status and I.Q., it is often difficult to compare findings across studies to the relationship between phonemic awareness and early reading and spelling development.

To complicate matters further, there is task variability in level of difficulty, and therefore cognitive demand (see Table 3 of Yopp, 1988) in comparing phonemic tasks. Phoneme blending, for example, is considerably easier than phoneme deletion. Yopp (1988) notes that even within task types, there is considerable variability. For example, in measuring segmentation ability, some researchers use nonsense words, some use real words, and others mix items within a task. “The use of such a wide variety of tasks has made interpretation, consolidation, and comparison of research findings difficult” (Yopp, 1988,p. 160).

In response to this challenge, Yopp has determined which tests of phonemic awareness are highly interrelated, tapping a similar cognitive construct and therefore having construct validity. A factor analysis reveals a clustering of correlations around two factors. Factor one tests were found to require a solitary operation, isolating a given sound, segmenting or blending, and a response. Factor two tests appear to require more steps for completion. Such tests require respondents to perform an operation, and to hold it in memory
while performing yet another operation. An example of a Factor 1 test, also called *simple phonemic awareness*, is segmenting. Word-to-word matching, where a respondent isolates a sound in a given position in a second word to compare it with another sound already isolated in the first word, is an example of a Factor 2 test, or *compound phonemic awareness*.

Although other factor-analytic studies have produced results consistent with those of Yopp, (Lundberg et al., 1988), discrepancies regarding the fundamental underlying cognitive components of phonological awareness remains. For example, Stanovich et al. (1984) and Wagner and Torgesen (1987), firmly contend that phonemic awareness is a *single* factor construct tapping the same latent ability. Goswami and Bryant (1990) have produced a discrepant model describing the connections between reading and phonemic awareness, involving two separate components of phonological awareness: analysis of syllables into onset-rime and phonemic units. Goswami and Bryant state that these abilities develop at different rates and are related to written language in different ways. Rhyme sensitivity manifests in children as early as age four or five and is intimately related to beginning stages of reading. Phonemic awareness evolves later, is affected by exposure to print, and is instrumental in initial attempts at spelling.

In addition to the incongruities in defining and assessing aspects of phonemic awareness, there seems to be a critical conceptual orientation necessary for phonemic awareness to be activated. Malicky and Norman (1999) provide insight into this problem, focussing on the conceptual orientation which allows a beginning reader to mediate and monitor the crossovers or links between phonemic awareness and beginning reading and spelling:

The research of the 1990s has demonstrated that the relationship
between phonological awareness and reading is both more complex and less direct than many initially believed. . . . At the macrolevel, this involves an understanding that written words represent words in oral language. At the microlevel, it involves understanding that letters in written words stand for phonemes in spoken words. (p. 18)

Becoming literate requires more than phonemic and alphabetic skills. Rather, in addition to these skills, a child must possess the understanding of how to move between spoken and written words. Mounting evidence suggests that such transfer skills exist as a result of and must be mediated by a developing conceptual understanding of the literacy process (Yopp, 1992). This raises an interesting dilemma regarding the deficiencies and discrepancies in the differing models of literacy acquisition among educators. If teachers do not themselves have a holistic understanding of the relationship of factors impacting on literacy at different stages of development, how can they possibly pass it on to students?

An explanation as to why phonemic awareness knowledge gained in the context of isolated exercises may not readily transfer to the context of written language, may be suggested by the conditions necessary for vertical transfer to occur:

Vertical transfer is the transfer of known knowledge to the acquisition of some more complex knowledge that incorporates the known knowledge. Most often we think of this type of transfer in a skill acquisition context in which lower-level skills contribute to, and may be a prerequisite for, acquisition of some higher skill. However, it might apply in the context of schema acquisition where simpler elements of declarative knowledge contribute to the formation of schema. (Gagne, Yekovich, & Yekovich, 1993, p. 243)

Several factors affect the degree to which activation and transfer of phonemic awareness knowledge may occur in the context of reading and writing. Most significantly, a child must develop a model or schema of written language, which will
direct the literacy acquisition process and alert the individual as to what skills would be useful in a specific literacy context. This requires a *conceptual understanding* of literacy. The child must also see the relevance of a phonemic task in the context of the literacy exercise and then *activate* applicable skills and processes. Activation and successful transfer of the relevant phonemic skill depends on several factors: the individual’s conscious assessment of the phonemic skill’s effectiveness, how well the learner understands the conditions under which the strategy applies and the ability to focus on the problem (Gagne et al., 1993). Given the numerous factors to consider, supporting early readers and writers in their efforts to recognize that knowledge gained in one setting is applicable and should be activated in another context, “poses a challenge for educators and researchers alike” (Gagne et al., 1993, p. 235).

Despite these challenges, there have been numerous studies, which have found that when connections between phonemic awareness and literacy tasks are highlighted by direct, teacher instruction in small group settings, children are able to apply phonemic skills and knowledge more frequently and accurately in subsequent similar literacy tasks (Bradley & Bryant, 1983, 1985; Eldredge & Baird, 1996; Fox & Routh, 1984; Hohn & Ehri, 1983).

The most significant contributions which studies such as these have made to current understandings of phonemic awareness, and early reading and spelling, is that “the most pedagogically sound method of phoneme awareness training is one that eventually makes explicit the complete letter-to-sound mappings in segmented words” (Ball & Blachman, 1991, p.64). Teacher-facilitated connections seem to generalize or transfer to literacy tasks and result in immediate positive effects on reading and writing.
achievement (Cunningham, 1990; Eldredge & Baird, 1996). Systematic instruction is the best methodology for teaching component skills; however, the application of component skills requires instruction emphasizing the application and utility of the skill (Cunningham, 1990).

Kindergarten children who received both instruction in sound categorization and sound-symbol relationships, significantly outperform those children who receive phonemic training alone (Bradley & Bryant, 1983, 1985), or other traditional training such as alphabetic knowledge in isolation (Ball & Blachman, 1991). It has been hypothesized that such linking activities may help to generate a cognitive construct for the conventional alphabetic model of literacy, allowing children to conceptualize written language and organize component skills around this model (Fox & Routh, 1984).

Can Phonemic Awareness Training Support the Challenged Learner?

Although the literature on phonemic awareness provides promising leads for the classroom teacher in search of a more authentic and complete model of literacy teaching and learning, those studies which examine effects of training on the weakest readers and writers urge caution in applying a blanket description to all children (Vellutino et al., 1996). A recent meta-analysis of training programs assessing the effect size on phonological awareness showed that although the average training effects are substantial, those children in most need of this training do not substantially benefit (Wagner, Torgesen, & Rashotte, 1993). This finding suggests that the learning profile for children struggling with literacy differs from the average child and, as such, teaching methodology must be adjusted accordingly (Torgesen, Wagner, & Rashotte 1994).
Even where gains are made, typically these children require more time-on-task to grasp isolated phonemic skills as compared to their same age counterparts (Lundberg, 1988; Torgesen & Davis, 1996). These findings justify early intervention attempts to promote literacy, given that progress for the children in greatest need is slower than that of an average child.

Furthermore, unlike the results found with typical children, phonological awareness skills are not typically predictive of reading success for this category of children (Felton & Brown, 1990). Even where their phonological skills are better than average, many of these children remain weak readers (Vellutino et al., 1996). It is becoming increasingly clear that factors such as prior literacy experiences and education, class environment, the intensity, timing and duration of practice with literacy tasks and the ability to mediate components of the literacy process cognitively, all variably affect the impact of phonemic awareness on a child's early literacy progress.

Children who have been exposed to aspects of alphabetic knowledge and have had practice accessing related information from memory, will experience greater success with phonological tasks. The degree to which other pieces of the literacy puzzle are understood will also significantly effect the degree to which children understand phonemic tasks and their relevance to literacy (Torgeson & Davis, 1996). When phonemic skills are brought to a mastery level, and then applied in a systematic, intensive, extended application to reading and spelling, the greatest gains are made with those children experiencing the greatest literacy difficulties (Hatcher, Hulme, & Ellis, 1994; Vellutino et al., 1996). The more time on task that struggling children have to learn
and link phonemic awareness to other foundational literacy skills, the more likely that successes will result.

**How Does the Primary Teacher Apply Research to Classroom Learning?**

From such conclusions, it would seem reasonable that a considerable portion of the primary curriculum should be dedicated to explicitly teaching children about the links between phonemic awareness and alphabetic knowledge via a hands-on, diversified, experience-based program. Despite the clear need to teach phonemic awareness, some limitations exist when attempting to apply research to classroom practice.

Given that phonemic training research occurs in small groups of one to five children, it is difficult to determine the effect of this type of training on larger groups of children in classrooms of fifteen or more. Furthermore, training must take place on a regular basis for several periods each week over several months. Inclusion of this training into the kindergarten program might require a restructuring of current classroom routine. Is this feasible given current curricular demands? What resources and methodologies are best? Implementation requires a teacher to stay current with research and to continually modify beliefs about literacy and learning while juggling the demands of everyday classroom life. Such limiting factors may at least partially explain the delayed or imperfect implementation of phonemic awareness at the classroom level.

In the context of public education, how might this knowledge be implemented into a classroom and curriculum without causing undue disruption to the flow of learning already in place and yet achieve the goal of teaching and linking phonemic awareness to other aspects of early literacy? Practicality dictates that implementation would occur
most efficaciously within some teaching method currently in place in the kindergarten classroom. A familiar context would ease change for both the teacher and students as new content was learned. For this reason, the context of *play in centers* is examined as a potential medium for phonemic awareness learning.

**Linking Literacy Research and Classroom Practice: The Modified Learning Center**

For years, play, "the work of the child", has been the center of investigation in early childhood education. This familiar context provides diverse opportunities for child-directed investigation, interaction and risk-taking, which is essential for intellectual growth. As such, the early childhood play center offers an exciting potential for literacy learning, both to the child and to the educator.

Research has revealed that free play and the interactions which facilitate and extend play, may provide precursory literacy-related experiences which support the child on the path towards increasingly conventional literacy. Detailed studies of preschoolers' symbolic play note that the transformation of one object into another which occurs during a play sequence, may facilitate the understanding of the representational (symbolic) nature of the written alphabet (Galda, Pellegrini & Cox, 1989; Pellegrini, Galda, Dresden, & Cox, 1991; Vygotsky, 1978). In fact, the symbolic play of a three-and-a-half-year-old child, predicts writing ability at the age of five. (Pellegrini & Galda, 1991).

