How can learning centers be used to support classroom instruction and promote critical thinking in a kindergarten classroom?

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HOW CAN LEARNING CENTERS BE USED TO SUPPORT CLASSROOM INSTRUCTION AND PROMOTE CRITICAL THINKING IN A KINDERGARTEN CLASSROOM

by
Amelia M. Pellegrino

A Thesis
Submitted in partial fulfillment of the requirements of the Master of Science in Teaching Degree of The Graduate School at Rowan University July 1, 2007

Approved by ___________________________
Advisor

Date Approved 6.28.07

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ABSTRACT

Amelia M. Pellegrino
HOW CAN LEARNING CENTERS BE USED TO SUPPORT CLASSROOM INSTRUCTION AND PROMOTE CRITICAL THINKING IN A KINDERGARTEN CLASSROOM 2006/07
Dr. Susan Browne
Master of Science in Teaching

The purpose of this study was to examine how learning centers can be used in the Kindergarten classroom to support regular classroom instruction and encourage students to think critically. This qualitative study used observations, interviews, surveys, student work samples, photographs, and discussions to collect information about the effectiveness of learning centers in the classroom. Sixteen Kindergarten students participated in learning center activities planned and implemented by the researcher to examine how the learning centers related the curriculum and whether the activities encouraged students to think critically about the content. The researcher found that the Kindergarten students showed improvement in their engagement in learning center activities, quality of work, and use of higher order thinking skills to complete the tasks when the learning centers were clearly linked to classroom instruction and included critical thinking activities.
# TABLE OF CONTENTS

List of Figures

<table>
<thead>
<tr>
<th>CHAPTER</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>I. Introduction to Study</td>
<td>1</td>
</tr>
<tr>
<td>Introduction</td>
<td>1</td>
</tr>
<tr>
<td>Story of the Question</td>
<td>2</td>
</tr>
<tr>
<td>Statement of Research Problem and Question</td>
<td>4</td>
</tr>
<tr>
<td>Purpose Statement</td>
<td>5</td>
</tr>
<tr>
<td>Organization of the Thesis</td>
<td>8</td>
</tr>
<tr>
<td>II. Review of the Literature</td>
<td>9</td>
</tr>
<tr>
<td>Meeting the Needs of Diverse Learners</td>
<td>10</td>
</tr>
<tr>
<td>Going Beyond Differentiated Instruction</td>
<td>16</td>
</tr>
<tr>
<td>Learning Centers: Theory behind the practice</td>
<td>18</td>
</tr>
<tr>
<td>Using Learning Centers to Support and Challenge</td>
<td>21</td>
</tr>
<tr>
<td>III. The Research Design</td>
<td>25</td>
</tr>
<tr>
<td>Context</td>
<td>25</td>
</tr>
<tr>
<td>Methodology</td>
<td>27</td>
</tr>
<tr>
<td>IV. Findings</td>
<td>33</td>
</tr>
<tr>
<td>Data Analysis</td>
<td>33</td>
</tr>
<tr>
<td>V. Summary, Conclusions, and Recommendations</td>
<td>46</td>
</tr>
<tr>
<td>Summary</td>
<td>46</td>
</tr>
<tr>
<td>Recommendations</td>
<td>49</td>
</tr>
</tbody>
</table>
Conclusion

References

Appendices

Appendix A  Learning Centers: Initial Questionnaire  57
Appendix B  Learning Centers Survey  58
Appendix C  Jungle Animal Actions Teacher Work Sample  60
Appendix D  Jungle Animal Actions Student Work Sample  61

iv
# LIST OF FIGURES

<table>
<thead>
<tr>
<th>FIGURE</th>
<th>Description</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Figure 1</td>
<td>Learning Centers Survey (Set 1)</td>
<td>36</td>
</tr>
<tr>
<td>Figure 2</td>
<td>Learning Centers Survey (Set 2)</td>
<td>36</td>
</tr>
</tbody>
</table>
Chapter One

Introduction to Study

Introduction

“Learning without thought is labor lost.” – Confucius

A student who is expected to learn without thinking will never truly understand what is taught. Taking in information without really understanding and applying it has no value to the learner. When students are instructed by teachers to repeat or memorize information, they may learn new concepts, but understanding is reliant on whether the students have thought about what they have learned in order to discover its meaning, usefulness, or application in their world (Krathwohl, 2002). Teaching should result in more than learning, it should encourage students to think critically about what they are learning. Through critical thinking, students will be able to apply what they have learned in more valuable, productive ways. In order to truly understand, students should participate in a variety of learning experiences that help reinforce and practice new concepts and skills in different ways (Krathwohl, 2002). Students should also be encouraged to think about the concepts and skills more critically to uncover new meaning and strengthen their understanding.
Teachers can help students understand not only through direct instruction, but by allowing students to think about what they have learned on their own. One significant way to do this is through learning center activities. In learning centers, students can work independent of teacher instruction to make sense of new information and practice using new information and skills in useful ways. While working in learning centers, students in early grades have opportunities to question what they have learned and think about why the information is important, how it can be used, and how it relates to other things they have learned. By questioning, thinking, and reflecting during learning center activities, students will gain a better understanding of what they have learned.

Story of the Question

As a student teacher in a second grade classroom, I observed the students every week as they participated in learning center activities, while the teacher conducted guided reading groups. While the students in guided reading groups were receiving valuable small group instruction from the teacher, the students working at independent learning centers were essentially participating in meaningless activities. The “learning” centers were nothing more than busy work, where students made puzzles, read big books, or played games on the computer. The centers lacked a specific educational purpose, no relation to what the students were learning in class, no real academic tasks to complete, and were not interesting or engaging to the students. I noticed that many of the students at independent centers would lose focus quickly because the activities appeared too simple and had little meaning behind them. Students would then become disruptive by talking to others, interrupting the teacher, or finding their own activities to complete.
I was not the only one to notice this problem with the learning centers. The classroom teacher also saw that the students were not engaged in the activities. She knew that activities like puzzle building and coloring were not a valuable use of time, but she said it was the fastest way to keep the students busy as she worked with the reading groups. In one learning center, students worked in pairs to read big books together. During the partner reading activity, the students never actually read an entire book. They would choose a book, sit on the carpet, look through the pages, go back to the bookshelf, and repeat the same actions. There was no follow-up activity to ensure that the students would actually read and comprehend what they read. The teacher expressed that she would like to add a follow-up activity for the reading partners, but there was simply no time. Time seemed to be the biggest issue as to why more meaningful learning center activities were not created.

I wondered why the teacher would set up learning centers in this way, and whether creating more purposeful centers would really be that time consuming. I wanted learning center time to become more productive for the students at the independent centers. The students needed to be engaged in activities that were more meaningful and more challenging. How can the centers become more meaningful? How can I ensure that students stay on task? How can centers become more challenging, especially for gifted students who complete tasks quickly? I also wondered why the centers were not more focused on reinforcing certain concepts and skills that were being taught in class, such as in science, math, health, or writing. I thought that learning centers would be a great opportunity to reinforce new information and skills that the students were learning in
other subject areas.

The way in which learning centers were organized in this classroom led me to wonder how learning centers could be used to support classroom instruction and promote critical thinking. In order for the learning centers to be meaningful to the students, they needed to be directly linked to the classroom instruction (Cosgrove, 1992). Although learning centers in this classroom occurred during reading time, learning centers can be created to support instruction from any subject area. Learning centers should be useful to the students, helping them to gain a better understanding of the information they are focusing on. In order for the students to reach this understanding, they need to be challenged to use the information and skills in new ways. Learning centers should encourage students to think critically about the concepts and skills, and apply them to the tasks they are to complete within each center.

This study is important because it will not only allow me to create more productive, meaningful learning centers in my own classroom, but it will help other teachers to understand the important components of creating effective learning center activities in their classrooms. Too many times learning centers are used as meaningless busy work and mindless playtime. Learning centers are an opportunity to reinforce classroom instruction and engage students in meaningful tasks where they can demonstrate learning.

