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A Descriptive Study of Preschool Children Learning Through Shared Activity

Carol Lynn Enger

A DESCRIPTIVE STUDY OF PRESCHOOL CHILDREN

LEARNING THROUGH SHARED ACTIVITY

by

Carol Lynn Enger
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Master of Science, University of North Dakota, 1985

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Sara E. F. Harrar
(Chairperson)

Deanna L. Strackbein

Glenn W Olsen

Carla A. Hess

Mary R Sayrs

This dissertation meets the standards for appearance, conforms to the style and format requirements of the Graduate School of the University of North Dakota, and is hereby approved.

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ABSTRACT

The purpose of this study was to develop a better understanding of how preschool children learn from other children in shared activities. Shared activities provide opportunities for children to assist each other in a meaningful social context. The question directing the study was: how do preschool children assist other children to learn in teacher designed learning centers and in child directed free play activities?

In order to discover how and when children are learning from other children, an observational study of one universtiy campus child care center was conducted over a period of seven months. Initial investigations included observations of the whole center and were conducted throughout the day, at least three days a week. Eventually the study was condensed to one key classroom and to free play activities orchestrated by the children and learning centers structured by the teacher. While the primary mode of inquiry for the study was child observations, informal interviews with teachers were also conducted.

Analysis of the data revealed several patterns. The opportunity for children to work in both same-age groups and mixed-age groups was beneficial in the learning process. Most of the shared activity was between pairs of children rather than three or four children. Language was an important part of the assistance children gave to each other. Even physical assistance and demonstration was usually accompanied by verbal

assistance. It was important for a child acting as an 'expert' to provide assistance to another child, a 'novice,' within the novice's Zone of Proximal Development. Computers were shown to be a very popular shared activity in this classroom. Teachers both directly and indirectly fostered children learning from other children. Indirectly teachers set up the classroom environment so that collaboration could occur, and directly teachers influenced children learning from other children by encouraging children to help each other and by modeling assistance themselves.

CHAPTER 1

INTRODUCTION

The notion that children can learn from other children is not new, but recent emphasis on collaboration, mixed age grouping, and shared activity has once again highlighted this concept. Cooperative learning, where children must work together to solve problems and complete projects, has been found to benefit both the intellectual and social development of children (Slavin, 1990). The research on cooperative learning has shown that this approach enables children to learn from and with other children. Perret-Clermont (1980), for example, found that children develop their ability to think logically when they exchange ideas with peers in small groups.

Vygotsky and Piaget have also contributed to our understanding of how young children can learn from other children. According to Piaget, interaction with other children provides opportunities for cognitive conflict when peers have clashing viewpoints (Piaget, 1955). Tudge and Rogoff have stated that children repeatedly see that others hold different opinions and start to accommodate their cognitive structures (1989). Vygotsky contended that children acquire a mental process by sharing or using it through collaboration, rather than conflict, with peers. He explained "What the child can do in cooperation today he can do alone tomorrow" (1986, p. 188-189).

Children have many opportunities to interact with their peers in quality, developmentally appropriate programs. These opportunities include not only unstructured, free play activities, such as dramatic play and block building, but also more organized activities like learning centers and circle times. However, just interacting with another peer is not always adequate to promote learning. Informal interaction may be haphazard or even promote misunderstandings (Bodrova & Leong, 1996). Interactions become very complex because of the many factors that are involved, including friendships, past interactions, and the immediate social situation. Likewise, structured cooperative learning activities may not work with very young children because of children's social and cognitive levels of understanding. Curran (1990) points out several important differences between using cooperative learning with primary students and with intermediate children. These differences include the inability of young children to read and write fluently, to read and remember directions, and to concentrate for long periods of time. In addition, young children have a smaller amount of knowledge and experience on which to draw. Many of the formal cooperative learning activities disseminated to teachers are not developmentally appropriate for very young children.

Statement of the Problem

Formal cooperative learning activities structured by teachers have been promoted as one answer to the problem of haphazard interactions that lead to more misunderstandings than learning. More than 70 high-quality studies have evaluated various formal cooperative learning methods. These studies compared the effects of cooperative learning with traditionally taught control groups where children worked alone

at their desks. Over half the studies found greater achievement in cooperative learning than in control classes (Slavin, 1987). A closer look at these studies shows a noticeable lack of research in the early grades, and particularly in preschool programs. Although there have recently been a small number of quantitative studies of cooperative learning in kindergarten and preschool (Azmitia, Lopez, Fraley, Lum, & Short, 1991; Perlmutter, Kuo, Behrend, & Muller, 1989), there have been few qualitative studies (Hill & Reed, 1990; Kotloff, 1993; Shreve, 1993) of preschool children learning from other children. Questions remain regarding the value of cooperative learning for young children and how cooperative learning contributes to young children learning from other children.

The popular impression is that young children are not capable of working together. There are numerous books and articles being published for parents and caregivers addressing such issues as behavior problems and children in conflict with each other. While it cannot be denied that there are children in our society today who are having serious problems, there are also many examples of children who are growing up as happy, cooperative members of our society. Besides looking at what is wrong in our world, there is also a real need to look at what is right.

Purpose of the Study

The purpose of this study, then, was to observe a preschool classroom in order to describe how preschool children may potentially learn from other children in shared activities. Specifically, the question guiding this study became: how do preschool children assist other children to learn in shared activities during teacher designed learning centers and child-directed free play?

Methodology

In order to discover how and when children were learning from other children, an observational study of one university campus child care center was conducted over a period of seven months. Initial investigations included observations of the whole center and were conducted throughout the day, at least three days a week. Eventually the study was condensed to one key classroom and to free play activities orchestrated by the children and learning center activities structured by the teacher.