Oral language, which also dominates symbolic play, both inside and outside of the play sequence itself, generates opportunities to use linguistic verbs such as *talk*, *write*, and *read* (Dickinson & Moreton, 1991), which suggests a child's understanding that written words can be manipulated as objects. The ability to talk about language as an
object also has predictive value in learning to read (Galda et al., 1989; Pellegrini et al., 1991). Furthermore, given that center play is a context where talk is already analyzed as an object, the use of this setting for phonemic training is a natural choice.

The verbal interactions, which take place around play, serve to extend and elaborate the play sequences (Doyle, Deehring, Tessier, de Lorimier, & Shapiro, 1992). Child dialogue intended to define play has been referred to as *conceptual conflict* (Piaget, 1983; Williamson & Silvern, 1991). This conflict characteristic of peer play encourages children to “go meta”, in order to negotiate the direction of play as it unfolds. When this occurs, children are, in effect, standing outside the play and orally manipulating it. Such experiences seem to provide children with foundations upon which to build conventional literacy concepts, such as the use of phonemic awareness. These mediating abilities will ultimately allow skilled readers to manipulate, access and control meaning through the written word. Such abilities are increasingly being highlighted as critical skills for the integration of phonemic awareness into the literacy acquisition puzzle (Malicky & Norman, 1999; Tunmer et al., 1988).

Recognizing the learning potential in a child’s natural inclination to play, early childhood educators have typically incorporated learning centers, which facilitate and extend play, into the preschool and kindergarten classroom. Given that play in centers promotes conceptual perspectives required for building and deciphering written language, center play has evolved to directly promote early literacy as well. Contexts, which are literacy-focused, are currently used in the learning centers of many kindergarten classrooms. Although such literacy-based experiences alert children to the presence of literacy in their world as the reviews of classroom environments suggest
(Weinstein, 1979; Petrakos & Howe, 1996), there is a limited understanding of how the physical features of the classroom influence learning (Neuman & Roskos, 1992; Troyer & Yopp, 1990; Petrakos & Howe, 1996).

In response to this need, Neuman and Roskos (1992) conducted an investigation, describing classroom ecology, learning centers and manipulatives as factors influencing early literacy. In a quasi-experimental study of two preschool classrooms, the effects of introducing an abundance of literacy-related objects into four familiar play settings were assessed. By means of observation across seven months, the children's play themes and their usages of objects during play were recorded.

Students from the classroom with an abundance of purposefully selected literacy-related articles more frequently engaged in literacy-related play than did those children who did not have literacy-dependent centers in their classrooms. Furthermore, these students used oral language to designate names of objects, negotiate meaning, and coach peers in some literacy tasks more often during play than the children in the control group. Literacy objects and settings appeared to serve as "pivots supporting the play and assisting the use of language over action as a means of conveying meaning about literacy" (Neuman & Roskos, 1992, p. 221).

Such literacy experiences, created by restructuring classroom settings and providing more literacy objects, were valuable "run-ups" (Bruner, 1984) to conventional literacy for the child endeavoring to make sense of written language as a "pattern of discourse" (Goelman, 1984). These settings and literacy objects created opportunities to develop new "strategies, associations and behavioral prototypes" which could later be implemented in other literacy contexts.
Despite the clear value of classroom design in creating a context for literacy exploration, this factor alone, did not directly facilitate conventional literacy acquisition. "This study makes no claim that increased frequencies in literacy-enriched play directly impacts the broad array of abilities associated with literacy achievement" (Neuman & Roskos, 1992, p. 221).

Neuman and Roskos also argue that research into the role of the adult in assisting and enriching literacy learning is sorely needed. Support for this claim is generated by the conflicting findings regarding the effect of adult intervention in literacy learning. Depending on the context and desired learning outcomes, adult intervention may be a help or a hindrance to the literacy process. Because internal control and intrinsic motivation are fundamental to the definition of play (Garvey, 1977), findings suggest that adult intervention in symbolic play suppresses a child's demonstrations of symbolic competence and language usage (Dickinson & Moreton, 1991; Pellegrini & Galda, 1993). This clearly is undesirable in the interest of developing the precursory knowledge associated with reading and writing. Conversely, however, in skill-oriented tasks (Tudge & Rogoff, 1989) and print-related tasks (Dickinson & Moreton, 1991), adult-intervention has met with positive results. In summary, the acquisition of language functions, such as phonemic awareness, are heavily dependent on adult input whereas the exercising of language functions, such as language in play, are not.

Adult intervention has brought about desirable results also in the context of young readers learning to decode at the word and phoneme level. Efficient decoding is an automated basic skill which allows the reader to "crack the code of print and make it meaningful" (Gagne et al., 1993). Practice in decoding, under the supervision and
guidance of a superior reader, has repeatedly demonstrated gains in decoding (Ball & Blachman, 1991; Hohn & Ehri, 1983; Marsh & Mineo, 1977; Williams, 1980; Yopp & Troyer, 1992).

Kindergartens are typically seen as transitional domains, which assist young children in making the move from home to school. Routines are established and appropriate socialization techniques are developed and reinforced. Much credence is given to developmentally appropriate practices, and yet there seems to be vast discrepancies in teachers' individual understandings of this notion and even greater variations in methodological attempts to put associated theories into practice.

Literacy teaching all too often fails to integrate the full range of skills, methodologies for teaching, learning and connecting knowledge, focussing too closely on a few skills and methodologies. The formation of letters, recognition of alphabet letters, including upper and lower case, and sound-symbol associations in isolation are stressed. Not only do such methodologies fail to explicate links, but they are not developmentally appropriate in the kindergarten classroom, as they fail to consider the conceptual orientation of the child. At the other end of the spectrum, whole language, promoting functions of literacy, story structure, and picture to word relationships, develops concepts about written language, but does not help children to become proficient in the mechanics of accessing meaning from print. As a result, only modest gains in literacy can be anticipated in this first year of formal education.

With creativity, reflection and some training, however, it does not seem impossible to unite the all of the above objectives. According to Troyer and Yopp (1992), this possibility should become a mandate. “In order for fewer students to be labeled ‘at
risk' in reading as they progress through the elementary grades, it is necessary for kindergarten teachers to become and remain knowledgeable about current conceptualizations of the [literacy] process" (p.39). In order for intervention to be optimally effective, methodologies must also be in keeping with the dictates of the National Association for the Education of Young Children's guidelines for developmentally appropriate practice (1996-97).

The question underpinning this study is, "How might a kindergarten teacher develop a methodology that both maximizes the benefits of literacy instruction and yet maintains developmental appropriateness?" Is literacy naturally learned or must it be taught? Clearly, if programs to promote phonemic awareness are to be optimally implemented, their important role in the beginning stages of literacy acquisition must continue to be described and understood in the classroom setting.

Statement of the Problem and Significance of the Study

This study was designed to determine the effects of modified center-play on the development of phonemic awareness as a component skill of literacy. Research indicates that although phonemic skills are successfully taught to challenged learners in small group settings (Vellutino et al., 1996), the implementation of phonemic awareness programs should be further investigated at the classroom level. The transfer of these critical skills must be thoroughly explored at the starting point in early childhood education if the literacy ability of high school graduates is to be significantly augmented.

It was the intention of this study, then, to seek out a teaching strategy which optimally implements research findings on phonemic awareness, while recognizing the
demands and limitations of the kindergarten classroom. As such, center play was modified in an effort to facilitate phonemic awareness and literacy, using a classroom feature which is both familiar and accessible: the learning center.

In accord with research findings suggesting that the acquisition of component skills are best learned when overseen by an adult, phonemic skills were introduced in a teacher-directed center. The life-story of a main puppet-character was designed to engage and involve children in a meaningful drama which sustained interest while phonemic principles were taught and proficiency was gained.

The application of phonemic skills to literacy tasks took place through a discovery methodology at a child-directed center. These centers were designed to extend and elaborate on the drama which initiated literacy investigation at the teacher-directed center. The office and library centers provided approximations of real-life literacy locations for participants to explore and connect personal literacy knowledge to center-based tasks and games. While connections between literacy and phonemic awareness were not explicitly taught, the child-directed play centers included activities which require children to make these connections.

It was hypothesized that as a result of center play, growth in phonemic awareness would occur and transfer to other literacy tasks. The process of implementing research into the classroom is often challenging due the demands of teaching which leave little opportunity for the teacher to design and evaluate methodology to implement critical research findings. This study was undertaken to investigate the modified learning center hypothesis in a systematic manner. It is hoped that this study will contribute towards the development of research-based early literacy programs and empower kindergarten
teachers in designing and assessing language arts programs which facilitate the literacy growth of students.

Vellutino et al. suggest that with extended, intensified literacy instruction, the thirty percent illiteracy rate could be reduced by as much as twenty percent. This study endeavors to examine the center-based method of literacy enhancement at the starting point in the literacy acquisition process, towards the larger, more challenging goal of improving societal literacy.

This study seeks to address the following questions:

1) Does an oral language, teacher-directed play center in a kindergarten classroom significantly increase phonemic awareness skills?

2) Are phonemic skills learned in an adult-directed learning center used and transferred to child-directed learning centers?

3) What is the effect of center-learned phonemic awareness on the development of a kindergartner’s emergent spelling when no direct links are taught between phonemic awareness and spelling?
Chapter III

Methodology

Participants

Thirty kindergarten children participated in this study (11 females and 19 males). Subjects were chosen according to non-probability sampling. Permission to participate was given by parents or guardians of the children who were given a newsletter detailing the proceedings of the study and were required to return a permission form (Appendix A). Of the thirty-one children, thirty parents gave permission for children to participate. Participants in the study attended either a morning (intervention group) or an afternoon kindergarten class (control), which was in session for two and one-half hours per day, Monday to Friday. Intervention took place during May and June of the 1998-99 kindergarten school year. Ten boys and six girls attended during the morning session while nine boys and five girls attended the afternoon class. The mean age of children in the morning class was 73.78 months and in the afternoon class, 71.68 months. Age differences were non-significant.