Statement of Research Problem and Question

In many classrooms, learning centers provide students with nothing more than playtime or busy work. This study examines how to use learning centers more effectively
as a supplement to classroom instruction. It seeks to identify ways to use learning centers
to relate to the curriculum, reinforce new concepts, and practice new skills. This study
also explores how learning centers can help students gain a better understanding of new
concepts and skills through critical thinking activities. This study asks the question: How
can learning centers be used to support classroom instruction and promote critical
thinking?

Purpose Statement

This study was developed based on the impression from experience, observation,
and research, that many teachers do not use learning centers effectively in their
classrooms. Often, teachers use learning centers as a way to keep students occupied as
they work with small groups of students, usually during guided reading. While a small
group of students receives valuable instruction from the teacher, the other students often
complete meaningless tasks that provide no reinforcement for classroom curriculum.
Using learning centers as a cover for play time, busy work, and monotonous tasks should
not be acceptable simply because it is convenient for the teacher. The time students
spend away from the teacher in learning centers should be equally engaging, meaningful,
and challenging as direct instruction from the teacher. Effective learning centers need to
be directly related to the curriculum, provide students with activities that reinforce
classroom instruction, give students an opportunity to practice new skills, and challenge
students to think more deeply about the concepts or skills through critical thinking. The
critical thinking component is crucial, as young students will not build value or meaning
from the learning center activities unless they are encouraged to use higher level thinking
skills to apply, analyze, or evaluate content.

As Ford & Opitz (2002) explain, many times teachers will work with a small guided reading group as the rest of the class is left to work at learning centers with worksheets or “cut, color, and paste response projects” (p.711). Ford & Opitz (2002) argue that these types of learning center activities “do not provide a level of instruction away from the teacher that is as powerful as the instruction with the teacher” (p. 711). These types of activities are not as powerful because they do not actively engage the learner with material relevant to the curriculum, they do not encourage students to apply developing skills, and they do not challenge the students to think more critically about new concepts. There is no direct objective to these activities, besides keeping the students busy as the teacher works with small groups. According to Cosgrove (1992), every learning center activity should have an objective. In order for the learning center activities to hold some meaning and value for the students, the teacher should consider the curricular expectations and specific goals students are to reach (Ford & Opitz, 2002). If the goal of the learning center is directly related to the curriculum, students will be able to apply what they have been learning to complete the activity, or use the activity to explore new concepts through critical thinking.

The purpose of this study is to examine how learning centers can go beyond play areas and busy work during guided reading, to become an effective supplement to classroom instruction in all subject areas. Learning centers can be used to reinforce concepts and skills in all subjects, and allow students an opportunity to apply those concepts and skills, as well as evaluate their use and value through critical thinking.
activities. Cosgrove (1992) argues that direct instruction is only the first step in the learning process, and that learning centers can be a useful supplement to teacher instruction. Cosgrove (1992) explains that:

Learning takes place when the students reinforce the skills by using them in interesting, meaningful, relevant, and social contexts. This is where and why learning centers enter the instructional scene. They can extend learning by being interesting, meaningful, relevant, and social to the learners because they will give students opportunities to participate in thought-provoking activities and stimulate curiosity to learn within a cooperative setting. (p. 3)

Students will gain a deeper understanding of the concepts being reinforced by learning centers when they are asked to use higher order cognitive behavior, such as that laid out in Bloom’s Taxonomy (1974). Krathwohl (2002) explains that using higher order skills, which include Apply, Analyze, Evaluate, and Create, gives relevance to what students are learning by allowing them to question the concepts, put them to use in meaningful ways, and apply them to real life situations and experiences. By asking students to evaluate how the concepts and skills can be used in their world, students will be more likely to find the information valuable, and more likely to have a deeper understanding of the material (Paul, 1985). Learning centers can provide students with the opportunity to question, apply, and analyze what they are learning in most elementary subject areas, and explore its meaning and usefulness through interactive, cooperative activities.
This study seeks to fill the gaps in the research on learning centers in Kindergarten contexts by focusing on how to use learning centers as an effective instructional method across instructional areas. It examines how to use learning centers to explore new concepts and skills in meaningful, challenging ways, and specifically focuses on incorporating a critical thinking component to all learning centers in order to encourage students to find value and usefulness for what they are learning.

Organization of the Thesis

In the following chapter, literature related to this study is reviewed. The literature review focuses on four areas: meeting the needs of diverse learners, going beyond differentiated instruction, the theory behind using learning centers, and using learning centers to support classroom instruction and challenge students to think critically. Research related to each area is evaluated and discussed in relation to the question of study. Chapter three explains the context of the study and the research design. This chapter explains where the study takes place, and who is involved in the study. It also provides information about the design of the study, data sources collected during the study, and how the data is analyzed. Then, chapter four discusses the findings of this study. In this chapter the data sources are closely analyzed, and the findings are discussed in relation to the research question. Finally, in chapter five, the study is summarized, conclusions are made, and recommendations for further study are discussed.
This chapter is a review of the relevant literature on how learning centers can be used as an effective supplement to regular classroom instruction, and as a means to encourage students to think critically about the concepts being taught. This study focuses on using learning centers to encourage students to explore new concepts in all subject areas and gain a better understanding of those concepts through critical thinking activities. In order for learning centers to provide authentic learning experiences, they must have a direct objective, be related to the curriculum, meet the needs of all learners, and encourage higher order thinking in students (Tomlinson, 2000). This study includes research on several learning theories in order to examine how the needs of diverse learners can be met. The general research on learning theories can then be applied to the development of more effective learning centers. Research on encouraging higher order thinking in students is also included because of the goal of using learning centers to develop students’ critical thinking skills. Much of the research specifically on learning centers focuses on how to set up and organize the centers, how to group students, and the types of activities that should be included in the centers. A more theoretical discussion of learning centers is also included to help explain some of the main theories that pushed educators toward using learning centers in their classrooms. While most research
encourages hands-on activities that keep students busy during the center time, this study goes beyond simply keeping students busy, to getting students deeply engaged in learning by challenging them to think more critically about the concepts being explored in each center while working independently.

Meeting the Needs of Diverse Learners

In order to implement more effective, authentic learning centers in the classroom, it is important to first examine how students learn. The way in which students are taught should reflect the fact that each classroom includes students of varying academic abilities, interests, and needs (Tomlinson, 2000). Students will not truly learn at the learning centers unless centers are set up to meet students' diverse needs. Several learning theories will be examined to help explain the different ways in which students learn, their varied abilities and needs, and how to apply this information to the development of differentiated learning centers.

Multiple Intelligence

One way of examining the unique learning lenses of students is through Gardner’s (1983) theory of Multiple Intelligences (MI). Shearer (2004) discusses the impact of Gardner’s theory on education by explaining how Gardner questioned the concept of general intelligence that had become so valued with the popularity of the IQ test. This general intelligence is based on the idea that intelligence is the ability to solve problems and use logical reasoning to come to the right answer. Gardner saw intelligence as more than the ability to solve problems. He believes that intelligence also includes the ability to create products, provide services, and think differently than others.
Each area of intelligence includes specific skills and abilities. Shearer (2004) explains the eight intelligences included in MI theory: linguistic, logical-mathematical, visual-spatial, kinesthetic, musical, naturalistic, interpersonal, and intrapersonal. Linguistic and logical-mathematical intelligences are those most often associated with academics. Those with linguistic intelligence have a talent for using words effectively for reading, writing, or speaking. Students with linguistic intelligence may be good at writing descriptively, using expression when reading, or giving explanations (Shearer, 2004). Logical-mathematical intelligence includes the ability to use logical reasoning to solve problems and strong skills in computing number problems. As Shearer (2004) explains, students with logical-mathematical intelligence show skills in solving multistep problems, doing mental math, and generating useful questions to help solve a problem. Those with musical intelligence are more sensitive to rhythm, pitch, and tone, and may be skilled in singing or playing an instrument (Shearer, 2004). Those who are skilled in using their bodies as a form of expression, such as dancing, or to meet a goal, like in athletics, have kinesthetic intelligence. Spatial intelligence includes the ability to accurately perceive the visual world or create mental images. Students with spatial intelligence may be talented in reading maps, working with objects, or creating visuals (Shearer, 2004). There is also naturalistic intelligence, which includes recognizing and understanding living and natural things. Last, are the personal intelligences, interpersonal and intrapersonal intelligence. Intrapersonal intelligence emphasizes self-knowledge, setting goals, monitoring behavior, and managing emotions. Interpersonal intelligence emphasizes knowledge of self and others, such as managing relationships with others or
recognizing the moods or emotions of others. All of these intelligences include very different skills and abilities.