The study began in the spring of 1995, when most of the children had been together for several months. All children in the key classroom were approximately 4 years old during that spring. Further observations were conducted the following fall, when a significant change had occurred. The teacher, materials and equipment were the same, and many children were back from last year, but the group now included a more mixed age range of 2 1/2 to 5-year-olds. This move from same-age to mixed-age grouping provided an interesting dimension to the study of children learning from other children in shared activities.

Detailed field notes were taken and transcribed later each day. An attempt was made to analyze and reflect upon the observations throughout the study in order to identify patterns and themes that would inform the ongoing research. Interviews with the classroom teacher were also conducted. Most of these interviews were informal, natural interactions between the teacher and myself and occurred simultaneously with the observations. After the spring observations were completed, the data were examined

using Vygotsky's work on shared activity and assisted performance. Fall observations and final analyses were further influenced by Vygotsky's ideas.

Definition of Terms

The following definitions will assist readers in their understanding of this study.

Cooperative Learning may be defined as structured small group problem solving that formally incorporates the use of heterogeneous teams, maintains individual accountability, and promotes positive interdependence, group processing and enhanced use of social skills (Millis, 1993). Cooperative learning can also be viewed as a continuum ranging from formal teacher directed activities to much more informal, natural collaborative activities. This collaboration occurs whenever people work together to get a job done or to help others (Marion, 1995). The present study focused more on learning at the informal, natural end of the continuum, although the preschool being observed conducted some formal cooperative learning activities as well.

Prosocial Behavior includes any action intended to benefit or help another person, animal, or group of people without expectation of external reward. A child may act prosocially out of fear, because she[1] is genuinely compassionate, or because of self-interest. True prosocial behavior, however, is selfless, not selfish altruism (Batson & Shaw, 1991). Besides cooperation, prosocial behavior also includes helping, the sharing or donating of time, resources and information, and comforting or showing compassion (Marion, 1995).

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[1] The female pronoun is used in this dissertation only for ease of reading and is not intended to be discriminatory.

Shared Activities is the means for facilitating a child's internalization of mental processes (Bodrova & Leong, 1996). All the participants in a shared activity must be both mentally engaged and communicating with each other in some way. "Shared activities provide a meaningful social context for learning" (Bodrova & Leong, 1996, p.110). Vygotsky believed mental functions exist in shared activity before being internalized (Bodrova & Leong, 1996). Shared activity is a way to provide assistance to children as they move to higher levels of their zone of proximal development.

Zone of Proximal Development (ZPD) is the dynamic region in which learning and development takes place (Berk & Winsler, 1995). It is the distance between what a child can accomplish independently at the lower level of the zone and what she can accomplish with assistance at the upper level. Between these levels are varying degrees of partially assisted performance.

Assisted Performance may be in the form of *direct* help, such as giving hints or clues, explaining, rephrasing questions, asking the child to restate what has been said, asking the child what she understands, or demonstrating the task to be completed. It may also be in the form of *indirect* help, through the setting up of the environment to facilitate practicing a specific set of skills. A child's level of assisted performance, then, includes any situation in which there are improvements in the child's mental activities as a result of intervention or social interaction (Bodrova, & Leong, 1996).

Peer Tutoring is a one-to-one teaching process in which one child is usually assigned as the expert and another as the novice (Cohen, 1986). Tutoring offers both tutor and tutee first-hand experience in the teaching and learning process. The novice is

provided needed support, and the expert learns to be more explicit (Cohen, Kulik, & Kulik, 1982).

Learning Centers are places or activities in a classroom that define a special focus or afford a specific opportunity for children (Flemming, Hamilton, & Hicks, 1977). Teachers provide, assemble, and arrange a physical space that allows children to see what activities are available, to make their own choices, and to become deeply involved in their own learning. For the purposes of this study, learning centers are defined as specific activities set up by the teacher. Included in these centers are games related to the daily theme, special art or craft activities, and other unique materials such a math manipulatives. Children moved freely from one center to another with no time constraints during this study. The free play activities that followed learning center times allowed children more choices and included dramatic play, computer, blocks, creative art, and other child-initiated activities.

Limitations

This research included descriptive observations of only one classroom and is, therefore, not intended to provide the basis for broad generalizations that can be applied to all other classrooms. The study is more an investigation of the processes of children learning together than of the products of that collaboration. Rather than presenting evidence that children have learned from each other, then, the study was intended to reveal the many types of shared activities where children may potentially learn from other children.

Significance of the Study

While no broad conclusions can be made from this study, the insights that developed as a result of these observations may help educators as they make important decisions about the organization of classrooms so that they can be conducive to children learning from other children. The research conducted as part of this investigation may be valuable to practicing early childhood teachers and to other educators who are interested in how preschool children assist other children to learn in teacher-designed learning centers and in child-directed free play activities.

CHAPTER II

REVIEW OF THE LITERATURE

Developmentally Appropriate Practice in Early Childhood Programs Serving Children from Birth through Age 8 (Bredekamp, 1987) is a position statement formulated by the National Association for the Education of Young Children (NAEYC) in response to a widespread practice of using inappropriate formal teaching techniques for young children. These inappropriate practices are largely the result of misconceptions about how young children learn (Elkind, 1986). Young children do not learn by sitting alone at desks doing workbooks. They learn through active exploration and interaction with adults, other children, and with materials. Formal, teacher-directed drill and practice on isolated academic skills are not developmentally appropriate for young children. Instead, teaching techniques must allow for the integration of all areas of development, including physical, affective, social, and cognitive development. "A developmentally appropriate curriculum is planned to be appropriate for the age span of the children within the group and is implemented with attention to the different needs, interests, and developmental levels of those individual children" (Bredekamp, 1987, p.3). Individual-to-individual and small group interactions are more effective than teacher directed large groups because they provide the opportunity for more exploration and interaction (Bredekamp, 1987).