The same teacher taught both the morning and the afternoon classes. The classroom teacher has a Bachelor of Education degree and has taught for eight years. The daily programs taught for each class were identical; the exact lesson plans were followed for each class. Activities and methodologies were based on the curriculum prescribed by the Ministry of Education for British Columbia and incorporated elements of science, language arts, social studies, art, math, religion and physical education.

Classroom activities relating to literacy were plentiful and included many of the following: choral reading selections (big books, poems), alphabet games and puzzles, a
listening center, computer games, a book corner with a big comfortable chair, alphabet puppets, phonics, and story time (1-2 times) daily. The classroom endeavored to facilitate literacy using diverse teaching methods and materials. Lessons included elements of phonics, sight words, and printing, but also introduced a rich variety of literature, drama and dialogue to develop ideas. Journal writing took place four times each week in which invented spelling was encouraged on a subject of the child's choice. The teacher would write a sentence back to the children in response to their artwork and writing. Approximately twenty minutes per day were allocated for free play prior to intervention. During this time children were free to visit any one of the many centers in the room including library, writing, lego, puzzles, big blocks, painting, sandbox, sewing, sticks, house center, computers or invention table.

**Demographic Information**

Participants attended an independent public school, which is situated in a rural community. The surrounding area had access to a complete range of community services, including several libraries. Admission takes place through an application process and requires an interview with the principal. Upon entry to the school, a questionnaire is administered for each student in order to collect information regarding parental occupation, cultural background, primary language used in the home, religious orientation and job status. The school serves primarily English speaking, working class families with diverse cultural backgrounds. The majority of mothers are "stay-at-home" or run small businesses out of the home (Tupperware, Avon). The majority of fathers are self-employed or do shift work, while a small percentage of fathers and mothers work outside of the home as professionals in education, the police force or as entrepreneurs.
Measures

All tests were administered by the researcher. The classroom teacher initially introduced the researcher to the children as a teacher-helper. The researcher spent two days with the class as a participant prior to testing so children had some familiarity with the researcher. Parent-helpers were common in the school and children were comfortable with classroom visitors in this context. Each test was administered to children individually at a corner table in an isolated corner of the kindergarten classroom. The researcher administered both tests during the first hour of the day. Testing took place across two days prior to and over two days following intervention.

Phonemic awareness. The Yopp-Singer Phoneme Test (H. K. Yopp & H. Singer, 1988, Appendix B) was administered to both the morning and the afternoon classes as a pre- and post-test assessment of phonemic awareness. This test requires approximately ten minutes to administer. It is designed to measure the child’s ability to articulate the sounds of a word separately and in the correct order. Children are given instructions such as the following, "(Name), today we are going to play a different word game. I’m going to say a word, and I want you to break the word apart. You are going to tell me each sound in the word in order. For example, if I say old, you say o-l-d. Let’s try a few words together”.

Transfer and usage of phonemic skills in writing context. A Dictation Test, designed by S. Robinson and B. Watson (Clay, 1985), was used to measure each participant’s ability to transpose spoken sounds into written letters (Appendix B). This test was also administered
by the researcher as a pre- and posttest assessment of the effect of phonemic training. This measure indicates a child's ability to use phonemic knowledge in conjunction with alphabetic knowledge to approximate conventional spelling. The procedure is explained to the child as follows, "I am going to tell you a story and I want you to write it for me." A sentence is dictated to the child in full, and then word by word, allowing time for the child to write. Credit is given for attempts to represent each sound in the same order that it is heard, even if the word is not spelled conventionally.
Observations

Two children from each class were selected for observation by the classroom teacher according to high and low levels of literacy knowledge. Criteria for high and low levels of literacy were set by the classroom teacher, and included knowledge of letter-sound relationships, letter recognition, sight word vocabulary and writing ability during journal time. Observations took place in the intervention classroom following phonemic awareness instruction, during free play. Detailed, hand-written observations were collected two to three times per week for seven weeks by the researcher for a period of five to ten minutes on each occasion. Observations in the control group took place following the teacher-planned literacy lessons during free play. Each observation lasted for approximately five to ten minutes, during which time I took field notes of behaviors, materials used, oral language communications and interactions among students. The goal was to document literacy-related behaviors and communications for both the control and intervention groups.

The classroom teacher also kept informal records of observations of the target children, as well as behavior trends of both classes on days the researcher was absent. Following the same format as the researcher, detailed, hand-written observations were collected two to three times per week for seven weeks by the classroom teacher for a period of five minutes on each occasion. Observations took place during free play for the high and low literacy children in both classes and during other incidental classroom activities for other class members. Such observations took place during reading time, journal writing, and story circle.
Justification for Test Selection

In a study conducted to assess the reliability and validity of ten tests designed to operationalize the concept of phonemic awareness, Yopp (1988) concluded that two highly related factors requiring children to manipulate mentally individual sounds, underlie phonemic awareness tests. Factor 1 tests (Simple Phonemic Awareness) require a single operation, such as segmenting, blending or isolating a given sound. Factor 2 tests (Compound Phonemic Awareness) require subjects to hold in memory the resulting information acquired in factor 1 tests, such as an isolated sound, while performing yet another operation.

An example of a Factor 2 test would be the Bruce (1964) deletion test, in which the subject recalls the remaining sounds and then blends them. Combining the results of tests that measure these factors together has greater predictive validity for the beginning steps of reading acquisition than does any other test alone. Yopp found that the most reliable test, the Yopp-Singer phoneme segmentation test, also displayed a predictive correlation between phonemic awareness and subsequent rate of learning to read novel words. The most accurate measure of Compound Phonemic Awareness was provided by the Bruce (1964) Phoneme Deletion test. Among the Factor 2 tests, this analysis provided the highest predictive correlation with subsequent rate of learning to read novel words. Of additional interest is the fact that these two tests were ranked from moderately difficult (see Phoneme Segmentation Test, Yopp-Singer, 1992) to the most difficult of the tests assessed (Phoneme Deletion Test, Bruce, 1964).

The Dictation Test has not been assessed for reliability and validity.
Environment

Prior to intervention, the site's physical setting consisted of a book corner, a circle/story telling area, a housekeeping nook, and an art center and a three-tiered manipulative shelf full of blocks, puzzles, lego, alphabet letters and chalk boards which were placed along opposing walls of the classroom and comprise the majority of the centers. Large circular tables where children sat in fours were positioned in the center of the room. Two literacy-related centers already existed in the classroom. Several shelves contained numerous literacy-related objects, such as paper, pencil crayons, crayons, felt pens, scissors, glue as well as other 'office' supplies which were readily accessible to the children. A library center containing a variety of books including literature relating to the theme currently being studied was available to the children. There was some environmental print in the classroom including an alphabet, a weather chart, birthday lists, chart stories and lists of children's names.

The intervention classroom was modified to include two literacy-specific, child-directed learning centers that were available to children during the periods of free play. As such, the environment was largely unaltered and centers were placed where space permitted. Child-directed centers were integrated into the teacher-directed center in that several of the games and activities available at these centers were introduced in the teacher-directed center.

Phonemic awareness instruction that took place in the teacher-directed unit was built on the imaginary life of a frog puppet named Pagami. The frog's life generated a context for literacy play and it was hypothesized that this character would stimulate curiosity and draw children into an interactive play that demonstrated the functionality of different literacy
activities while engaging children as they developed phonemic skill. At no time were explicit connections made between written language and phonemic awareness. As well, Pagami, the frog puppet made reference to the child-directed centers, suggesting that they were replicas of the office and library in his town and asked children to use the resources there to help him with his various dilemmas. The control group did not have access to these literacy centers.

**Procedure**

Each week a different component of phonemic awareness was introduced. Three 20 minute sessions each week adhered to a specific phonemic component and followed a predetermined format: Lesson 1 : Story-Dilemma, 2: Song/Game, and 3: Literature/Writing Link. Each day after instruction in the teacher-directed center, children were given 20 minutes of free play at the child-directed centers. During this free play, the observations took place. (see Appendix C for complete unit plan).

**Lesson 1** centered on story telling and involved a problem, which served to purposefully introduce a phonemic concept or bridge from the previous week’s lessons. The puppet frog, Pagami, orally recounted a personal experience involving himself or neighbors and through classic story structure involving a dilemma, children would be drawn into the story, motivated to use phonemic knowledge and assist Pagami in solving his problem. For example, on one occasion when Pagami visited, he explained that his boss required a list of animals for the Alphabet Zoo that they were designing for the city, and Pagami needed a list of animals that began with a /b/ sound. Using this method, children appreciated why it might be important to listen for sounds in certain positions in words.

By weaving the phonemic concepts and skills into a character’s life, it was hoped that the children’s inherent empathy and curiosity for this new character would motivate
participants to become active in their own learning process. The story dilemma was intended to generate a function and need for the use of aspects of phonemic awareness. The use and practice with phonemic awareness would create opportunities to practice and experiment and over time result in greater proficiency.

Lesson 2 was based on a game or song designed to practice or experiment with specific phonemic skills introduced in Lesson one and which reinforced the week’s concept. Although the frog was not present during the second and third lessons, concepts and skills were linked back to lesson one and often children were questioned as to how Pagami would react or might think about not only the lesson itself, but also about events in classroom life. In this way, it was hoped that children would develop a familiarity with the frog who would return weekly and regularly ask for help and in doing so demonstrate the utility of the knowledge and skills being introduced.

Lesson 3 focussed on the use of the skill in the context of written language. Stories, posters, newspapers and poems were often read, or charts were made and discussed in the informal, teacher-led center. The skill or concept of the week was continually explored and reconsidered. This lesson often concluded with a letter read aloud (written on chart paper) or a taped phone call from Pagami detailing a difficulty he had had that week at the office, at home or in the town that again required the children’s input to resolve. The phonemic skills and knowledge gained that week were essential for solving the week’s dilemma. The literacy materials were organized at the free play learning centers for children’s use should they choose to help Pagami with the difficulty. When Pagami returned the following week, before the first lesson began, he would thank the children who chose to help, bring treats for all and a discussion of why and how their
contribution had helped him would serve to again reinforce and review the phonemic components from the previous week. This provided a logical springboard into the next week’s theme.