Lash (2004) explains that “learning environments should include opportunities for children to develop strengths in each particular intelligence area” (p.13). Lash (2004) believes that students learn best when they are encouraged to use their strongest area of intelligence. As pointed out by Lash (2004), students may show strong intelligence in just one area, or in many. It is important to discover the areas in which students are likely to make achievements based on the skills they possess in each area of intelligence. In order to allow students to demonstrate their unique intelligence, learning centers that encompass all areas of intelligence should be included in the classroom. Learning centers should be designed to allow students of different intelligences to complete tasks using their specific skills and abilities. By giving students an opportunity to employ their talents in the classroom, the learning experience becomes more meaningful to the student. Students who are encouraged to use their strengths to complete independent learning activities will show more interest in the activity, and be more likely to successfully complete it (Lash, 2004).

Learning Styles

Multiple Intelligences theory focuses on students’ talents, and how those talents are used to create a product or solve a problem (Shearer, 2004). Working along with the students’ talents, or MI, are the students’ learning styles. Students have different preferences for how they like to learn, these are their learning styles. Dunn, Denig, & Lovelace (2001) identify five basic elements that affect how a student will learn:
environment, emotion, sociology, physiology, and psychology. Environment includes lighting, sound, temperature, and seating arrangements. Emotionality refers to the student’s motivation, responsibility, or need for structure. Sociological factors include preferences of learning alone, with a partner, or in a group, as well as working with peers or adults. Physiological factors can include visual, auditory, tactile, or mobility needs. Psychological preferences include the preference toward global or analytic processing. (Shaughnessy, 1998).

Each of these elements transfers into students’ learning preferences. Some students may prefer to learn in a brightly lit area, with many visual aides, while working in a small group, while another student might have very different learning preferences. When constructing learning centers in the classroom, teachers should keep their students’ learning styles in mind. Because all centers will not be able to fit the specific preferences of each student, students may be given choice in which centers they attend, or a say in how centers will be set up. Teachers may choose to develop specific centers that cater to certain learning styles, or group students in ways that are sensitive to their preferences. By keeping students learning styles in mind, teachers can create learning centers that make the student feel comfortable and confident that they can complete the task.

Brain Based Learning

Another learning theory that keeps the needs of students at the forefront is brain based learning. According to Winters (2001), this theory emphasizes “student engagement and active involvement in their own learning, teachers teaching for meaning and understanding, and teachers immersing students in complex learning experiences” (p.
Brain based learning theory is based in cognitive neuroscience. It takes what scientists have discovered about how the brain retains and uses information and applies that information to education. Neuroscientists have found that the brain learns best through pattern, repetition, and “meaning-making,” and that emotion can have a positive or negative effect on the learning process (Winters, 2001). Roberts (2002) explains that learning can be enhanced by challenge, but inhibited by threat. If the brain senses that it may not be able to complete a task or solve a problem, then there is a perceived threat, and it will respond to the task with lower level thinking (Roberts 2002). Based on what neuroscientists have uncovered about how the brain learns, educators can incorporate these ideas into how they teach.

Related to learning centers, teachers should create centers that set up the students for success. If students feel that they are not able to complete a task, they will likely feel threatened, and become uninterested or unable to complete the activity. On the other hand, if students are challenged at the learning centers, they will be more likely when required to use higher order thinking skills to solve problems and complete tasks.

Because the brain learns through repetition, learning centers are a great opportunity for new concepts to be reintroduced. The centers should also focus on making sense of the new concepts, so that students can put a meaning behind the new idea. By being aware of how the brain learns best, teachers can develop learning centers that accommodate those needs.
**Differentiated Instruction**

Based on the research of students’ different learning abilities, needs, and preferences, it is easy to see that students learn best in a variety of ways. In order to meet the needs of diverse learners, teachers should differentiate their instruction. According to Tomlinson (2000), “differentiation consists of the efforts of teachers to respond to variance among learners in the classroom” (p. 1). Teachers can differentiate four elements of their classroom to meet the students’ needs. Teachers may vary the content: what is being taught, process: how it is taught, products: how students display what they have learned, and learning environment: the way the classroom is organized and operated (Tomlinson, 2000). In relation to learning centers, teachers may differentiate the content by relating it to students interests in different subject areas. Teachers can develop learning centers that focus on specific student interests to encourage students’ excitement about participating in the centers. The process of completing the learning center may be differentiated by incorporating a simple recall activity for a struggling learning, or a critical thinking activity for a more advanced student. The product can be differentiated by allowing students at different learning centers to create different types of projects that show their work. Students may present their final project through creative writing, a dramatization, a drawing, or a model. The learning environment may be differentiated by providing students with the opportunity to work collaboratively or independently, to reflect through discussions or in writing, or to work in a talkative, active area or a quiet corner. All of these options allow students with diverse needs and learning abilities to participate in the learning experience in a way that is best for them.
Teachers need to be aware of students’ talents (MI), learning styles, and other interests and needs in order to effectively differentiate classroom instruction to meet those needs. Learning center activities can be differentiated to meet the various needs of all students in the classroom. By allowing students to participate in many different types of learning center activities, each student’s abilities, interests, and needs can be met by one activity or another (Tomlinson, 2000).

**Going Beyond Differentiated Instruction**

In order for learning centers to provide authentic learning experiences for students, they must meet the needs of all learners. Differentiating the centers to meet the needs of all students is only the first step in creating effective learning centers. Learning centers need to do more than just get students interested and involved. Students also need to be challenged by the activities in order to keep them engaged and allow them to develop a deeper understanding of the concepts being taught. Students should be engaged in activities that encourage them to use higher order thinking skills, such as those described by Bloom (1974).

**Bloom’s Taxonomy**

Bloom (1974) created the *Taxonomy of Educational Objectives* as a framework for categorizing levels of intellectual behavior that are important to learning. Bloom’s (1974) revised Taxonomy includes six categories: remember, understand, apply, analyze, evaluate, and create (Krathwohl, 2002). Each category contains specific behaviors related to learning, from lower level thinking skills, such as recognition or recalling information, to higher order thinking, such as comparing ideas, making judgements, or applying the
information in a real-life situation (Krathwohl, 2002). Mastery of the lower level skills is usually needed before a student will engage in higher order thinking skills, although the framework has become more flexible with the recent revision.

Teachers should incorporate activities in the classroom that allow students to master lower level skills quickly, and encourages them to use higher level skills when completing tasks (Krathwohl, 2002). Teachers should keep in mind the higher order skills when developing learning centers, as it is these higher level skills that will keep students interested and engaged in the activity. By encouraging students to think more deeply about the concepts at hand, they will gain a better understanding of the concepts and be more likely to find the information meaningful (Krathwohl, 2002). By challenging students to do more than memorize or recall, they will be able to develop critical thinking skills that will be useful in and out of learning centers.

Critical Thinking

By applying Bloom’s Taxonomy (1974) to the way centers are created, teachers can create activities that encourage students to think critically in order to really understand what is being taught in the classroom. Learning centers should go beyond busy work, and really get students to develop meaning and understanding of important skills and information. Black (2004) stresses the idea that critical thinking skills should be directly taught to students in order for them to apply these skills during classroom activities. Black (2004) believes that teachers should use direct instruction “for the purpose of showing their students how to observe, compare, explain, and predict” (p. 45). Students will then be able to apply these skills on their own to lessons and learning center
In order to foster students' use of critical thinking skills, there needs to be a classroom environment of high expectations and encouragement to take risks (Black, 2004). Students will be more likely to take risks and fulfill high expectations when they know exactly what is expected of them. Black (2004) explains that teachers should always give a clearly stated goal and purpose of each lesson or activity. If students know what the goal and purpose of each learning center is, they know where they need to start and how to proceed to meet that goal. Black (2004) states that “the best critical thinking occurs when teachers give students necessary information and thinking tools to solve problems” (p. 45). Because of this, teachers should include resources and materials at learning centers that will aid students in completing the activity. Students should not be expected to use only the information in their heads. Learning centers should be a learning experience, where students are able to use resources to help them remember or relearn new information, and have materials available to help them apply their new knowledge.