This review of the literature will address the issues surrounding learning in individual-to-individual and small group interactions. Topics include discussions of Vygotsky and Piaget's work, the zone of proximal development, prosocial behaviors, mixed-age grouping, expert-novice tutoring, and formal cooperative learning. Each of these topics has important implications for the study of children learning from other children.

Vygotsky and Piaget

Both Vygotsky and Piaget have addressed the notion of children learning from other children. Berk and Winsler (1995) made a number of comparisons and contrasts between Piaget and Vygotsky, stating that while both these theorists agree that children can learn from and with each other, they do differ on the best format for this learning. Piaget (1955) emphasized the role of cognitive conflict, especially between peers, in promoting cognitive restructuring. An important element of Piaget's theory is that children benefit more from interactions with same-age peers than from interactions with older children and adults. Same age peers prompt more opposing viewpoints, so that children become more aware of inadequacies in their own thinking. Because they are close to the same age, children take more notice of what their peers are doing and saying. Piaget believed that children are, for the most part, in charge of modifications in their own thinking. He assumed that as children take notice of what their peers are doing they become more aware of deficiencies in their own immature reasoning. According to Piaget, it is, in part, this cognitive conflict that leads to higher levels of thinking.

Vygotsky, on the other hand, saw collaboration with peers as more conducive to cognitive development than conflict between peers (Vygotsky, 1986). Piaget's theory, according to Vygotsky, establishes a "principle of antagonism between development and learning" (p. 157). He questioned whether conflicts provide good teaching situations for children and instead emphasized collaboration between teachers and children in joint cognitive activities chosen to fit each child's level of potential development. This collaboration may also be applied to child-child activities. Vygotsky has contended that instruction by teachers or other children is a major contributor to children's growing consciousness, and it prompts the shift to higher levels of cognitive activity.

Vygotsky stressed the importance of mixed-age groupings of children. Each child has access to more knowledgeable companions. Peers can lead one another's development forward as long as the help that one child provides is within the other child's Zone of Proximal Development, or ZPD. One child may, for example, be able to put together a puzzle independently while another can do the puzzle with some assistance. These children could benefit from working together on the puzzle.

Tudge and Rogoff (1989) recognized the many ways the ideas of Piaget and Vygotsky complement one another. Both theorists, then, have proposed these principles:

1. A genetic approach to studying psychological processes as they develop.

2. Cognitive development in both theories was thought to go through qualitative transformations in thinking. Piaget believed that children move through a series of four developmental stages (sensorimotor, preoperational, concrete operations, and formal operations). Their thinking proceeds through these stages from relying solely on their

senses and motor knowledge to being able to think in very complex, abstract ways. Vygotsky did not discuss development by stages, but did believe that thinking would be altered when children were able to communicate linguistically and when instruction led them to an awareness and mastery of their own thoughts.

3. The roles of the individual and the environment are inseparable in the developmental process. The pace of an individual's development can be influenced by the social surroundings. The social environment has a direct effect on children's learning.

4. Children are active in their own development. They arrive at knowledge of the world through activity.

Recognition of both viewpoints provides a broader understanding of the many facets of children learning from other children. The unique features of Piaget and Vygotsky's work, as well as the similarities, allow for helpful dialogue and an expanded, unified perspective that incorporates the best features of both (Berk & Winsler, 1995).

Zone of Proximal Development

Central to this study is the importance of a child's zone of proximal development or ZPD in the learning process. Vygotsky perceived development not as a point on a scale, but as a continuum of behaviors (Bodrova & Leong, 1996). The boundaries of a ZPD are formed by a lower and upper level. The lower level is the child's independent performance of a particular activity or skill. This is what the child knows and can do alone. The higher level is called assisted performance and is the maximum the child can reach with help. Vygotsky called this a 'proximal' zone because not all behaviors the children has or will have in the future are included. The skills and behaviors closest to

emergence at any given time are in a ZPD. As children are able to perform more difficult tasks over time, the ZPDs change and the child's level of assisted performance at one time becomes her level of independent performance at a later time on a more difficult task. See Figure 1, One Child's ZPD Development. While much of Vygotsky's work was developed

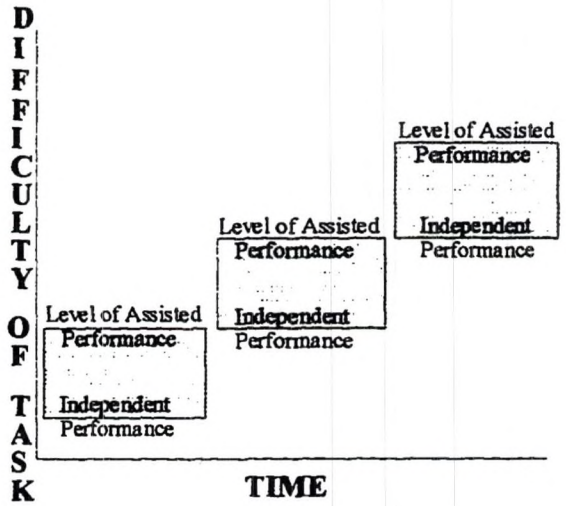

Figure 1. One Child's ZPD Development

for teacher-child interactions, many professionals are now adapting it to peer collaborations (Berk & Winsler, 1995; Bodrova & Leong, 1996). The level of assisted performance includes behaviors executed with the help of or in interaction with another child. This interaction, or shared activity, provides the social context for learning. Through talking and communicating in shared activities, the imperfections in the child's thinking become more distinguishable and therefore accessible to correction. Thought

becomes sequential and visible to the thinker. Shared activity forces the participants to clarify and elaborate their thinking. To communicate with another child one has to be clear and explicit (Bodrova & Leong, 1996). Looking at different aspects of an idea or task forces one to consider another child's perspective, and as a result, more and more characteristics of an object or idea are exposed.