**Measurement and Scoring of Phonemic and Dictation Activities**

The data from both the phonemic and the dictation activities were hand-scored. The phonemic segmentation activity consisted of two and three phoneme words. Children received credit only if all phonemes were represented in the correct order for a given word. For the dictation activity, children were given credit for every sound correctly represented, even where the word was not spelled conventionally. For example, a child would be given credit for spelling *cans* as *canz*. The dictation activity score gives an indication of the child’s ability to analyze the word said or heard, and to represent the sounds as letters.

**Data Analysis**

The purpose of this study was twofold: the first intention was to examine the effect of teaching phonemic awareness to a full kindergarten class using learning centers. Independent-samples t-tests were used to conduct within-group analysis and between group analysis to compare the results for the children who received instruction against the those who did not. An independent samples t-test was also run to evaluate the change in pre- and posttest scores for the instructional group against the change in pre- and posttest scores for the control group.

The second intention of this study was to assess the transfer of phonemic awareness to literacy contexts, including an informal learning centers and a more structured writing context requiring conventional spelling.
Activity of two of the children in the free play learning centers was recorded as field notes detailing all behaviors. They were classified as literacy-related, literacy dependent or other and represented as percentages (For example, the number of literacy-related observations out of all observations for that child.) *Literacy-related* play included play behaviors that used literacy knowledge and skills periodically to facilitate a play sequence. Literacy was not an essential component of the play and literacy skills, including phonemic or alphabetic were only used in passing. *Literacy-dependent* observations included play that centered on communication through the written word and took place over one minute or more. *Other* simply indicated that play sequences in no way related to components of literacy.

Independent-samples t-tests were used to conduct within-group analysis and between group analysis to compare the results of the dictation tasks of children who received instruction with those who did not. An independent samples t-test was run to evaluate the change in pre- and posttest scores for the instructional group against the change in pre- and posttest scores for the control group. All statistical tests were evaluated using significance levels of \( p < .05 \).
Chapter IV

Results

Chronological Age

The children in the intervention group were compared to the children in the control group with respect to chronological age. Using an independent samples t-test, no significant difference was found \[t(28) = 1.783, p = .085\].

Phonemic Awareness

Independent samples t-tests were conducted as a means to assess the effect of phonemic training. Between-group comparisons of the instructional group and the control group revealed no significant differences on pretest measures \[t(28) = .362, p = .720\]. Independent samples t-test analysis comparing the posttest scores of the intervention group and the control group, however, revealed a significant difference between the two means \[t(28) = 2.818, p = .009\].

Within-group comparisons evaluated the phonemic knowledge for the intervention group prior to instruction and following seven weeks of instruction. Results revealed a significant difference \[t(30) = -3.263, p = .003\]. As predicted, there was no significant difference found for the control group means in the pre- and posttest measures \[t(26) = -1.446, p = .160\].
A comparison of the change in means between the intervention group and the instructional group was considered to minimize the effects of individual differences between the two groups. By subtracting the pretest phonemic score from the posttest phonemic score for each subject, a mean change value could be determined for each participant in the instructional group and the control group. These values were then used to determine a mean change value for each group. An independent samples t-test comparison of the mean change revealed a significant difference between the two groups \[ t(28) = 2.936, p = .006 \].

**Spelling Analysis - The Dictation Activity**

Independent samples t-tests were again conducted to assess ability to transfer and apply phonemic awareness to a conventional spelling task. Between-group comparisons of the instructional group and the control group revealed no significant differences on pretest measures \[ t(28) = -.164, p = .871 \]. Independent samples t-test analysis comparing the posttest scores of the intervention group and the control group revealed no significant posttest difference between the two means \[ t(28) = .219, p = .828 \].

Within-group comparisons evaluated the spelling knowledge for the intervention group prior to instruction and following instruction. Results revealed no significant difference \[ t(30) = -1.096, p = .282 \]. As expected, there was no significant difference found for the control group means in the pre- and posttest measures \[ t(26) = -1.001, p = .326 \].

A comparison of the change in means between the intervention group and the instructional group was also considered. By subtracting the pretest dictation score from
the posttest dictation score for each subject in the intervention group, a mean change value could be determined. Likewise, by subtracting the pretest dictation score from the posttest dictation score for the control group, a mean change value for the control group was determined. An independent samples t-test comparison of the mean change was produced using these values. Results revealed no significant differences in the two means 

\[ t(28) = .827, p = .415 \].

Table 1

Means, Standard Deviations and Ranges of Phonemic Awareness and Dictation Tasks

<table>
<thead>
<tr>
<th></th>
<th>Instructional Group</th>
<th>Control Group</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>SD</td>
</tr>
<tr>
<td>Phonemic Pretest</td>
<td>7.81</td>
<td>7.48</td>
</tr>
<tr>
<td>Phonemic Posttest</td>
<td>15.69</td>
<td>6.11</td>
</tr>
<tr>
<td>Dictation Pretest</td>
<td>18.50</td>
<td>11.14</td>
</tr>
<tr>
<td>Dictation Posttest</td>
<td>22.56</td>
<td>9.79</td>
</tr>
</tbody>
</table>

Note. Maximum score for Phonemic Test = 22. Maximum score for Dictation Test = 37.

Incidence of Literacy-Related Free Play: Observational Field Notes

The observations for this study took place during the free play periods of four children, two to three times per week, over seven weeks. One intervention, high-literacy (I-HL) and one intervention, low-literacy child (I-LL) were observed as well as one of each in the control group (C-HL, C-LL). As expected, the introduction of the literacy-
dependent centers into the intervention group's environment resulted in a higher incidence of literacy-related play for the intervention group children as compared to the control children. (See Tables 2a and 2b.)

**Literacy-related** play included play behaviors that used literacy knowledge and skills periodically to facilitate a play sequence within another theme. Literacy was not an essential component of the play and literacy skills, including phonemic or alphabetic were only used in passing. For example, during the course of building straw creations with a peer, the I-HL child called out, “Look! A giant H!”, while pointing to some straws that were connected.

**Literacy-dependent** observations included play that centered on communication through the written word and took place across one or more minutes. The C-HL child gathering an audience and reading the story, *Rapunzel* to peers, for example, was an example of a literacy-dependent observation.

Of the total observations made for the intervention children (see Table 3), seventy-three and one-half percent (25/34) were literacy-related or literacy-dependent as compared to twenty-three percent (6/26) for the control children. Of these literacy incidents for the intervention children, fifty-three percent (18/34) of the total observations were literacy-dependent and centered on communication through the written word as compared to only eight percent (2/26) of the total observations for the control group.

Although the high-literacy children seem to engage in literacy activities more frequently than their low-literacy group counterparts, (I-HL: 82%; I-LL: 65% and C-HL: 31%; C-LL: 15%), it is surprising that the frequency of literacy-related observations for the I-LL (65%) child is more than twice that of the C-HL child.
**Table 2a**

**Summary of Free Play Observations: Literacy-Related Activity**

<table>
<thead>
<tr>
<th>High-Literacy Target Children</th>
<th>Low-Literacy Target Children</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intervention</td>
<td>Control</td>
</tr>
<tr>
<td>W-reading/writing</td>
<td>Lb-reading to peers</td>
</tr>
<tr>
<td>W-blending game</td>
<td>Lightbright-spells name</td>
</tr>
<tr>
<td>W-writing</td>
<td>Lb-reading</td>
</tr>
<tr>
<td>Lb-writing</td>
<td>Bingo</td>
</tr>
<tr>
<td>W-sound game</td>
<td>W-spelling</td>
</tr>
<tr>
<td>W-writing</td>
<td></td>
</tr>
<tr>
<td>Lb-read</td>
<td></td>
</tr>
<tr>
<td>W-writing</td>
<td></td>
</tr>
<tr>
<td>Lb-spelling game</td>
<td></td>
</tr>
<tr>
<td>Lb-read</td>
<td></td>
</tr>
<tr>
<td>W-writing</td>
<td></td>
</tr>
<tr>
<td>W-writing</td>
<td></td>
</tr>
<tr>
<td>Lb-writing</td>
<td></td>
</tr>
<tr>
<td>W-sound game</td>
<td></td>
</tr>
<tr>
<td>W-writing</td>
<td></td>
</tr>
<tr>
<td>Lb-reading</td>
<td></td>
</tr>
<tr>
<td>W-writing</td>
<td></td>
</tr>
</tbody>
</table>

**Note.** Abbreviations for Learning Centers:
- **W** = writing center
- **B** = blocks
- **Lb** = library center
- **In** = inventions center
- **P** = puzzle shelf
- **Hs** = house center
- **T** = truck corner
- **S** = sandbox
- **St** = sticks

**Table 2b**

**Summary of Free Play Observations: Activities Unrelated to Literacy**

<table>
<thead>
<tr>
<th>High-Literacy Target Children</th>
<th>Low-Literacy Target Children</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intervention</td>
<td>Control</td>
</tr>
<tr>
<td>S-building w/ peer</td>
<td>Puzzle</td>
</tr>
<tr>
<td>B-peer building</td>
<td>Hs-peer play</td>
</tr>
<tr>
<td>St-w/peer</td>
<td>Hs-peer play</td>
</tr>
<tr>
<td></td>
<td>Hs-peer play</td>
</tr>
<tr>
<td></td>
<td>Hs-peer play</td>
</tr>
<tr>
<td></td>
<td>In-peer interaction</td>
</tr>
<tr>
<td></td>
<td>Sewing</td>
</tr>
<tr>
<td></td>
<td>Painting</td>
</tr>
<tr>
<td></td>
<td>Hs-peer play</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Note.** Abbreviations for Learning Centers:
- **W** = writing center
- **B** = blocks
- **Lb** = library center
- **In** = inventions center
- **P** = puzzle shelf
- **Hs** = house center
- **T** = truck corner
- **S** = sandbox
- **St** = sticks
Table 3

Comparisons of Observed Free Play Behaviors

<table>
<thead>
<tr>
<th></th>
<th>I-HL</th>
<th>C-HL</th>
<th>I-LL</th>
<th>C-LL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Observations</td>
<td>17</td>
<td>13</td>
<td>17</td>
<td>13</td>
</tr>
<tr>
<td>Literacy-Related Or Dependent</td>
<td>14/17 (82%)</td>
<td>4/13 (31%)</td>
<td>11/17 (65%)</td>
<td>2/13 (15%)</td>
</tr>
<tr>
<td>Other Center-play Activities</td>
<td>3/17 (18%)</td>
<td>9/13 (69%)</td>
<td>6/17 (35%)</td>
<td>11/13 (85%)</td>
</tr>
<tr>
<td>Total Literacy Observations</td>
<td>25/34 (73.5%)</td>
<td>6/26 (23%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Literacy-Dependent Observations</td>
<td>18/34 (53%)</td>
<td>2/26 (8%)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: I-HL = Intervention group, High-Literacy Child
I-LL = Intervention group, Low-Literacy Child
C-HL = Control Group, High Literacy Child
C-LL = Control Group, Low-Literacy Child
The higher incidence of literacy-related play may be due to the increased accessibility of literacy materials (Neuman & Roskos, 1992), an understanding of the utility of literacy activities and materials in play due to the intervention (Cunningham, 1990), the enjoyment derived from engaging in meaningful literacy tasks (Jensen, 1996), or a combination of several of the above factors.