Learning Centers: Theory behind the practice

In order to understand the purpose of using learning centers in the classroom, the theoretical background supporting this instructional practice is examined. The theories of two main researchers, Jean Piaget (1969) and Lev Vygotsky (1962), had a significant impact in the development of classroom learning centers. While their theories differ, they both emphasize the idea that children learn through interactions with others and their environment. Learning centers became an instructional strategy used to allow students to have social interaction and environmental experiences while thinking and learning.
Jean Piaget’s Stages of Cognitive Development

Although Piaget studied children’s cognitive abilities from the viewpoint of a biologist, his findings are applicable to education because they discuss how children think and learn. Piaget studied the biological influences on “how we come to know,” and developed the idea that children moved through four cognitive stages: sensorimotor, preoperational, concrete operational, and formal operational, as biological development pushed them toward more developed thinking (Huitt & Hummel, 2003). The preoperational stage (ages 2-7) and the concrete operational stage (ages 7-11) are the levels at which most elementary aged children will think and learn. Piaget believed that at the preoperational stage, “the child is not yet able to conceptualize abstractly and needs concrete physical situations” (Funderstanding, 2001). Children at this stage of cognitive development also have a very egocentric view of the world (Silverthorn, 1999). As children accumulate physical experiences, they move into the concrete operational stage, in which they “start to conceptualize, creating logical structures that explain their physical experiences” (Funderstanding, 2001). Students at this stage think in more logical, organized, and flexible ways, being able to look at problems from various perspectives (Silverthorn, 1999). Based on Piaget’s theory, educators have developed instruction that encourages social interaction and promotes a discovery oriented environment in order to accommodate and develop the students’ cognitive abilities.

According to Brandt (1999), learning centers were introduced to primary grade classrooms as Piaget’s (1969) Stages of Cognitive Development began to influence education. Piaget’s theory emphasized the importance of children interacting with their
environment in order to gain knowledge (Brandt, 1999). His theory also encouraged
teachers to support student interests and challenging student abilities through concrete
learning experiences that allow for manipulatives, working in groups, or taking different
perspectives (Huit & Hummel, 2003). Learning centers became a way for teachers to
allow such interaction between the students and their environment, and provide students
with concrete, discovery oriented learning experiences.

*Lev Vygotsky's Social Development Theory*

While Piaget believed that there was a biological explanation for how children
developed intellectually, Vygotsky (1962) believed that culture was the main determinant
in cognitive development. Vygotsky's (1962) *Social Development Theory* states that
cognitive development is a process dependent on social interaction, and that children will
learn and develop cognitive skills through a socially shared experience of learning
(Riddle, 1999). According to Riddle (1999), Vygotsky believed that children would learn
best with others because “a student can perform a task under adult guidance or with peer
collaboration that could not be achieved alone” (p. 1). Based on this theory, educators
began to focus on instruction that emphasized problem-solving experiences that were
shared with others (Brandt, 1999). As Social Development Theory had a greater
influence on education, the classroom set-up changed from desks in rows to clustered
desks, whole class lecture to small group instruction, and independent practice to
collaboration. Learning centers also gave students the social interaction Vygotsky
believed was imperative for cognitive development. The centers allowed students to
work with peers, giving them the opportunity to complete tasks that they may not have
been able to finish on their own. Learning centers became a way for teachers to allow students to interact socially while completing academic tasks.

Using Learning Centers to Support and Challenge

What are learning centers?

Cosgrove (1992) characterizes learning centers as areas in the classroom where students engage in activities that reinforce specific skills or information in “interesting, meaningful, relevant, and social contexts” (p. 1). Students work away from the teacher, alone or together, to practice and review newly learned concepts or developing skills. According to Cosgrove (1992), all learning center activities should include a clearly stated objective, set of directions, and a means of evaluation. Because learning centers often include partner or small group work, the centers “capitalize on the inherent social nature of the classroom by encouraging students to communicate, share projects, and jointly solve real problems while meeting individual needs, styles, interests, and curriculum demands” (Cosgrove, 1992, p. 3). Learning centers are not busy work, tests, or mindless play areas. Learning centers should encompass all subject areas, and focus on specific skills, areas of interest, or curricular themes (Cosgrove, 1992). Learning centers allow students to be involved in purposeful learning experiences away from the teacher.

Why use learning centers?

Using learning centers in the classroom allows teachers to serve the needs of diverse learners, and allows students to have more personal, meaningful learning experiences. Devany (2005) discusses the many benefits of using learning centers, as she
reflects on the use of centers in her own classroom. Devany (2005) notes that learning centers are able to meet individual student needs, encourage meaningful learning experiences, increase students’ positive self-concept as learners, and give students opportunities to “gain practice and application skills, problem-solving and critical thinking skills, independent learning skills, and collaboration skills” (p. 2). By using learning centers in the classroom, students are encouraged to become responsible, independent learners because the activities give students the opportunity to make their own decisions and take responsibility for the learning process. Teachers are also able to take advantage of learning center time by working one on one or with small groups who may need extra help, as other students work independently at other centers.

*How can learning centers support regular classroom instruction?*

Learning centers can be used as effective, authentic supplements to regular classroom instruction by directly relating them to the curriculum, and using learning center activities to reinforce specific information and skills. As Devany (2005) explains, students should participate in learning center activities to fulfill curricular goals. By keeping this in mind, teachers should always develop learning center activities that are linked to the current curriculum, and will help students better understand new information and better perform new skills.

Learning centers can also be used to expand upon the curriculum or relate ideas from different subject areas. Cosgrove (1992) believes that learning centers can improve students’ understanding of specific content area information and skills by relating those skills and information to other subject areas. By showing students how to apply their
knowledge and use their skills in different areas, learning becomes more meaningful and useful to students.

*How can learning centers encourage students to think critically?*

By building upon the classroom curriculum, learning center activities should not only reinforce current concepts, but challenge students to show a deep understanding of the concepts by analyzing, explaining, acting out, questioning, or applying the information and skills to real-life situations. Paul (1985) explains that “knowledge is of little value if it cannot be utilized in new situations or in a form very different from that in which it was originally encountered” (p. 38). Learning centers can provide that new and different situation in which students can utilize their knowledge. Learning centers should give students the opportunity to put their knowledge to use using the higher level skills laid out in Bloom's Taxonomy. Teachers should keep this in mind when developing learning center activities, in order to create activities that ask students to do more than just memorize or recall information. Cosgrove (1992) notes that learning center activities should be thought-provoking and stimulate students' curiosity by asking students to apply information and skills to meaningful, real-life situations, or by questioning their understanding of certain concepts. Concepts that have not yet been introduced in the curriculum may also be included in learning centers in order to get students to first think critically about the concepts, make predictions, or develop initial ideas. The students can then apply what interested or confused them in learning centers to the lesson in which the concepts are formally introduced.
How can learning centers be used to effectively support classroom instruction and promote critical thinking in students?

In order for learning centers to be truly effective and meaningful, they must first meet the needs of all learners (Tomlinson, 2000). Teachers can apply what they know about how their students learn best to develop learning center activities that accommodate the specific abilities, interests, and needs of diverse learners. Along with differentiating activities, teachers should incorporate a critical thinking component into each activity. Students of all ability levels should be challenged to think deeply about the concepts and skills at hand, apply their knowledge, and show that they understand. Learning centers should be directly related to the curriculum, have specific goals and objectives, and allow students to apply their skills and knowledge in meaningful ways (Cosgrove, 1992). By doing this, learning centers become more than play areas or busy work, they become challenging critical thinking activities and important reinforcement for classroom instruction.
Chapter Three

The Research Design

Context

This study was conducted in a Kindergarten classroom at a small Southern New Jersey Elementary School. The Elementary School is one of two schools in the City School District in Atlantic County, New Jersey. This district is a small community public school district that serves students in pre-kindergarten through eighth grade. The Elementary School serves 546 students in grades Pre-K through 4th grade, and students in the district attend the Middle School from 5th to 8th grade. Both schools are located in the center of a neighborhood in the Educational Community Complex. Students in the district later attend High School in a slightly larger city, along with students from several other small shore communities in the area.