To promote learning within their ZPDs, children need to engage in specific types of interactions with each other. There are five types of interactions, or shared activities, that are especially relevant to this discussion on children learning from other children. Johnson and Johnson (1994) and Slavin (1987) contend that one such interaction is cooperating to successfully complete a task. Each child has a piece of information or complementary item that must be coordinated together. One example of this cooperation is putting together a puzzle when each child holds parts to be put into a whole. In this type of shared activity, children are motivated to coordinate roles, and assistance can be provided for an individual child's skill development (Bodrova & Leong, 1996).

Another type of interaction that promotes learning occurs when children assume assigned roles. Each child has a distinct role, but she shares in the final outcome of the task. For example, in creating a collage, one child may be responsible for cutting, one for gluing, and one for sharing the collage with the rest of the class. If the task has been well developed according to age and ability, children will learn to support and encourage each other, listen carefully to the ideas of others, and work quietly and efficiently in groups (Curran, 1990).

In a third type of shared activity, children can be paired to act as experts to help

each other think through a problem. Learning is facilitated because the distance between children's ZPDs is smaller than the distance between children and adults. Peers are thought to be more sensitive and empathetic than adults (Slavin, 1987). Figure 2 shows the relationship between the expert's and novice's ZPDs. Having an older child read

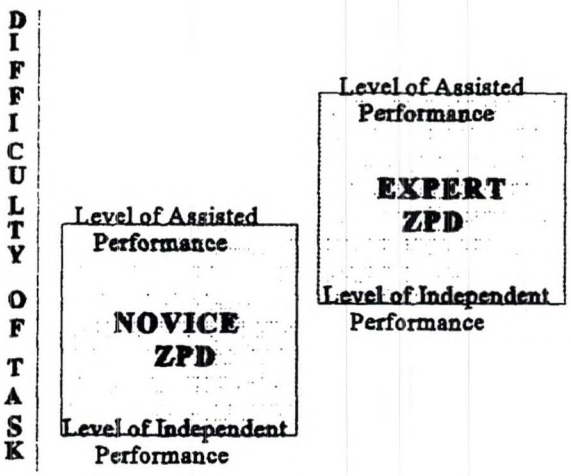

Figure 2. Expert and Novice ZPDs on the Scale of Task Difficulty

to a younger child is an example of this interaction. As a younger child listens to an older child read, she may focus on reading strategies that she would not necessarily pick up on if it was an adult doing the reading. More discussion on expert-novice tutoring will be addressed later in this literature review.

Another way for children to interact is through play. A number of theorists (Howes, 1980; Piaget, 1962; Rubin, 1980) view play as a form of social interaction that promotes a child's growing ability to engage in collaborative activities with peers. For

Vygotsky (1977), play serves as a tool of the mind, enabling a child to master his or her own behavior. Play establishes zones of proximal development for the child. New developmental accomplishments become apparent in play far earlier than they do in other activities. Nonplay behavior provides the upper level (assisted performance) of a child's ZPD, and pretend play provides the lower level (independent performance). A child, for example, may not be able to control her temper tantrums at the real toy store but may be able to appropriately act out the incident in pretend. Play, then, allows a child to act more independently in a pretend situation than she can when she is in a real situation.

Piaget did not write specifically about assisted performance or shared activity, but did address the issue of children learning from other children in play. According to Piaget (1962), play performs a major role in the child's growing mental abilities. Piaget has defined several stages in the development of play. In the first stage, functional play, the child repeats known schemes for actions and using objects. In symbolic play, the second stage, the child uses mental representations in which objects stand for other objects. Piaget viewed symbolic play as initially a solitary activity that only gradually becomes social with cognitive maturity and the decline of egocentrism. Piaget believed that children before the age of seven are still too ego-centric to communicate with others or to understand them (1955). The final stage is games with rules, where children begin to use external rules to imitiate, regulate, maintain, and terminate social interaction (Piaget, 1962).

A final way for children to interact is by confrontation. Both Piagetians and Vygotskians believe that encountering different views of the same situation may improve

the individual child's ability to grow mentally (Bodrova & Leong, 1996). Children may disagree, for example, on how to play a computer game. When they must explain their opinions to others, their own understanding will also be clarified. The actual disagreements, however, do not always lead to growth. Cannella (1992) investigated pairs of children between 5 and 7 years of age using spatial perspective-taking tasks. Results of the study showed that disagreements without justifications or explanations inhibited learning. This study also looked at gender composition of pairs and found that female pairs displayed the greatest conflict during social interaction and used the type of disagreement that contained no explanation.

These five types of shared activities all involve children interacting and learning from each other. Children may cooperate to complete a task, assume assigned roles, act as experts to help each other with a problem, play together, or disagree with each other. All these shared activities have the potential for promoting learning.

Expert-Novice Tutoring

Tutoring by peers generally refers to assigning one child as the expert and another as the novice in a shared activity (Cohen, 1986). For any given activity, then, one child (the expert) can perform a task independently while the other child (the novice) needs assistance to perform the task. Figure 2 shows the comparison of an expert's ZPD and a novice's ZPD.