Literacy tasks of the low literacy children in both groups (labeling, listing, naming family members and spelling items in pictures) diverged greatly in complexity from the activities of the high literacy children in both groups (reading, writing sentences in response to questions and coaching others in literacy games). Never-the-less, both children in the intervention group seemed to favored literacy-dependent activities during free play throughout the intervention (see Table 4). Almost three-quarters of free play in the intervention group involved aspects of literacy.

**Phonemic Awareness Usage During Literacy Activities**

Phonemic test results indicated that children in the intervention group clearly possessed a phonemic skill superior to their control group counterparts. The field observations further suggest that both high and low literacy children in the intervention group recognized and endeavored to apply phonemic knowledge and skills in literacy activities during the child-directed free play. When engaged in literacy-related activities, both the high-literacy and the low-literacy children in the intervention group (Table 4), used phonemic awareness skills and knowledge regularly during literacy activities (I-HL:86%, 12/14 literacy-related observations;
Table 4

Chronological Representation of Children’s Free Play Choices

<table>
<thead>
<tr>
<th>Date</th>
<th>I-HL</th>
<th>C-HL</th>
<th>I-LL</th>
<th>C-LL</th>
</tr>
</thead>
<tbody>
<tr>
<td>May 16</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>May 18</td>
<td>LD (ph)</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>May 20</td>
<td>LD (ph)</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>May 26</td>
<td>LD (ph)</td>
<td>O</td>
<td>LR (ph)</td>
<td>O</td>
</tr>
<tr>
<td>May 27</td>
<td>LD (ph)</td>
<td>O</td>
<td></td>
<td></td>
</tr>
<tr>
<td>May 28</td>
<td>LD (ph)</td>
<td>LR</td>
<td>LD (ph)</td>
<td>LR</td>
</tr>
<tr>
<td>May 31</td>
<td>LD (ph)</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>June 2</td>
<td>O</td>
<td>LD</td>
<td>LD</td>
<td>O</td>
</tr>
<tr>
<td>June 4</td>
<td>LD (ph)</td>
<td>O</td>
<td>LR</td>
<td>O</td>
</tr>
<tr>
<td>June 7</td>
<td>LD (ph)</td>
<td>LR</td>
<td>LD (ph)</td>
<td>O</td>
</tr>
<tr>
<td>June 8</td>
<td>LD (ph)</td>
<td>LR</td>
<td></td>
<td></td>
</tr>
<tr>
<td>June 10</td>
<td>LD</td>
<td></td>
<td>LR (ph)</td>
<td></td>
</tr>
<tr>
<td>June 14</td>
<td>O</td>
<td></td>
<td>LR (ph)</td>
<td></td>
</tr>
<tr>
<td>June 15</td>
<td>LD (ph)</td>
<td>O</td>
<td>LD (ph)</td>
<td>O</td>
</tr>
<tr>
<td>June 16</td>
<td>LD (ph)</td>
<td>LD</td>
<td>LR (ph)</td>
<td>O</td>
</tr>
<tr>
<td>June 17</td>
<td>LD (ph)</td>
<td>O</td>
<td>LD (ph)</td>
<td>O</td>
</tr>
<tr>
<td>June 18</td>
<td>LR</td>
<td>O</td>
<td></td>
<td>LR</td>
</tr>
</tbody>
</table>

TOTAL OBS: 17 13 17 13

LITERACY-RELATED 14 (82%) 4 (31%) 11 (65%) 2 (15%)

OTHER: 3 9 6 11

Phonemic Usage in Literacy Play 12/14 (86%) 0 8/11 (73%) 0

Note. LD = literacy dependent
       LR = literacy related, but not the center of play
       O = other; not related to literacy
       (ph) = phonemic skills used during play
I-LL: 73%, 8/11 literacy-related observations. It would seem that the intervention children, then, not only possessed phonemic skills and knowledge, but recognized the function of these skills in the literacy contexts, and endeavored to apply them in the majority of all literacy activities.

Changes in Frequency of Literacy Behaviors Across Intervention

Although conventional spelling was not significantly affected, observations suggest that positive literacy growth was occurring. The children in the intervention group, as evidenced both in the observational field notes and in the informal observations of the classroom teacher, demonstrated a heightened interest in literacy activities and an increased usage of phonemic awareness during free play literacy activities. The classroom teacher remarked on this development.

Children from the [intervention] group seemed to know their sounds better and showed greater frequency and confidence in sounding out words during literacy activities. In addition, the journal entries from the [intervention] group were much more detailed, involving more writing . . . students generally displayed a greater awareness of sound/symbol correspondences. Those who were not at this level seemed to employ more alphabet letters randomly in their work than previously. (Mrs. X, personal communication, July 16, 1999)

As time passed, children in the intervention group increasingly chose literacy activities in their free play (see Table 4). This transition is particularly marked for the low-literacy child. During the first half of the intervention, the low-literacy child engaged in literacy activities in thirty-seven and one-half percent of the free play observations (3/8), whereas eighty-nine percent of free play choices involved literacy-related activity during the final half of the intervention (8/9). This finding greatly
contrasts the free play literacy behaviors of the control children, which remain consistent throughout the observations (C-HL: 31%; C-LL: 15%).

**Modified Learning Centers and the Challenged Learner**

An unexpected outcome of this study appears to emerge when considering the challenged learner; those children who scored in the lower half of the phonemic and dictation test results. Analysis of data suggests that the greatest gains between pre- and posttest measures were achieved by the lower half of learners who received intervention instruction.

Assessment of the change between pre- and posttest means for both the phonemic and the dictation task (see Table 5), reveals that the greatest gain, although nonsignificant, was consistently achieved by the children with the least-developed literacy knowledge (See Appendix D for a complete listing of pretest-posttest scores).

<table>
<thead>
<tr>
<th></th>
<th>Upper Half of Scores</th>
<th>Lower Half of Scores</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Phonemic Task</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intervention</td>
<td>+27%</td>
<td>+44%</td>
</tr>
<tr>
<td>Control</td>
<td>+6%</td>
<td>+19.5%</td>
</tr>
<tr>
<td><strong>Dictation Task</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intervention</td>
<td>+7%</td>
<td>+15%</td>
</tr>
<tr>
<td>Control</td>
<td>+6%</td>
<td>+10%</td>
</tr>
</tbody>
</table>
Observations of individual high and low-literacy children further support this apparent trend, suggesting that the greatest increase in literacy-related play and the use of phonemic awareness during free play again emerged in the observations of the low-literacy child who received instruction (see Tables 6 and 7). Furthermore, the frequency of the selection of literacy activities during free play and the use of phonemic awareness for the low-literacy child not only dramatically increased but tended to mirror the profile of the high-literacy child in the second-half of the intervention (8/9 free play observations are literacy-related for both I-HL and I-LL, while 6/9 free play observations for both the I-HL and the I-LL children involve attempts to use phonemic awareness during literacy activity).

Table 6

Changes in Literacy-Related Activity

<table>
<thead>
<tr>
<th></th>
<th>I-HL</th>
<th>C-HL</th>
<th>I-LL</th>
<th>C-LL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Literacy-Related</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Observations</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>May 16-June 2</td>
<td>6/8 (75%)</td>
<td>2/7 (28.5%)</td>
<td>3/8 (37.5%)</td>
<td>1/7 (12.5%)</td>
</tr>
<tr>
<td>Literacy-Related</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Observations</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>June 4-June 18</td>
<td>8/9 (89%)</td>
<td>2/6 (33%)</td>
<td>8/9 (89%)</td>
<td>1/6 (17%)</td>
</tr>
<tr>
<td>Change in Literacy</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Related Observations</td>
<td>+14%</td>
<td>+4.5%</td>
<td>+51.5%</td>
<td>+4.5%</td>
</tr>
</tbody>
</table>
Table 7
Changes in Use of Phonemic Awareness During Literacy-Related Activity

<table>
<thead>
<tr>
<th></th>
<th>I-HL</th>
<th>I-LL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phonemic Usage</td>
<td>6/8 (75%)</td>
<td>2/7 (28.5%)</td>
</tr>
<tr>
<td>In Literacy Activities</td>
<td></td>
<td></td>
</tr>
<tr>
<td>May 16-June 2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Phonemic Usage</td>
<td>6/9 (67%)</td>
<td>6/9 (67%)</td>
</tr>
<tr>
<td>In Literacy Activities</td>
<td></td>
<td></td>
</tr>
<tr>
<td>June 4-June 18</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Change in Phonemic Usage</td>
<td>-8%</td>
<td>+38.5%</td>
</tr>
<tr>
<td>In Literacy Activities</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Assessment of Teaching Strategy on Phonemic Awareness and Literacy

In summary, the results of this study provide some insight into the questions posed regarding the effect of this teaching strategy on the relationship of phonemic awareness and literacy. Does an oral language, teacher-directed play center in a kindergarten classroom significantly increase phonemic awareness skills? Statistical analysis indicates that the teacher-directed play center significantly increased phonemic skills using a story-centered, adult-directed play center. Are the phonemic skills learned in an adult-directed learning center transferred to and used in child-directed learning centers? Observational analysis clearly indicates that children in the intervention group implemented phonemic skills in eighty percent of the literacy-related free play (20/25 observations). Therefore, phonemic skills were being transferred and used by children in the intervention group. Children in the control group who did not receive instruction were not observed to use phonemic skills at any time. What is the effect of center-learned phonemic awareness on the development of a kindergartner's emergent spelling when no direct links are taught between phonemic
awareness and spelling? Statistical analysis reveals that although the intervention group made the greatest spelling gains and the incidence of literacy activity dramatically increased, conventional spelling was not significantly affected by this teaching strategy.
Chapter V
Discussion

The purpose of this study was to assess the effect of modified learning centers on the development of phonemic awareness and emergent spelling within an existing kindergarten program. Previous research suggests that the inclusion of literacy-dependent learning centers into a classroom setting effectively increases the quantity of literacy-related behaviors and the purposeful selection of literacy-related objects. (Neuman & Roskos, 1992). Specific skills and knowledge required for conventional literacy, however, seem not to be significantly influenced by free play alone in literacy-dependent centers.