The Elementary School has a very diverse, multicultural student population. Students in the school may speak one of 19 different languages or come from a multitude of countries. Many students have parents who have immigrated to the United States from another country, and speak little English at home. In 2005-06, the elementary school students were comprised of 47% Caucasian, 34% Hispanic, 13% Asian Pacific, 4% African American, and 1% American Native. As reflected in the students, the surrounding community is very diverse as well. Residents vary from middle to
upperclass families that own homes in the area, or lower to middle class families that rent homes and apartments in the community. Many students come from families who rent homes in the community and work in the nearby casinos of Atlantic City. Family background comes into play within the classroom, affecting students’ background knowledge, English language proficiency, and attitudes toward school and learning. Parental involvement in the students’ education greatly affects how these young students perform and behave in the classroom.

This study took place in a Kindergarten TAM (Team Approach to Mastery) class in the Elementary School. This is an inclusion classroom with 16 students, one elementary education teacher, one special education teacher, one student teacher (the researcher), and a one-on-one aid for a disabled student. Five students in the classroom are classified with varying disabilities, and several other students receive special services. Students in the classroom receive services including basic skills instruction, speech therapy, physical therapy, and occupational therapy. These services are provided through individual, small group, and whole-class sessions.

This Kindergarten was a very busy classroom, with teachers and therapists constantly in and out of the classroom to provide extra services, and students being pulled out or receiving the service in the classroom. Students who received these services followed varying schedules. The constant movement of students and teachers in and out of the classroom had many effects on how the learning centers played out in the classroom. Some students were not always able to complete each activity because they had to leave the classroom, sometimes activities were started but never completed, and
sometimes the entire class had to stop working at centers to participate in a whole class lesson by the occupational therapist.

The participants of the study are the 16 Kindergarten students, ages five to seven, who are students in the TAM class. The students vary considerably in academic, social, and physical abilities. The students have experience working in learning centers, as centers have been part of their daily schedule throughout the school year.

Methodology

Research Paradigm

The general methodology of this study is based on qualitative research, which allows for more subjective interpretation of various sources of data, rather than the objective analysis of statistical data found in quantitative research (Phillips & Carr, 2006). The research is empirical because it is based on collection, analysis, and interpretation of several data sources gathered in the classroom (Cochran-Smith & Lytle, 1993). Qualitative research works best with this study because of the nature of the question: How can learning centers be used to effectively support classroom instruction and promote critical thinking in students? This study seeks to understand how learning centers can best be used in the classroom, which will take numerous observations, strategic planning, questioning of students and teachers, and evaluating the success of the plan that was implemented. This qualitative research design will allow for multiple viewpoints to be analyzed, and for data to be collected from various sources. The data will then be interpreted by uncovering what the data says about this study’s critical question and reflecting upon the findings (Phillips & Carr, 2006).
The type of qualitative research conducted in this study is teacher research, which Cochran-Smith & Lytle (1993) define as “systematic, intentional inquiry by teachers about their own school and classroom work” (p. 23). As a student teacher, I conducted this study in the classroom to gain a better understanding of how to successfully use learning centers in the classroom. Teacher research is conducted by teachers to answer questions that emerge from concerns they have about their own practice (Cochran-Smith & Lytle, 1993). Teacher research is based in professional knowledge and teaching and learning theory, and seeks to resolve discrepancies between theory and practice (Cochran-Smith & Lytle, 1993). Cochran-Smith & Lytle (1993) explain that teacher research is often based on observations and collection of several data sources that allow the teacher to document and reflect upon classroom practices. This research is then used to help teachers improve their practice as professionals (Cochran-Smith & Lytle, 1993). Because teacher research questions are developed based on a teacher’s individual concerns about her own teaching, school, or classroom, the findings of teacher research are intended to be used within that same context (Cochran-Smith & Lytle, 1993). However, the findings of teacher research can often be applied to other schools or classrooms with similar circumstances or concerns. For example, I have conducted a teacher research study based on a concern I had about the inefficient use of learning centers in the classroom, and the study will be used to help me develop more successful strategies for using learning centers in my own classroom. While the study was conducted in the context of my unique classroom, the findings can be shared with other teachers who may choose to use them as they see fit in their own classrooms. Teacher research provides valuable
information and insight to the teaching profession because “teacher researchers are uniquely positioned to provide a truly emic, or insider’s perspective” as to how teaching and learning occurs in the classroom, and the questions or concerns teachers and students have about those processes (Cochran-Smith & Lytle, 2006, p. 43).

This study is also based in the fundamentals of action research in that specifically integrated actions have been examined. Phillips and Carr (2006) explain that “the purpose of action research [is] improving one’s own teaching practice as well as student outcomes and, more holistically, life in schools” (p. 28). Action research integrates practice and research by allowing teachers and students to become participants in the study, and try out new teaching and learning practices in order to better understand what really works in that classroom. Phillips & Carr (2006) explain that the purpose of integrated action research is “to specifically try out a teaching method, practice, or approach in order to address a concern or to improve student learning, attitude, or motivation” (p. 31). During the course of this study, I used a new approach toward learning centers in order to find out whether this new strategy could improve my own teaching and student learning.

Research Plan

This study examined how to use learning centers to support classroom instruction and encourage critical thinking in students. Therefore, learning centers that directly relate to the classroom curriculum and contain a critical thinking component were implemented. Students participated in learning center activities created and implemented by the researcher. The learning centers took place five days a week for one hour and ten minutes
each day, over the course of three weeks. Four learning centers were set-up each day, giving students 20 minutes to work at each center. Some centers were set-up for one day, while others took two or three days to complete. Students were placed in heterogeneous groups of four, which were changed throughout the study. The learning centers contained activities in which students worked cooperatively and independently.

The learning centers were designed to directly relate to what the students are learning during instructional time. The centers mainly focused on math and language arts, but also related to the science, health, and character education curriculum. The learning centers were used to reinforce concepts and skills that the students have already learned in class. In order to encourage critical thinking in the Kindergarten students, the activities were designed to have three steps. The steps of the activity correlate with Bloom's taxonomy, increasing in the level of thinking skills necessary to complete each step. The first step of the activity may be simple recall or recognition. Step two may include activities in which the students make comparisons, summarize, or sort. By step three, students should be thinking critically in order to complete a task in which they check their work or create a final product.

Many resources and materials were necessary in implementing this study because of the use of several learning centers. The activities were developed based on the Language Arts curriculum found in the Kindergarten Harcourt Trophies Edition, and Math activities will be related to the Everyday Mathematics curriculum. Worksheets, crafts, games, and other materials used in the activities were all things readily available in the classroom. Many of the learning centers were based on games and activities that the
students were already familiar with, which were then stepped up to include an additional
critical thinking component.

Data Sources

In order for the research to be complete and comprehensive, three primary types of
data sources were collected: observations, interviews, and artifacts (Phillips & Carr,
2006). This ensured that the research contained varied and sufficient data to be
considered trustworthy (Phillips & Carr, 2006) Observations were documented on “Note-
taking/Note-making” observation sheets and “Anecdotal Record” sheets. Other notes,
ideas, records, and questions were kept in a teacher research journal. Interview sources
were collected through an Initial Questionnaire, as well as a Learning Center Survey used
to assess several learning center activities over the course of the research. Informal
conversation with teachers and students were also noted on record sheets and in the
teacher research journal. Artifacts collected during this study included photographs and
student work samples from several learning centers.