Azmitia et al. (1991) studied the variances in partners' skills that arose during children's collaborative problem solving. Expert-novice pairs of kindergartners were formed after they had been asked to copy a Lego model.. Each kindergartner copied the

model with her assigned partner, later copied the model again alone, and then copied a new model with her original partner. The researchers looked primarily at the changes in the novices' roles from the first to the second collaborative session. Results showed that novices who were taught strategies for working with a partner by adults were more likely to successfully renegotiate their role in the peer collaboration partnership. Collaboration did not work when experts did not provide guidance and did not give up control of the task when the novices' competence increased. The researchers cautioned that expert-novice pairs may not be the optimal peer learning context for very young children because not all novices are able to improve their circumstances in the pairing, and may not mutually benefit from the collaboration (Azmitia, et al., 1991). In addition, some tutors are more competent than others. The expert must be shown how to act, what to do if the answer is partly correct or wrong, and how to praise and encourage the other child (Bodrova & Leong, 1996). Cohen (1986) has also advised that the tutor needs training about how to help another person learn. Every child needs the chance to be both the expert and novice in a peer tutoring situation.

In another study, McGee, Almeida, Sulzer-Azaroff, and Fieldman (1992) evaluated peer incidental teaching as a strategy for increasing peer interactions of autistic children. These researchers defined incidental teaching as more than just 'loose teaching.' They explain that incidental teaching consists of a prespecified chain of interactions that involve teaching multiple examples of desired behavior within ongoing activities. Three typical preschoolers were trained as peer tutors and worked with three children with autism. The researchers found that peer incidental teaching was effective. It is especially interesting to

note that because the incidental teaching was not rigidly structured, the peer tutors often seemed to forget their 'teaching' as they became engaged in play with their autistic child. Children were learning from other children in informal free play settings.

Tutoring allows children the opportunity to practice other-regulation and internalize it into self-regulation. Vygotsky believed that children learn to regulate the behavior of other people before they are capable of regulating themselves (Leont'ev, 1978; Vygotsky, 1978). A child may, for example, first be able to tell a new child in the classroom what the rules are about yelling before she can fully control her own yelling. She can see the rule more easily when looking at the mistakes of another classmate than when trying to perform independently.

Prosocial Behaviors

The field of childhood education has long promoted the value of prosocial behavior in preschool classrooms from a social perspective (Marion, 1995). Children are encouraged to be helpful, cooperative, generous and loving in a world that seems plagued with violence, hatred, and aggression. Prosocial behaviors are defined as acts that benefit another without expecting external reward.

The prosocial behaviors of sharing, donating, and cooperating are especially important when children are learning from other children. Sharing is defined as an interchange in which one child grants to another the partial use or possession of a thing (Beauvais,1982). Children can also donate materials, information or time to each other. Cooperation as a prosocial behavior offers children the opportunity to depend on others

while working to achieve a common goal. These prosocial behaviors aid children both socially and cognitively as they learn from each other.

Prosocial experiences are prerequisites to children engaging in shared activities where they can potentially learn from each other. In the preschool years, children have the cognitive and affective skills to act prosocially (Marion, 1995). Two factors that afffect children's ability to act prosocially are a child's self-concept and a child's social relationships. Cauley and Tyler (1989) found a positive correlation between cooperative behavior and self-concept in four and five year olds. Children who felt good about themselves were more willing to cooperate with other children. Mussen and Eisenberg-Berg (1977) compared many studies of prosocial behavior and found that children were more helpful when they felt happy or successful. Children with strong prosocial traits seemed to be better adjusted and were more socially responsible.

Marion (1995) also compiled the work of many researchers and found other factors which were related to increases in cooperation, sharing, donating, rescuing, and comforting during early childhood. Marion defines donating as offering either materials or information to another, rescuing as saving someone from something or something that is potentially harmful, and comforting as supporting someone who is in need of reassurance. Costin and Jone's work (1992) showed that children were more likely to be sympathetic and willing to help when a friend, rather than an acquaintance, was in trouble. Children sometimes give more approval, affection, tokens, and shared toys to peers than to unpopular children (Gottman, Gonso, & Rasmussen, 1975). How much children share or help someone, then, depends at least partially on the characteristics of the recipients of the

prosocial behavior and on the helper's own self concept. Wittmer and Honig (1994) suggest pairing an assertive, gregarious, but gentle child who is likely to offer help and friendliness with a very shy child and placing a friendly, socially skilled playmate with a child having social problems. Children learn from other children, then, when they have some skill and experience with prosocial behaviors.

There appears to be a connection between children's prosocial behaviors and their ability to engage in assisted performance. To act prosocially, a child must first be able to perceive the other person's needs, interpret them accurately, and recognize that she can be helped (Mussen & Eisenberg-Berg, 1977). Children need these kinds of cognitive skills in order to be helpful and cooperative, but cognitive skills are not enough. Children need also to see models of prosocial behavior, be able to understand emotions, hear verbal labeling and discussion of prosocial behaviors, and have many opportunities to practice prosocial behavior (Marion, 1995). Adults need to clearly state expectations for prosocial behaviors, give children appropriate responsibilities, as well as reinforce and encourage prosocial acts.

Prosocial behaviors benefit children both socially and cognitively. The benefits go to the person who acts prosocially as well as to the recipient of the altruism. Children who act prosocially develop feelings of competence, have a strong motivation to continue acting prosocially, and also tend to receive more help themselves from other children and adults (Marcus, 1977).