Research has demonstrated that phonemic awareness skills are readily learned in small, teacher-guided contexts, which are isolated from everyday classroom proceedings (Ball & Blachman, 1991). The use of play centers for introducing phonemic awareness into a typical classroom and its associated effect on spelling had not been assessed. It was hypothesized that learning in modified learning centers, attempting to capitalize on the advantages of both literacy-rich environments and adult intervention, would significantly develop phonemic awareness and the acquisition of conventional literacy, namely spelling.

There are several important findings in this study. Firstly, the adult-directed learning center incorporated into a typical classroom setting, significantly improved components of phonemic awareness including phonemic blending, sound isolation, and segmenting, as indicated by significantly improved phonemic scores. Secondly, the
phonemic skills learned in the adult-directed learning center were transferred to and used in the child-directed learning center as indicated by a dramatic increase in the use of literacy activities and the inclusion of phonemic skills during the majority of these play sequences, as indicated by the observational records of the researcher and the classroom teacher. Thirdly, the inclusion of literacy-specific modified learning centers into the free-play setting did not significantly improve conventional spelling after seven weeks of intervention, although an unexpected apparent trend suggesting a growing literacy confidence and subsequent increased usage of literacy tools and phonemic skills for low-level literacy children seemed to emerge as a result of this teaching strategy.

Modified Learning Centers and Phonemic Awareness

Systematic instruction in the teacher-directed learning center resulted in a significantly higher level of phonemic awareness as indicated by the results. Significant gains were achieved on within-group scores for the intervention group and on between-group results on the intervention and control groups posttest scores.

In this study, proficiency with phonemic awareness was attainable within a comparable time frame as compared to the more costly small-group teacher-directed settings. Given that phonemic awareness is imperative for early literacy, this finding is promising because it contributes to the body of research required to fully implement the goal of classroom phonemic awareness instruction as a component of a well-rounded kindergarten language arts program in a regular class, without dramatically altering an established language arts program.
Modified Learning Centers and Conventional Spelling

Results indicated that no significant within-group or between-group changes in spelling ability occurred as evidenced by the scores on the dictation activity. Although the intervention group achieved a higher level of phonemic awareness, this ability did not manifest in spelling scores. This finding, which concurs with the conclusions of previous studies (Malicky & Norman, 1999), stresses the necessity of teaching not only the transfer and usage of phonemic skills within a literacy context but perhaps more importantly, teaching associated knowledge, such as graphophonemic skills, which also are connected intimately to the larger, more challenging goal of conventional literacy.

Children in the intervention group clearly possessed a superior phonemic skill level as indicated by the phonemic tests results. The field observations further suggest that children in both the high and low literacy categories recognized and endeavored to apply phonemic knowledge and skills in literacy activities during the child-directed free play. Intervention children indeed possessed phonemic skills and knowledge, recognized to at least some degree, the utility of phonemic awareness in the literacy contexts, and frequently endeavored to apply known skills.

An alternate explanation, then, considers the role of other literacy skills and knowledge, in addition to phonemic awareness, which also must attain a threshold level for conventional spelling to result (Gagne et al., 1993). The many components of written language are intimately connected and impact on every other component. Therefore, the ability of phonemic awareness to augment conventional spelling performance is directly impacted by other skills and knowledge necessary for conventional spelling. Where one of the component skills is formative, the effect of phonemic awareness regardless of how
developed, will be marginalized when the end product, conventional spelling, is the assessing instrument.

The Developmental Literacy Map (Figure 1) proposes components of the literacy process and their possible relationship to each other based on the findings of studies considered in this thesis. (Methodologies and experiences actualizing these literacy components are not included). It is suggested that conventional spelling would be influenced by all components surround it. Therefore, phonemic awareness of words (left) and graphophonemic knowledge (vertically below) both variably influence conventional spelling.

Other components shaping conventional spelling are represented by elements on the diagonals in relationship to a particular element. It can be seen, then, how it might be that phonemic skills, which were taught in this study, although influential, may not significantly impact on conventional spelling; phonemic awareness is only one of several important elements required for conventional literacy.

Correspondence with the kindergarten teacher further supports this hypothesis explaining inability of phonemic awareness instruction to impact on conventional spelling:

Prior to phonemic awareness activities with Nicole, students had adequate exposure to alphabet letters and sounds. . . 95% of the students could recognize the alphabet in its entirety. . . [only] a small percentage of the children could link the letters to their corresponding sounds. . . this was a skill that needed work with many children. (Mrs. X, personal communication, July 16, 1999)

This information supports the hypothesis that because graphophonemic knowledge of the majority of the children in this study was formative, it is plausible that this factor could account in part, for the nonsignificant spelling results.
**Developmental Literacy Map**

<table>
<thead>
<tr>
<th>SPOKEN LANGUAGE</th>
<th>WRITTEN LANGUAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Infant</strong></td>
<td>oral sounds</td>
</tr>
<tr>
<td>Development</td>
<td>Oral words</td>
</tr>
<tr>
<td></td>
<td>representing ideas</td>
</tr>
<tr>
<td></td>
<td>Simple oral sentences</td>
</tr>
<tr>
<td><strong>Early</strong></td>
<td>Increasingly complex</td>
</tr>
<tr>
<td><strong>Childhood</strong></td>
<td>oral sentences</td>
</tr>
<tr>
<td><strong>Meaning Focussed</strong></td>
<td>(concept represented)</td>
</tr>
<tr>
<td></td>
<td>written sentences</td>
</tr>
<tr>
<td></td>
<td>represent thoughts</td>
</tr>
<tr>
<td><strong>IN CONTEXT</strong></td>
<td>written word</td>
</tr>
<tr>
<td>of language</td>
<td>represents</td>
</tr>
<tr>
<td></td>
<td>an idea/concept</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PHONEMIC AWARENESS</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Early</strong></td>
<td>Awareness that oral</td>
</tr>
<tr>
<td><strong>Childhood</strong></td>
<td>sentences composed of</td>
</tr>
<tr>
<td></td>
<td>words</td>
</tr>
<tr>
<td><strong>Focus on Form</strong></td>
<td>Awareness that oral</td>
</tr>
<tr>
<td>of Language</td>
<td>words composed of</td>
</tr>
<tr>
<td></td>
<td>sounds</td>
</tr>
<tr>
<td><strong>MAY NOT</strong></td>
<td>conventional spelling</td>
</tr>
<tr>
<td><strong>BE IN</strong></td>
<td>form of written word</td>
</tr>
<tr>
<td><strong>CONTEXT</strong></td>
<td>letter-sound relationships</td>
</tr>
<tr>
<td>(ie. isolated</td>
<td>graphophonemic skills</td>
</tr>
<tr>
<td>skills)</td>
<td></td>
</tr>
</tbody>
</table>

oral sound manipulation phonemic awareness
Observations further revealed that during more than half (9/16) of the posttest dictation tasks, children in the intervention group were recorded as accurately identifying specific sounds, but could not access the corresponding letter in memory. In an effort to spell 'shop', one child became animated as he endeavored to recall the associated letters by detailing the events of the lesson where the sound /sh/ had been introduced. “Remember? The librarian in that story! Sh, sh, sh”, putting his hands on his head in frustration, “You remember! Oh, what letters were they again?”

These findings suggest that further investigation into the modified learning centers as a means of stimulating the use and transfer of phonemic skills to literacy contexts must be further developed. As research indicates, systematic instruction which explicitly teaches the complete letter-to-sound mappings in words is the most “pedagogically sound method” for augmenting early spelling and reading (Cunningham, 1990; Eldredge & Baird, 1996). These findings also seem to correspond with research studies which have found that although phonemic awareness had no immediate effect on the spelling performance of low-literacy kindergarten children, trained children who developed graphophonemic skills significantly outperform the untrained children the following year on measures of spelling skills (Lundberg et al., 1988). This study also deduces that only when all required literacy elements are developed to a sufficient level, is conventional literacy attained. A literacy map, in which the teacher is aware of all knowledge, skills and their relationships, is required to reach the finally destination of conventional literacy.

In summary, observations offered by the kindergarten teacher, coupled with the free play observations of the researcher, seem to suggest that children in the intervention
class recognized increasingly the relationship of letters and sounds and were striving to 
use phonemic awareness during attempts to spell, even though the results were not yet at 
the level of convention spelling, and did not register a significant result.

Participant-Drama as Motivational Strategy for Low-Literacy Learners

Because the literacy exercises were embedded into the everyday life and activities of 
the frog puppet, they were contextualized and given meaning for the children (Jensen, 
1996). The following excerpt details how the frog puppet’s interaction with the children 
was a catalyst for engaging in meaningful, easily accessible literacy-dependent tasks.

During this interaction, the low-literacy instructed child sought to respond to a letter from 
the frog, Pagami, who was requesting help from the child:

Pagami had written to children who had written to him last week. During the 
White Rock flood, I had misplaced Pagami, so I told the children an elaborate story 
about how he had to go to the hospital to have a wart removed from his tongue. He 
had asked for help from some of the children in the letters, made little puzzles and 
games for others and discussed topics of potential interest, such as frog ball and T-
ball. Each letter attempted to target individual skills, knowledge and interest levels.