Data analysis

Based on the data collected, the researcher took a deep look into whether the
learning centers effectively supported the regular classroom instruction, and how well
those learning centers encouraged the Kindergarten students to think critically about what
they were learning. The Initial Questionnaire helped set a basis for how learning centers
had previously been used in the classroom. The Learning Centers Surveys helped keep
track of the original and newly implemented centers’ relation to the classroom curriculum
and ability to get students thinking critically. Observations, conversations, photographs,
and student work samples were also collected to show how students responded to the new centers, how well the activities related to the curriculum, and how the centers encouraged critical thinking. All of these data sources then gave insight into how the centers had changed over the course of the study, whether the centers successfully supported the classroom curriculum, and if the critical thinking component was beneficial to student learning.

Because of the large number of learning centers conducted during this study, a case study and analysis of one learning center is included to provide one representation of what happened in the classroom as the learning centers changed and students began to think critically.
Chapter Four

Findings

Data Analysis

Several sources of data were collected during the course of this study. This chapter closely analyzes each data source to relate the findings to the research question: How can learning centers be used to support classroom instruction and encourage critical thinking in a Kindergarten classroom?

Before implementing new learning centers, the researcher sought to gain knowledge of the current use and effectiveness of learning centers in this Kindergarten classroom. An Initial Questionnaire (Appendix A) was completed by the researcher and two cooperating teachers. The questionnaire provided information about how learning centers were conducted in the classroom, their relation to regular classroom instruction, whether the centers encouraged students to think critically, and ideas about how the centers might be improved. This questionnaire provided a picture of how learning centers were being used, and how they could be changed over the course of this study.

Learning centers in this Kindergarten classroom were conducted five days a week for one hour and ten minutes, during the allotted time for writing and guided reading instruction. There were at least three, but possibly four or five, learning centers conducted each day, and the centers change daily. The learning centers were planned
during weekly lesson planning, and were developed to relate to instruction in reading, math, and character development for that week. Many of the learning centers asked students to recall information they had learned in regular classroom instruction, but the activities did not encourage more critical thinking about the information. It was also difficult for some of the students to stay on task or complete the learning center activities because of vague instructions, being unfamiliar with the concepts or skills necessary to complete the task, or a lack of interest in the activity. The lack of activities that required higher order thinking skills, along with no system for checking or grading work, allowed the students to mindlessly rush through the activities without being held responsible for their work. Many students completed the activities well before the hour and ten minutes were over, some even finished all of the learning centers within the first fifteen minutes.

One entry from the researcher's journal summed up how learning centers were conducted each day:

*Watching the students work at the learning centers, I can see that many of them are not engaged in the activity. The students rush through their work. Their work is not turned in, instead it is crammed directly into their mailbox to go home. No teacher ever looks at it. The students take no pride in their work, they don't want to do it. They just rush through so they can play with toys or on the computer when they are done. The activities are too easy, just coloring and cutting. There is no thinking involved. Its such a long period of time wasted.*

While the two classroom teachers made more idealist suggestions for improving learning center time, such as having fewer students in the class, a larger classroom, or
more adult help in the classroom, the researcher focused on making more realistic changes so that the learning centers fit the needs of this classroom. Based on this questionnaire and observations of how learning centers are conducted in this classroom, it was obvious that these learning centers needed to be more structured, activities needed to be developed to fit the needs of diverse students, students needed to be held more responsible for their work, and the learning center activities needed to be more involved, including steps for higher order thinking to come into play.

Using this initial data, the researcher reworked how learning centers were conducted in this Kindergarten classroom. Changes were made to insure that students had more direction and structure during learning centers. Students talents, interests, and needs were considered when developing the new learning centers in order to differentiate the activities. Activities with self-check allowed students to be more responsible for their work. Follow-up activities and discussions also allowed students to feel a sense of pride in their completed products. As work began to be collected by the teacher, students took more time to correctly complete the tasks as well. All of the learning centers were created to include three steps, each increasing in the level of thinking required. These steps were intended to get students thinking critically about what they were learning.

A Learning Centers Survey (Appendix B) was completed by the researcher, two cooperating teachers, and a classroom aid to measure whether the learning centers were related to the classroom instruction, whether they encouraged critical thinking in the students, and whether students remained engaged and were able to complete the activity. This survey was completed by each adult for ten learning centers planned and
implemented by the regular classroom teachers (set 1) and for ten learning centers planned and implemented by the student teacher (researcher) after changes were made to how learning centers were conducted (set 2). The results of these surveys can be compared in Figures 1 and 2. Figure 1 shows the results for surveys completed in set one after observing learning centers implemented in their original manner. Figure 2 shows the results of the surveys in set two, completed after observing the learning centers implemented with several changes by the researcher.

![Learning Centers Survey (Set 1)](image1)

**Figure 1: Learning Centers Survey (Set 1)**

![Learning Centers Survey (Set 2)](image2)

**Figure 2: Learning Centers Survey (Set 2)**
Figures 1 and 2 show the difference between the learning centers originally conducted in the classroom, and the learning centers conducted after making changes to provide more differentiated activities, critical thinking components, and more student responsibility for work completed in the centers.

As the learning centers changed to reflect more of the students' talents, interests, and needs, the students became more interested in participating in the learning centers, and worked harder to complete the activities. As Lash (2004) explains, based upon Multiple Intelligences Theory, students learn best when they are encouraged to use their strongest area of intelligence. In order to allow the students to demonstrate their unique intelligence, the new learning centers were created to encompass all areas of intelligence. The learning centers were designed to allow students of different intelligences to complete tasks using their specific skills and abilities. By giving students an opportunity to employ their talents in the classroom, the learning experience became more interesting and meaningful to the student. Based on the surveys, observations, and student work samples, this showed in the students' increased engagement in the activities, improved student work, and increased ability to apply the information outside of the learning centers.

These improvements in student engagement, work, and knowledge also occurred as the learning centers began to encourage and require students to use critical thinking skills in order to complete the activities. According to Bloom (1974), teachers should incorporate activities in the classroom that allow students to master lower level skills quickly, and encourages them to use higher level skills when completing tasks. This idea
was taken into account when developing the new learning centers, as it was observed that activities which included only lower level thinking skills did not keep students interested and engaged in the activities, and allowed students to rush through the activities without much thought. As Krathwohl (2002) explains, by encouraging the students to think more deeply about the concepts at hand, they will gain a better understanding of the concepts and be more likely to find the information meaningful. By applying Bloom’s Taxonomy to the way learning centers were created in this classroom, the researcher was able to create activities that asked students to think critically in order to complete the task and really understand the concepts being practiced. As students completed the new three step learning centers, they became more engaged in the process as each step built upon the next, they employed higher order thinking skills in order to complete the steps, they took more time to think about the information they were applying, and took more pride in their completed product.

Breaking the learning center activities into three steps also helped keep the students on track when completing the centers, and made giving directions much more clear. The learning centers became more structured and the students knew what to expect each day. Black (2004) explains that teachers should always give a clearly stated goal and purpose of each lesson or activity. If students know what the goal and purpose of each learning center is, they know where they need to start and how to proceed to meet that goal. Using the three steps allowed students to see each part of the process of completing a learning center, and allowed students to see how the steps came together to make a complete product. This allowed for the purpose of each learning center to be
clearly explained, and gave clear steps to follow to reach the goal of each learning center.

In order to foster students’ use of critical thinking skills, there needs to be a classroom environment of high expectations and encouragement to take risks (Black, 2004). This environment of high expectations was established as student work started to be collected as students completed their activities. Learning Centers were then followed-up with discussions about students learned, what they found confusing, or what activities they really enjoyed. Share time was also allotted to allow students to share their completed products with teachers and classmates. Students were able to display their hard work and share their new knowledge, while receiving praise and feedback from teachers and peers. Students who may not usually take the risk of showing their work to the class, because they rushed through it, it was incomplete, or they did not understand the task, were standing in front of the entire class, smiling, and showing off the wonderful work they did at the learning centers. Although the learning centers had become more involved and more difficult to complete, students were producing greatly improved work, and had an increased sense of accomplishment when they were able to complete the more difficult tasks.

A look into one Learning Center

Because of the large number of new learning centers developed and implemented over the course of this study, it is more meaningful to discuss one representative learning center, rather than analyze and present data from all sixty learning center activities. This learning center provides an explanation of how each learning center activity was designed, how students responded to the center, and how the learning center related to the
classroom curriculum and encouraged critical thinking in the Kindergarten students. To understand how this learning center was planned and developed, one must first understand the context in which it was developed. Because each new learning center was developed to directly relate to the Kindergarten’s regular classroom instruction, that classroom instruction must first be explained.