Mixed-Age Grouping

The benefits of mixed-age grouping have been discussed by several educators,

including Montessori, Pestalozzi , and Dewey (Shoemaker, 1995). A mixed-age group of children, where the children's age range is more than a year, is intended to optimize the educative potential of the mixture itself (Katz, 1995). The natural mixed-age groups of families and neighborhood cliques offer children models and information that they cannot always get in same-age groups. Mixed-age groupings give children a wider selection of models from whom they can learn. They provide older children with leadership opportunities and younger children with more complex pretend play opportunities (Lodish, 1992).

The differences within a group of children can be a source of rich intellectual and social benefits. Experiments in which children worked in groups of three, either in same-age or mixed-age groups, have shown that in the latter, older children spontaneously facilitated other children's behavior, there was more help-giving and sharing, and turn taking was smoother (Chase & Doan, 1994). Other research has also indicated that mixed-age groups can provide a therapeutic environment for children who are socially immature (Katz, Evangelou, & Hartman, 1990).

Of course, mixed age grouping is not without risks. Bailey, Burchinal, and McWilliam (1993) completed a quantitative study of children in mixed-age pairings and found that children in mixed-age groups tended to score higher than children in same-age groups at the younger ages on the Battelle Developmental Inventory. But these differences in scores decreased over time and disappeared by age five. Older children in this study did not benefit as much from being in mixed-age groups, which suggests that

mixed-age groups work well with younger children and same-age groups are better for the older children.

Lodish (1992) also suggested that older children in mixed-age groups may have fewer challenges than younger children, and because of this, teachers are required to do more planning when there is a wide age range of children. This, of course, may also be seen as an advantage if it means teachers are more compelled to remember individual children as they plan curriculum.

Several professionals have suggested guidelines for organizing mixed-age groups. Younger children must not be overwhelmed by older or more competent peers (Katz, 1995). Teachers need to maximize the potential benefits by encouraging children to turn to each other for explanations, directions, and comfort. Rather than allowing older children to gloat over superior skills, they need to learn to take satisfaction in their competencies. Younger children may also pester older children. Teachers need to show older children how to protect themselves and help younger children accept their own limitations (Katz, 1995). The primary requirement is that all children be respectful and caring of one another (Lipsitz, 1995).

Formal Cooperative Learning

Cooperative learning can be found on a continuum from very formal, structured activity to informal, natural collaborations. The research on formal cooperative learning provides valuable information about children learning from other children. The components of formal cooperative learning are:

a) Heterogeneous groups. Children are intentionally placed in groups with other

children who are different. Children may differ, for example, because of age, ability, or background.

b) Positive interdependence. In formal cooperative learning, it is very important that all children depend on one another in some way in order to complete the task.

c) Group interaction. Each member of the group interacts and communicates with the other members.

d). Group reward. The group as a whole gets some reward for successfully completing the task.

e) Individual accountability. Even though there are some group rewards, each member of the group is also held accountable for her share of the work. One person cannot do all the work while all members share the reward.

f) Success. Groups process and evaluate how their work together has gone and what they might do better next time (Foyle, Lyman & Thies, 1991).

Formal cooperative learning as a teaching technique with these components incorporates the type of small group work promoted in developmentally appropriate practice and allows for an active, rather than passive, exchange of ideas (Tudge & Caruso, 1988).

Many professionals have written articles that promote the benefits of children learning from other children in formal and informal cooperative learning activities. These articles are not based on research studies but do provide information about the use of formal cooperative learning in preschools. According to Lyman and Foyle (1988), providing young children the opportunity to work together promotes student motivation, fosters social and academic interaction, and improves children's relationships with peers.

Children can also practice oral language skills and develop positive feelings towards school, teachers and their peers.

Another educator to write about the values of cooperative learning was Kamii (1982), one of Piaget's major American interpreters, who stated that children of all ages would develop more rapidly if teachers would stop correcting worksheets and instead encourage youngsters to exchange ideas honestly and argue among themselves. A preschool teacher, Cartwright (1993) wrote about her experiences in a nursery school. She found that cooperative learning allowed children opportunities to help each other discover relationships and gain new insights about the world. Children could teach each other concepts and learn firsthand how to work together, help each other, and share mutual rewards. Coon and Palmer (1985) identified a number of possible ways to pair children together from different grades and reported that older children will retain what they learn and eagerly gather in more knowledge when they are asked to share their skills with younger children.

Atkinson and Green (1990) also state that children who have opportunities to cooperate develop higher order thinking and problem solving. Children are able to investigate and clarify their understanding of concepts by actively exchanging and using one another's ideas. "The aim of shared learning is to bring children together to teach and learn from one another" (1990, p.8). Each child profits from another child's expertise (Moore, 1986).

Quantitative Studies of Cooperative Learning with Young Children

The theoretical and experiential writings in the above section provide information

about formal cooperative learning, but a lack of qualitative research studies of formal preschool cooperative learning should be noted. Several quantitative research studies, however, do provide evidence that cooperative learning can improve academic skills and problem solving. Perlmutter et al. (1989) completed three cooperative learning studies that looked at how peer interactions affected children's problem solving. Children ages 4-11 worked either alone or with a same-age peer at a computer on letter related tasks. Young preschool children working with a peer did not demonstrate any changes in retention of simple or moderately complex tasks but were negatively affected on complex tasks. Peer interaction did have a positive effect on older preschoolers in simple tasks. Working with a peer also increased preschool children's affective levels and task engagement. Peer interaction appeared to help motivate children to engage in problem-solving activity.

First graders in formal cooperative learning settings have been found to do better in language development as indicated by more accurate paraphrasing and explaining of metaphors. They also did better in math, which was reflected by increased ability to set up equations, and in cognitive reasoning, as reflected by an increased ability to categorize in a sorting task (Skon, Johnson & Johnson, 1981).