In the previous letters to the I-LL child, Pagami had been discussing a house that 
he had been building at work for two mice (a picture of them had been included). He 
now needed a list of items that he should put into this house to make it special. The 
child had previously drawn a picture of the house that he should build. (Topic 
selected as child spends much time at house center in classroom.)

Today she crossed the room, took my hand and said, “Help me read this letter”.

And afterwards announced, “But I already drew him a picture!”

“No”, I said, “I think he wants a list of things to put in the house”.

“Oh” (long pause). Do I have to write them?”

“That’s what Pagami wants, but I could help you! Should we try? Maybe we 
could just put a few important things”. Child and I worked through “t.v., bed, fridge 
and dog”, using principles of phonemic awareness.

“We need a couch. O.K? How do you spell it?”

“What is the first sound you hear in couch?”

“/c/ /c/ /c/”.

“Right! So what letter?”
Suspiciously, with eyebrow raised, “C or K?”
“What do you think?”
“C?” says child.
“Right!” The dialogue continues in this manner. For some sounds child now recognizes orally, she does not know the letters or letter combinations. However, she seems much more confident about offering a guess for the sound she hears. Earlier on in the intervention she would say, “I don’t know.” Now, there seems to be an increased willingness to make a guess. Classroom teacher has noticed a change as well.

The child desired to help a peer in need, which motivated her to engage in literacy tasks. Because these tasks were embedded within a story-dilemma structure brought to life in a familiar context, a purpose was generated. The solution to the problem required the child’s participation, which stressed the value of engaging in the literacy tasks. Conversely, for children in the control group, such motivators were not present. As a result, literacy-related play was less frequent.

The intervention group, high-literacy child also demonstrated this desire to help Pagami, the frog puppet, on numerous occasions. When dialoguing with peers during free play, the I-HL child states, “He told us he needs to practice his reading. Use the words. I’m not doin’ pictures.” The low-literacy child also seems to develop an empathy for the frog. On one occasion when the literacy centers were closed during free play, she remarked to the classroom teacher, “Well, who is going to write to Pagami? It’s gonna make him sad if he gets no letters.”

The lack of confidence for the low-literacy children and the discomfort produced by the literacy context was apparent for both observed low-literacy children. The control group, low-literacy child rarely engaged in literacy activities and when he did, became quickly frustrated. On attempting to write “slurpee” during journal time, his discomfort and
frustration were prevalent. While twisting in his seat, and contorting his face, he made such despairing comments as, “Oh, no!”, “I don’t know these letters”, and “I just can’t”.

The intervention, low-literacy child also seemed to demonstrate an initial low confidence with literacy tasks. At the beginning of the intervention, sixty-three percent of the observations involved play unrelated to literacy. As the intervention program progressed, however, the classroom teacher noted a shift in the child’s willingness to take risks at both the teacher-directed center and at the child-directed centers. Avoidance of literacy-related activity decreased dramatically.

After Activities with Nicole, the difference between the two groups of children was evident. Several children in particular with very low confidence levels became very excited about alphabet work and were more willing to take risks. They became more active participants during group literacy games and discussions and they were very pleased with their progress. . . . Discussions during free time also tended to be more literacy-related than those in the [control] group. Even the low-literacy children seemed to hold such discussions (ex. speculating on the spelling of words with peers). Many would have never done this prior to the intervention. (Mrs. X, personal communication, July16, 1999)

Towards the end of the intervention, the I-LL child initiated literacy-related play which, according to the classroom teacher, was uncharacteristic of this child prior to the intervention. At the end of the intervention, the majority of the free play choices for the low-literacy child involved literacy in some regard.

Modified Learning Centers and the Challenged Learner

Towards the end of the intervention, a trend seemed to be emerging which suggested that modified learning centers were of greatest benefit to the low-literacy learners. This was evidenced in several ways: the greatest gain in phonemic and spelling knowledge was
achieved by the lower half of scores on both the phonemic segmentation task and the dictation task of the intervention group, and the greatest increase in the selection of literacy activities during free play and in the use of phonemic skills during these literacy related activities again was seen in the low-literacy intervention child's observational records. The I-LL child increasingly initiated literacy-related play which, according to the classroom teacher, was uncharacteristic of this child prior to the intervention.

This apparent trend is informative in three respects. Firstly, it appears that this teaching strategy served to sustain interest and motivation of a low-literacy child in literacy tasks across time, which was necessary to gain literacy proficiency (Jensen, 1996). Secondly, this context seemed to successfully approximate an authentic literacy experience, in that the focus of literacy was not literacy itself, but some form of communication for a greater goal. As such, perhaps the children in the intervention group saw the utility of engaging in such tasks requiring phonemic skills. Thirdly, referring to children as knowledgeable helpers and literacy authorities sought out by others (the frog puppet) seemed to develop especially the low-literacy child's confidence in literacy settings. This was seen in an increased willingness over time to engage in literacy tasks and conversations, and an increased willingness to take literacy-related risks during free play observations. Research suggests that children who experience feelings of incompetence in learning contexts tend to avoid them, which subsequently hinders growth (Jensen, 1996). The combination of teacher-instruction for the introduction of literacy skills and knowledge and the accessibility of the literacy activities coupled with the functionality of the literacy tasks and empathy for a peer generated by the frog's life
story, seemed to facilitate both the desire to engage in literacy tasks and the confidence of low-level literacy children in during this learning process.

**Conclusions and Recommendations for Further Work**

The modified learning center is a play-based teaching strategy which can significantly increase phonemic awareness in kindergarten children. In this study, children in a whole class setting learned phonemic skills and were motivated to engage in literacy-related activities in the same amount of time and with a success rate that closely approximates that of the more common, smaller, teacher-led groups. These results correspond with research findings which have highlighted the value of free play in literacy-dependent centers (Neuman & Roskos, 1992), and the successes found in using systematic instruction to teach specific phonemic awareness skills (Ball & Blachman, 1991).

The finding that there was little transfer of phonemic awareness skills to conventional literacy, however, requires further investigation. Research indicates that "the application of component skills requires instruction emphasizing the application and utility of the skill" (Cunningham, 1990). Although the utility of literacy skills seems to be understood as evidenced by the frequency of the intervention children’s use of phonemic skills in free play, further investigation is required to assess the effect of different levels of graphophonemic skills which seems to variably influence the effect of phonemic skills on conventional spelling. The teaching strategies in this setting seem to be an intermediate step facilitating literacy investigation and growth but not fully realizing conventional spelling.
Critical to the success of the modified learning center seems to be the introduction of a consistent character, the frog, who developed a familiarity with the children throughout the course of the intervention. Together, child and frog shared literacy-related successes and dilemmas and supported each other throughout the process. Because children took on different roles, sometimes learner and sometimes teacher, confidence seemed to evolve and empowered the children as competent literacy users.

The context provided by the frog’s life story and the bonding that developed between students and the character served to generate meaning, motivation and increased learning during literacy-related activities (Jensen, 1996). Results suggest that the low-literacy children are most significantly affected by this methodology, experiencing the greatest gains (although not always significant) in phonemic skills, spelling, frequency in selection of literacy activities and use of phonemic skills during these activities.

Although children acquired proficiency with specific phonemic skills in isolation, this ability did not ensure the children’s ability to accurately apply the skills in relevant contexts, nor to mediate the relationship of graphophonemic skills as they relate to phonemic awareness. Although some researchers have found that possession of phonemic skills means the ability to use the skill (Juel et al., 1986), the vast majority of findings suggest that the transfer of the skills must be taught as well (Malicky & Norman, 1999).

A more accurate assessment of the children’s graphophonemic knowledge in subsequent studies would be advantageous in assessing the theories regarding the relationship of phonemic awareness and graphophonemic knowledge as it conjointly impacts on conventional spelling.
Implementation of the teaching strategies used here would recognize that an optimal level of component skills, both phonemic and graphophonemic, must be learned prior to or in conjunction with the transfer and application of these skills as they apply to conventional spelling.

The dictation activity measured and assessed the child's ability to achieve conventional spelling. Although this goal must not be minimized, it would be advantageous to devise or access tools to assess a child's progress as they aspired to increasingly close approximations of conventional spelling. Clearly growth was occurring in this study although measurement tools could not assess it.

A seven week period of instruction was not sufficient to develop links between literacy and phonemic awareness using this teaching strategy. Furthermore, the effects of teaching other or additional phonemic skills such as deletion (Bruce, 1964) was not assessed. Further investigation regarding the teaching of other phonemic skills may have a greater influence on conventional literacy and produce findings that diverge from those of this study.

Given the importance of meeting the needs of the challenged learner in today's classroom, closer examination of the trend suggesting that low-literacy children respond best to a peer-support and dramatic activity during the acquisition of literacy skills and knowledge merits further investigation. Extended periods of observation would allow for closer scrutiny of the apparent trend suggesting that selection of literacy activities and the frequency of use of phonemic skills during these activities in low-level literacy learners is increased by this teaching strategy.
Systematic observation, so as to attend to the target children's application of phonemic skills, would shed light on the transfer and usage of phonemic skills into literacy contexts. A rubric of how children apply skills, considering such factors as what skills are being used, how they are applied, the duration of efforts to apply skills (intense focus or superficial) and any observable cues alerting children to the value of phonemic knowledge would significantly augment the quality of observations and the information that could be derived.

General Limitations of the Study

**Design and Internal Validity.** The groups of children were organized into a morning and afternoon kindergarten class. The morning class comprised the intervention group and the afternoon group, the control group. The learning curve in the afternoon as compared to the morning is variable and poses a limitation to this study.

All three learning centers were available to the intervention group while the control group had access to none of the classroom additions. It is impossible, therefore, to know the relative influence of either student-led centers or by the teacher-led center in isolation on the phonemic awareness and spelling performance of kindergarten children. Future investigation with multiple groups: one group with the three centers, one group with only the teacher-directed center, one with the student-directed learning centers and one control group would shed light on which factors can be accounted for by which interventions.