For the month of April, the Kindergarten theme was “The Jungle.” Students were learning about the jungle environment, what types of plants grow there, and the types of animals that live there. In Science, students learned about jungle animals that lived in the trees and sky, animals that lived on the ground of the jungle, and animals that lived in the water nearby the jungle. In Reading, students were exposed to a multitude of children’s literature, fiction and nonfiction, about the jungle and jungle animals.

Children were also learning about “action words,” which were taught during the daily language arts lessons. The Kindergarten students were first introduced to the concept of action words with a read-aloud. Before reading, the teacher instructed students to pay close attention to the actions of the characters in the story. The word action was discussed, allowing students to share their ideas of what the word means, and the teacher giving an explanation of the word. After reading the story, the teacher prompted students to tell what different characters in the story did, or give their actions. With students having some difficulty grasping the concept of an “action,” the teacher had students stand up and act out some action words. Words that were not actions were also thrown in to show students the difference between and action and nonaction word.

In order to reinforce the concept of action words, and allow students to use their
knowledge of jungle animals, a learning center activity “Jungle Animal Actions,” was developed to allow students to apply information they had learned in different subject areas to complete the activity. As Cosgrove (1992) explains, learning centers can improve students’ understanding of specific content area information and skills by relating those skills and information to other subject areas. In this learning center, students would have to rely on their knowledge of jungle animals that live in the sky, land, or water, in order to identify the types of actions each animal would do (fly, run, or swim). By showing students how to apply their knowledge in different areas, the information becomes more meaningful and useful to them.

This learning center not only allowed students to use their knowledge from different content areas, but also reinforced the concepts they had already practiced in daily lessons. This repeated learning supports brain based learning theory, which is based upon the findings of neuroscientists who explain that the brain learns best through pattern, repetition, and “meaning-making” (Winters, 2001). Because the brain learns through repetition, this learning center was a great opportunity for the new concepts to be reinforced. Because the learning center repeats what has already been taught in the classroom, the teacher can be sure that the activity is related to the regular classroom curriculum. According to Devany (2005), students should participate in learning center activities to fulfill curricular goals. This learning center fulfilled the goal of mastering the concept of “action words,” while also applying knowledge from the science curriculum to complete the activity. The learning center was directly linked to the current curriculum, and helped students better understand new information and better perform new skills.
The "Jungle Animal Actions" center was structured just as all of the other new learning center activities, with three steps to ensure that students were using higher order thinking skills to complete the steps. The learning center was designed to give students the opportunity to put their knowledge to use using some higher level thinking skills laid out in Bloom's Taxonomy. In step one, students were given 10 jungle animal picture cards of animals that live in the trees and sky, on land, and in water, and three action word cards labeled fly, run, and swim. The first step of this learning center was to sort the animal picture cards so that each jungle animal was sorted under the correct action word. For example, students should have sorted the pelican under fly, the crocodile under swim, and the tiger under run. This step encourages students to employ the first two levels of Bloom's cognitive process, to Remember by recognizing the animals in the pictures and recalling information about how those animals live, and to Understand by comparing and classifying the animals under their correct actions. The first step of the activity allows students to use some of the lower level thinking skills early, in order to display their knowledge and boost their confidence in completing the task.

However, this learning center required students to do more than just recall information. Cosgrove (1992) notes that learning center activities should be thought-provoking and stimulate students' curiosity by asking students to apply information and question their understanding of certain concepts. In the next step, students were required to think more deeply and apply their knowledge in order to complete the task. In step two, students were to look through several magazines to find and cut out three animals, one of which lives in the jungle, and all of which perform different actions. Students
would first have to think about what types of animals live in the jungle and Apply that knowledge when looking through the magazines. They would also have to Analyze the possible animals they could cut out to identify whether each animal did a different action.

After cutting out three animals, the students moved on to step three, which allowed the students to Evaluate or check the accuracy of their work and Create a final product that showed their understanding. A teacher-made work sample was provided to the students to show them how to create the final product. Students were to create a chart with four boxes on a piece of construction paper. One box would contain the student’s name, and the other three would contain one picture of an animal cut from the magazine. After gluing one picture into each box, the students were to label each animal with an action word (See Appendix C). Students had many resources available to aid them in writing the action words, including the sorting cards and teacher provided work sample. While some students attempted to copy the sample, they found that the action words on the sample did not match with their animals. On the other hand, students who could have easily copied the action words provided labeled their animals with original action words, and even attempted to spell them on their own (Appendix D). This shows that when students are challenged, they remain engaged in the activity, employ higher level thinking, access their own knowledge base, and create products that exceed the teacher’s expectations.

The student work sample in Appendix D illustrates how one student well exceeded the expectations of the teacher for this learning center. The student did an excellent job of following the format of the teacher-made sample, by creating four boxes
on the construction paper. He was successful in writing his name in one box and glueing three animal cut-outs in the other three boxes. His animals included a cat, dog, and one jungle animal, a monkey. The student’s choice of animals varied greatly from the sample provided, and would not fit with the labels of run, swim, and fly provided on the word cards and in the teacher sample. Although the student could not use all of the words provided within the learning center materials, he met the challenge by using his developing spelling skills to create his own labels: jap (jump) and soing (swing). Black (2004) notes that students will be more likely to take risks and fulfill high expectations when they know exactly what is expected of them. By providing clear steps to follow and a sample of the final product, this student was successful in creating his own product, and willing to take the risk of using his own action word labels for the animals he chose. If the brain senses that it may not be able to complete a task or solve a problem, then there is a perceived threat, and it will respond to the task with lower level thinking (Roberts 2002). Had the directions not been clear, or had the student felt threatened by the activity, he may not have taken those risks or employed higher order thinking skills to complete the task.

Just as important as the actual learning center, was the follow-up activity, which allowed students to share their ideas through discussion, and show their knowledge and new understanding of action words in a new way. After students completed the “Jungle Animal Actions” center, they participated in a class discussion about what their experience was like working at the center. Students shared their work, explained their animals and actions, identified which of the three animals lives in the jungle, and talked
about some difficulties they ran into when trying to complete the task. Many students laughed about how they cut out animals like polar bears or penguins, but then realized that these types of animals did not live in the jungle. Others told of how they cut out three animals that all did the same action, and had to think of new action words to describe other things they can do.

One student explained that “I didn’t remember what action means, so I didn’t think I could find the right animals, but step one helped me remember, and then I found a lot of good animals in the magazine.” As Roberts (2002) explains, teachers should create centers that set up the students for success. By allowing students to complete the task in step one using lower level thinking skills, students were able to complete the task easily, mastering simple recall, and relearning information that may have been hard for them to grasp. Had this learning center only included tasks that required higher order thinking, the students may have felt discouraged. If the brain senses that it may not be able to complete a task or solve a problem, then there is a perceived threat, and it will respond to the task with lower level thinking (Roberts 2002). On the other hand, if students are provided with the tools they need to complete a more challenging activity, they will be more likely to use higher order thinking skills to solve problems and complete tasks.
Chapter 5
Summary, Conclusions, and Recommendations

Summary

In many classrooms, learning centers provide students with nothing more than play time or busy work, and these simple activities allow students to perform using only lower level thinking skills. However, learning centers should be more than busy work. They should supplement the regular classroom instruction and encourage students to think critically about what they are learning. This study examines how to use learning centers more effectively to support everyday classroom instruction and explores how learning centers can strengthen students' understanding of new concepts and skills through critical thinking activities.