There have been a few studies of cooperative games programs. Grineski (1989) studied the extent to which cooperative games promoted prosocial behavior interactions of young children with and without impairments. Sixteen preschoolers were involved in the study. Four of the children had developmental delays. Children were observed during regular gross motor play, cooperative games and regular gross motor play after the

cooperative games intervention. Grineski found that the cooperative games resulted in higher rates of positive physical contact than free play, especially for the special needs children. The cooperative games allowed children to demonstrate higher rates of goal-related cooperative behaviors than free play and were effective in decreasing instances of negative physical contact and negative verbal interactions. Orlick (1981) also worked with cooperative games and found that kindergarten children shared candies with other children more readily when they had participated in a cooperative games program. Orlick reported that a cooperative games program in preschools promoted self esteem.

Other research has also supported the success of formal cooperative learning for young mainstreamed children (Miller, 1989). One study, conducted by the U.S. Department of Education involved the Perry Preschool Project (Reaves & Burns, 1982). The study was designed to document the mainstreaming of mildly and moderately disabled children with non-disabled children in a plan-do-review sequence. Children were encouraged to use the plan-do-review sequence to make decisions and solve problems throughout the preschool program's day. All the children demonstrated significant gains on the McCarthy Scales in the areas of verbal and general cognitive skills. Problem solving and social skills were also improved.

Tudge (1992) conducted a quantitative study of children in kindergarten through fourth grade. The study pretested children to discover their rules for predicting the movement of a mathematical balance beam. Some children worked alone, some with a partner who used the same rule and some with a partner who was more or less competent at making the predictions. Tudge found that for children to benefit from collaboration, it

was helpful to have a partner whose thinking was at a more advanced level, but this, by itself, was not sufficient because there were situations in which children could adversely affect each other's thinking. On average, in this study, the less competent partners improved as a result of collaboration but the more competent partners regressed. The children in this study did not receive any feedback from adults, which may account for some of the regression, since children did not know if their predictions about the balance beam were accurate. If collaboration is not sufficient, then, it may be that one factor missing is adult feedback. This study raises important questions about cooperative learning with young children and the limitations of using it as a teaching technique.

Qualitative Studies of Cooperative Learning with Young Children

While much of the research on formal cooperative learning has been positive, it should be noted once again that many of the investigations were quantitative studies done with older children. The qualitative studies that have been completed with preschoolers, however, do also indicate positive outcomes when children are working together. Hill and Reed (1990) introduced a cooperative games program into four kindergarten sessions over a twelve week period. They found that the games were developmentally appropriate and were enjoyed by the children, and that the children learned a variety of social skills through participating in the games.

Kotloff (1993) was a participant-observer in a Japanese preschool with children ages three to five for a year. The children attending this preschool were divided into five classes according to age. "The classroom activities at Dai-ichi promoted a sense of common goals and shared purpose among the children " (p.23). The teachers had several

strategies for promoting this classroom atmosphere. They met daily with all children so they could share ideas, present achievements, and discuss projects. Teachers also planned activities that required cooperation and collaboration, and they were careful to select activities that would promote both group cohesion and individual expression. There was a balance of cooperative group-activity formats and individualized-activity formats.

In another qualitative study of preschoolers, Shreve (1993) investigated meaning-making within the social context of friendship. It was a case study of two preschool children identified as friends. Shreve found that friendships do support learning. Peers should be encouraged to collaborate because they do influence each other's meaning-making in very positive ways.

This review of the literature provides the foundations for exploring how children learn from other children in a variety of shared activities. The need for qualitative studies of formal and infomal collaborative preschool learning continues to exist.

While there is sufficient research implying that children learn from other children in a variety of ways, there is also some conflict about the processes of how children learn from other children, as has been noted in some of the research on formal cooperative learning. The purpose of this study was to investigate these phenonema from a qualitative perspective in a preschool setting. The research question was: how do preschool children assist other children to learn in shared activities during teacher- designed learning centers and in child directed free play?

CHAPTER III

METHODOLOGY

Children can learn from and with other children in a variety of ways. Their interactions may range from formal, teacher directed activities that require them to work together, to very informal, child directed activities where children spontaneously cooperate and learn from each other.

This study started with an interest in formal cooperative learning for young children, defined as a teacher-structured form of small group problem solving that incorporates heterogeneous teams, interdependence, and group processing. As it proceeded, the study became focused on one part of the cooperative learning process -- the process of children learning from other children. The research question guiding the study was: how do preschool children assist other children to learn in teacher designed learning centers and in child directed free play activities? The study was a descriptive study of one preschool classroom where children were learning together in a variety of ways. The study included an observation of not only the children but also of the teachers, materials, and curriculum. Glesne and Peshkin (1992) suggested beginning an observational study by trying to consciously observe everything about the research setting; to describe the setting in words and in sketches, using all the senses. Children, teachers,

materials, and curriculum all have the potential to influence how children learn from other children and therefore were all included in this study.

The Setting

The children and teachers in this study attended a child care center on the campus of a small upper Midwest university. The center included children from infancy through kindergarten age. There were both a Head Start program and licensed child care program housed in the same building, but children who attended as Head Start affiliates were not differentiated in the classrooms from children who attend for other reasons. Most of those were children whose parents needed child care while they were working.