**External Validity and Generalizability.** In order to increase statistical confidence to which these results will generalize to the population of kindergarten children in
general, groups must be formed from random sampling from a kindergarten population. Because the children of this study were attending a private school, where members were admitted on the basis of application and an interview with the principal, this group of students may not be representative of the larger, general kindergarten population. As such generalizability is limited.

**Measurement.** The Yopp-Singer Phonemic Segmentation Test (1988) had been assessed for validity and reliability, however, the Dictation Test (Clay 1985) had not. As such the reliability and validity of the dictation task to assess the influence of phonemic awareness on spelling developments poses limitations on this study. Furthermore, conventional spelling only was assessed and intermediate spelling growth occurring between the commencement of the observations and the conclusion could not assessed.

**Observations.** The observations of free play behaviors occurred two to three times each week during the intervention. Observations prior to and following the study, as well as increased observations during the course of intervention would have provided a more detailed and therefore authentic representation of the target children's play behaviors.

**Concluding Remarks**

Teaching strategies which stimulate the child's curiosity and self-concept, while demonstrating the relevance of adult skills in a child's world are well worth investigating. Perhaps the value of the modified learning centers strategy is best summarized by its intention to highlight the intended utility derived from conventional literacy: meaningful human interaction.
References


Appendix A

Permission Forms Regarding Participation in Study
Appendix B

Yopp-Singer Phonemic Awareness Test
Yopp-Singer Test of Phoneme Segmentation

Student's name ___________________________ Date ________________

Score (number correct) ________________

Directions: Today we're going to play a word game. I'm going to say a word and I want you to break the word apart. You are going to tell me each sound in the word in order. For example, if I say "old," you should say "o-l-e." (Administrator: Be sure to say the sounds, not the letters, in the word.) Let's try a few together.

Practice items: (Assist the child in segmenting these items as necessary.) ride, go, man

Test items: (Circle those items that the student correctly segments; incorrect responses may be recorded on the blank line following the item.)

<table>
<thead>
<tr>
<th>Item</th>
<th>Segmentation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. dog</td>
<td></td>
</tr>
<tr>
<td>2. keep</td>
<td></td>
</tr>
<tr>
<td>3. fine</td>
<td></td>
</tr>
<tr>
<td>4. no</td>
<td></td>
</tr>
<tr>
<td>5. she</td>
<td></td>
</tr>
<tr>
<td>6. wave</td>
<td></td>
</tr>
<tr>
<td>7. grew</td>
<td></td>
</tr>
<tr>
<td>8. that</td>
<td></td>
</tr>
<tr>
<td>9. red</td>
<td></td>
</tr>
<tr>
<td>10. me</td>
<td></td>
</tr>
<tr>
<td>11. sat</td>
<td></td>
</tr>
<tr>
<td>12. lay</td>
<td></td>
</tr>
<tr>
<td>13. race</td>
<td></td>
</tr>
<tr>
<td>14. zoo</td>
<td></td>
</tr>
<tr>
<td>15. three</td>
<td></td>
</tr>
<tr>
<td>16. job</td>
<td></td>
</tr>
<tr>
<td>17. in</td>
<td></td>
</tr>
<tr>
<td>18. ice</td>
<td></td>
</tr>
<tr>
<td>19. at</td>
<td></td>
</tr>
<tr>
<td>20. top</td>
<td></td>
</tr>
<tr>
<td>21. by</td>
<td></td>
</tr>
<tr>
<td>22. do</td>
<td></td>
</tr>
</tbody>
</table>

The author, Hallie Kay Yopp, California State University, Fullerton, grants permission for this test to be reproduced. The author acknowledges the contribution of the late Harry Singer to the development of this test.
Appendix C

Phonemic Awareness: Seven Week Unit Plan
Phonemic Awareness: Seven Week Unit Plan

WEEK #1: Blending – Discover all words (spoken/ written) made by blending sounds
#2: Sound Isolation – First sounds
#3: Sound Isolation – Last Sounds
#4: Continue with Sound Isolation- Middle Sounds/ Count Number of Sounds
#5: Segmentation – two and three sounds per word
#6: Segmentation – Continue with Week five or advance according to class blends
(two letters that produce one sound ie. BL, SM, SL, TR) or Diagraphs (two letters
that produce new sound, ie. SH, CH, TH)
#7: Deletion – remove first and last sounds from two and three sound words
- change first or last sounds in speech stream.

Lesson Plan Structure:
Each week three lessons- (20-30 min each)
A) Oral Story Telling
   Concept/ Skill introduction (or continuation of last week)
B) Song/Game to practice/ experiment with skill (tie into office
center- to demonstrate functionality of written language)
C)Literature— pick out examples of concept in published stories
tie to real world literacy (ie. Wk #1: BLENDING, wk #2: Sound
isolation-first sound in word, listen for /d/)

Sample of Weekly Lesson Plan
WEEK 1- BLENDING

LESSON A (Oral Story): Pagami and the Magic Bottle

Part 1

Early this morning, I was playing at the beach. Do you know where White Rock
Beach is? Good for you! The sun was shining, the waves were lapping at the edge of the
beach when suddenly, I saw something flashing in the water like a diamond and it was just
beyond my reach! Well, I dashed out into the swirling waves and discovered a bottle! Much
to my disappointment, it was just a regular old dark green bottle. . . but look! There was
something in it! Whoosh! I pulled out a stained, wrinkled piece of paper and saw some
wonderful pictures on it. But even more amazing, when I pulled on the paper, it exploded
out with a forceful \textit{pop} and there before my eyes was . . . (let children jump in to suggest ) an
\textit{“A”}, you know A, the first letter of the alphabet. Here, I’ll draw you a picture ( on the board).
He, or maybe it was a she, floated just above my head and said in a friendly voice, Pagami
(How did it know my name? ), today is your lucky day. If you can solve the secret message
on this scroll, you will unlock the secret of reading and you will find a treasure!

Oh my, I cried and I ran straight here to speak to Mrs. X. Do you know Mrs. X? I
came to see her because she is the smartest person I know and I knew she could help me.
And you’ll never guess what she told me! She said \textit{you} were the smartest children she knew
and that you could help too! So I said that I would share the treasure with all of you if we could solve the mystery together!!! What do you think?

The A then said that we have to listen to the first sound in each picture. When we put these sounds together, in the right order, we will not only find the hidden treasure, but unlock the secret to reading!!!! (Giving concept to sounding out words- phonemic awareness task one-blending)

Using poster, 1) discover sounds at beginning of words, 2) string sounds together 3) Discover where treasure hidden

Find treasure and have Mrs. X read secret: *Words are made up of little sounds that we put together in the right order*. Read message, then distribute goodies.

Part 2
After children have settled down, suggest experiment to see if they can “hear” all the sounds in given words. Do you think that the magic letter A was right? Let’s investigate and see for ourselves if all words are made up of smaller sounds. Should we try?

i) Say a few two- and three-sound examples: she, it, dog, cat, hat, top. Then break apart

ii) Use pictures to encourage children to try listening for sounds making up words

iii) If time permits, have children say a word and try to discover smaller sounds making up words

Part 3
Free play/ Observations

*LESSON B: Game/Song*
Twinkle, Twinkle Little Star

Part 1
Recap on secret message: *All words are made up of little sounds we put together, in the right order!* Would you like to try a little game? Do you know the song *Twinkle, Twinkle Little Star*?

Let’s try singing a few bars. Well, let’s change the words and make it into a guessing game! I’ll say some sounds and you put the sounds together and try to guess the word (See Yopp, 1992).

Part 2
Teacher says sound and children draw picture of what teacher sounded out

Part 3
(Teacher Facilitation) Center #1: Library- Pagami leaves message, says sounds and children try to guess words, draw picture
Center #2: Office- What sounds do you hear in words on bulletin board- Also allow for free play and use of literacy tools on more individualized level

**LESSON C: Literature**

**Part 1**
Choose a story which fits into the theme the classroom teacher is currently presenting, or one that fits into the use of library or office to extend literacy knowledge.
- Once per page, rather than saying word, sound out word and allow children to reconnect word before continuing.
- Make concrete connections for children saying, Pagami was right, even written words right here on this page are made up of little sounds! And you can discover them all by yourself. How exciting!

**Part 2**
Using large chart paper, invite children to suggest words with similar sounds (ie. Similar beginning sounds). Draw pictures of items

**Part 3**
Free play follows this session/observations
Appendix D

Pretest-Posttest Scores for Phonemic and Dictation Tasks
Dictation Task Results

Pretest: Intervention Group
Mean Score = $X = \frac{EX}{n} = 18.50$ out of a possible 37
37, 34, 34, 32, 26, 21, 19, 18, 15, 14, 11, 10, 10, 8, 4, 3
296/ 16 = 18.50

Pretest: Control Group
Mean Score = 19.07 out of a possible 37
30, 29, 27, 23, 22, 22, 21, 19, 17, 14, 14, 13, 12, 4
267/ 14 = 19.07

Posttest: Intervention Group
Mean Score = 22.56 out of a possible 37
37, 36, 34, 34, 33, 28, 23, 23, 18, 17, 16, 14, 14, 14, 13, 7
361/ 16 = 22.56

Posttest: Control Group
Mean Score = 21.86 out of a possible 37
34, 34, 28, 25, 25, 23, 22, 21, 21, 19, 19, 16, 12, 7
306/ 14
Phonemic Segmentation Test Results

Pretest: Intervention Group
Mean Score = 7.81 out of a possible 22
22, 19, 16, 16, 14, 12, 7, 5, 5, 3, 2, 2, 1, 1, 0, 0
125/16

Pretest: Control Group
Mean Score = 6.93 out of a possible 22
18, 17, 12, 9, 9, 8, 7, 4, 3, 3, 2, 2, 0
97/14

Posttest: Intervention Group
Mean Score = 15.69 out of a possible 22
22, 22, 21, 21, 20, 20, 20, 18, 17, 15, 15, 13, 11, 7, 6, 3
251/16

Posttest: Control Group
Mean Score = 9.86 out of a possible 22
19, 16, 15, 15, 15, 10, 8, 8, 7, 6, 5, 5, 5, 4
138/14
Appendix E
Ethics Board Certificate of Approval