In order for learning centers to provide authentic learning experiences, they must have a direct objective, be related to the curriculum, meet the needs of all learners, and encourage higher order thinking in students. The general research on learning theories can be applied to the development of more effective learning centers that will meet the needs of diverse learners. While some research encourages hands-on activities that keep students busy during learning center time, this study goes beyond simply keeping students busy, to getting students deeply engaged in learning.
Based on the theories of Multiple Intelligences, learning styles, and brain based learning, teachers can develop learning center activities that accommodate the specific abilities, interests, and needs of diverse learners. Along with differentiating activities, teachers should incorporate a critical thinking component into each activity. Bloom’s Taxonomy is a useful tool in developing learning centers that encourage higher order thinking in students. Teachers can incorporate different levels of thinking to allow students of all ability levels to be challenged to think deeply. Learning centers should be directly related to the curriculum, have specific goals and objectives, and allow students to apply their skills and knowledge in meaningful ways. By doing this, learning centers become more than play areas or busy work, they become challenging critical thinking activities and important reinforcement for classroom instruction.

This study is based on qualitative research, specifically teacher research, which allows for a more subjective interpretation of the data sources collected. Teacher questionnaires, surveys, observations, student work, and photographs were collected as data sources to be analyzed in this study. These sources aided in answering the research question of how to use learning centers to support classroom instruction and encourage critical thinking in students.

This study does have some limitations, including generalizability. The research was conducted in only one small Southern New Jersey Kindergarten classroom. Only 16 students participated in the complete study, allowing for only one classroom to be
observed, and providing a small number of student work samples. With this classroom being so busy, having students on varying schedules, receiving several special services, some students were unable to complete activities or participate in the learning center activities each day. Although the results of this study may be unique to this Kindergarten classroom, the same literature and methodology may be applied in other classrooms of varying size, grade level, or geographical area.

Learning centers that directly related to the classroom curriculum and contained a critical thinking component were implemented in the Kindergarten classroom. Students participated in learning center activities created and implemented by the researcher. Changes were made to insure that students had more direction and structure during learning centers. Students' talents, interests, and needs were considered when developing the new learning centers in order to meet the needs of diverse learners. Activities with self-check allowed students to be more responsible for their work. Discussions, share-time, and follow-up activities also allowed students to feel a sense of pride in their completed products.

In order to encourage critical thinking in the Kindergarten students, the activities were designed to have three steps. The steps of the activity correlated with Bloom's taxonomy, increasing in the level of thinking skills necessary to complete each step. The three steps allowed for the purpose of each learning center to be clearly explained, and gave clear steps to follow to reach the goal of each learning center.
Major changes were noted between the original learning centers, and newly implemented learning centers based on the two sets of Learning Centers Surveys, observations, and student work samples. The new learning centers showed stronger support for classroom instruction, more critical thinking components, an increased ability to keep students engaged, an increase in the number of students completing the activities successfully, and an increased ability for students to apply the information outside of the learning centers. An environment of high expectations was established as students became more involved in their work. Although the learning centers had become more challenging, students performed well beyond the expectations.

**Recommendations**

**Implications for teaching**

This study offers valuable information for teachers who want to create more effective learning center activities in their classrooms. Learning centers are an opportunity to reinforce classroom instruction and challenge students to show that they understand the new concepts and skills. Learning centers allow students to be involved in purposeful learning experiences away from the teacher. Teachers should use learning centers to supplement regular classroom instruction by directly relating the learning center activities to the curriculum. By building upon the classroom curriculum, learning centers not only reinforce current concepts, but challenge students to show their
understanding in new ways. Learning centers are a valuable way for students to practice using new skills, and meet curricular goals.

In order for all learners to have successful learning experiences at the centers, the activities must be differentiated to meet the needs of diverse learners. Teachers must keep in mind students’ talents, interests, abilities, and needs when developing learning centers. Students should be set up for success, but also challenged by the activities in order to keep them engaged. The learning centers should be viewed as a useful teaching tool, allowing students to learn in the process, instead of being tested for their knowledge.

By incorporating critical thinking activities into each learning center, students are more likely to remain engaged in the activity, produce higher quality work, and be better able to apply the information outside of the learning center. A classroom environment of high expectations should be developed, encouraging students to take risks and use higher order thinking to complete tasks. Teachers can use Bloom’s Taxonomy as a useful tool for developing learning centers that challenge students through critical thinking. The critical thinking component is crucial to keeping the students engaged, and allowing them to gain a deeper understanding of the concepts being reinforced in the learning center.

Implications for further research

More conclusive evidence of the effectiveness of using learning centers in the classroom could be gained by including a larger sample of students, various grade levels, and classes in different geographical areas. Using a larger number of participants over a
longer amount of time may provide more generalizable results. It may be useful to introduce the structure and use of learning centers in the classroom early in the school year, before students become accustomed to other learning center routines. Critical thinking skills should be explicitly taught to students, allowing them to better utilize these skills at the independent learning centers. Allowing for more student input as to how learning centers are developed and implemented, as well as more extensive follow-up discussions may also be useful in understanding how these learning centers really affect student learning and performance.

**Conclusion**

This study focused on explaining how learning centers can be used to effectively support classroom instruction, as well as to encourage critical thinking in Kindergarten students. In order to support the classroom instruction, the learning centers should be planned along with the classroom instruction. The learning centers should have clear objectives and easy to follow steps to meet curricular goals. By incorporating critical thinking components, the learning centers are more likely to keep the students engaged and allow them to gain a deeper understanding of the concepts and skills being practiced. Learning centers are a valuable teaching tool that allow students to explore new information independent of the teacher. These learning experiences are just as important as time the students spend with the teacher, and should allow students to strengthen their understanding of the concepts being taught in the classroom.
REFERENCES


APPENDICES

<table>
<thead>
<tr>
<th>APPENDIX</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>A Learning Centers: Initial Questionnaire</td>
<td>57</td>
</tr>
<tr>
<td>B Learning Centers Survey</td>
<td>58</td>
</tr>
<tr>
<td>C Jungle Animal Actions Teacher Work Sample</td>
<td>60</td>
</tr>
<tr>
<td>D Jungle Animal Actions Student Work Sample</td>
<td>61</td>
</tr>
</tbody>
</table>
APPENDIX A

Learning Centers: Initial Questionnaire

Please answer honestly and descriptively. It is not required that you give your name. Please attach answers and explanations on a separate sheet of paper (written or typed). Thank you for your time and effort.

Given by: Date:

Completed by:

1. How are learning centers currently structured/organized in the classroom? Include information about how often they are used, how students are grouped, how activities are developed and implemented, how directions are given, etc.

2. Do the learning centers relate to and support regular classroom instruction? If so, how?

3. Do the learning centers encourage students to think critically about what they are learning? If so, how? Please provide examples of activities or student behaviors that show critical thinking through application, analysis, synthesis, evaluation (refer to Bloom’s Taxonomy).

4. Do the learning centers aid students in better understanding and applying the concepts and skills being taught in regular classroom instruction? If so, please explain.

5. Are students productive during the learning center activities? Include information about whether they stay on task, appear actively involved, and complete the task at hand.

6. What are some Pro’s/Con’s regarding how learning centers are currently used in the classroom?

7. How might the learning centers be changed or improved to more effectively support regular classroom instruction?

8. How might the learning centers be changed to more actively encourage critical thinking in the Kindergarten students?
Learning Centers Survey

Please choose one learning center that you observed or participated in today and rate its effectiveness by giving a brief description of the learning center activity and circling “Yes,” “Somewhat,” or “No” for each of the five questions.

Completed by:

Date:

Learning center activity:

1. Did the learning center reinforce concepts/skills being taught in the regular classroom instruction?
   - Yes
   - Somewhat
   - No

2. Did the learning center actively encourage students to think critically about the concepts/skills they were learning?
   - Yes
   - Somewhat
   - No

3. Did the learning center aid the student in better understanding and applying the concepts/skills being taught in the classroom?
   - Yes
   - Somewhat
   - No

58
4. Were the students actively engaged and focused on the learning center activity?
   
   Yes  Somewhat  No

5. Were the students successful in completing the learning center activity?

   Yes  Somewhat  No
APPENDIX C

Jungle Animal Actions Teacher Work Sample

<table>
<thead>
<tr>
<th>Swim</th>
<th>run</th>
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<tbody>
<tr>
<td>fly</td>
<td>Miss</td>
</tr>
<tr>
<td></td>
<td>Amelia</td>
</tr>
</tbody>
</table>
APPENDIX D

Jungle Animal Actions Student Work Sample