Because I began this study with an interest in formal cooperative learning for preschoolers, one of the original rationales for choosing this site was because the center, although not yet incorporating formal cooperative learning activities into its curriculum, was considering it as a possible addition to the program. The university was finishing a three year campus-wide cooperative learning Bush Grant so cooperative learning was a technique in which the staff and teachers at the child care center were interested. The grant called for training instructors in all discipline areas on the uses of formal cooperative learning techniques in the university classrooms. At the same time, the teachers in the child care center were redesigning the lesson-based curriculum into a learning center-based curriculum. They expressed interest in finding out more about how they might implement formal cooperative learning into their program to tie into their learning center-based curriculum.

Another reason for choosing this center was because many of the staff were known to me. As a former director/teacher in this particular center, I felt the rapport and trust which had been established would be beneficial to my study. Glesne and Peshkin (1992) state that in qualitative research, rapport can be distance-reducing, anxiety-quieting, and trust-building. Rapport is one of the conditions needed to obtain good data because it allows subjects to open up and participate more fully in the study.

It should be noted that the program and children had changed in the past years. There was no Head Start affiliation during the years I was a director/teacher at this center. Consequently, the site provided both a comfortable and a unique environment in which to conduct research.

At the time of this study the center was located on a university campus. As in other programs that incorporate developmentally appropriate practices, this program strived to meet the needs of each individual child. The curriculum centered around eight areas. They were: cognitive, gross motor, arts/crafts, nutrition, culture, health/science, music, and parent education. During early observations for this study, children were primarily grouped into classrooms according to age, but during later observations the children were in mixed-age groups.

The building used as the child care center was once a dorm. Until a few years ago, the center was primarily housed on the first floor, but with the addition of the Head Start Program, the second floor was being used as well. See Appendix A for a floor plan of the center. The basement was used for storage and as a lounge for staff. Offices were used

by personnel from both Head Start and the child care program. These offices occasionally changed ownership over the period of this study.

During the spring there were three main classrooms for preschool children. These classrooms were all set up into relatively defined centers, such as dramatic play, blocks, books, art, and science. Half of each classroom was carpeted (usually the area with the blocks and dramatic play centers). See Appendix B for a floor plan of one classroom. The other classrooms were similar in design. The classroom shown in Appendix B became the key classroom for the study. It was located upstairs during the spring observations and moved downstairs in the fall. When the fall observations were being made, only two classooms were located in this building because the third group was moved to a neighboring town to accommodate more Head Start children.

The daily schedules of the head teachers were also similar. One schedule can be found in Appendix C. None of the teachers kept exactly to the times listed on the schedule but did usually follow the same order of events. Occasionally classrooms would combine for an activity, such as outside play, but most of the time each teacher decided individually what to do and when to do it. One teacher, for example, seldom used the library, choosing instead to give children more time in free choice activites.

At the time of the study, the program was in the process of becoming accredited by the National Association for the Education of Young Children and had collaborative agreements with the local Special Needs Cooperative to provide an integration program for preschool special needs children. Head Start also provided many services to both the Head Start children and other enrolled children. The Head Start nurse, for example, was

available to all children regardless of affiliation. The center was open from September to May, usually closing only for holidays and for one month in the summer.

The Subjects

There were approximately 80 children enrolled at the center, including infants and toddlers. There were three preschool classrooms in the spring and two in the fall, with 8-10 children in each classroom at any given time. Over the lunch hour there was often an overlap of children coming for morning and afternoon sessions so that there were sometimes up to 12 children in the room. Head Start children usually attended three hours a day, four days a week during the regular school year. Other children attended on a variety of schedules, ranging from nine hours a day every day to only four hours a day twice a week. The center was licensed for children ages 6 weeks to 6 years.

At the beginning of this study, all three classrooms were observed, but these observations were narrowed to two classrooms very early in the study because one teacher was not as receptive to having me observe in her room as were the other two teachers. The observations were narrowed to one key classroom after about five weeks. The children in this key classroom were almost all 4-year-olds during the first 10 weeks of observations in the spring, although there were two 5 1/2- year-old kindergartners who attended several half days each week. See Appendix D for a list of children and their ages. During later observations in the fall the children were in mixed-age groups, ranging from 2 1/2 to 5 1/2 years old. Each classroom had several Head Start children, but because no differentiation was made in the classroom between children, none was made in this study. Likewise, there were one or two special needs children in each classroom, but they were

included in all activities with no discrimination. Information regarding Head Start affiliation or special needs was confidential and not available to me unless a teacher mentioned it during a discussion.

There were three head teachers, four classroom aides, and three volunteer "grandmothers," who assisted teachers in a number of ways. During play activities, grandmothers interacted with children. They also helped set up for lunch and were usually assigned to sit at a table and help children as needed. The classroom aides were also responsible for helping with meals and other routines, such as tooth brushing. The aides were available to help during circle times and free play as needed.

Erica[2] was the head teacher for the key classroom in this observational study. She had been a teacher in the center for several years. Beth was head teacher in the second classrooom that was observed during the early spring observations. She had also been a teacher in the center for many years. Many of the spring observations in Beth's classroom have been included in this study, but she moved her classroom to a neighboring town in the fall and was not a part of the later observations.

A number of college students worked in the program as work study, practicum, or student teachers. Because of the campus-wide cooperative learning Bush Grant, most of these students had experience with cooperative learning in their college classes. Each classroom teacher had her own aides and volunteer grandmothers. Student teachers and work study students changed each semester.

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[2]Pseudonyms are used for all subjects in this study. Parents and teachers signed agreement forms that were kept confidential in my office.

There were also several people on the coordinating staff at the center, including the Center Director, Head Start Coordinator, Education Coordinator, and Health Services. While these people were not directly involved in this study, they were cognizant of the study, provided information about the center's programs, and occasionally offered opinions about children learning from other children.

Data Collection Procedures

Where possible, I attempted to collect data from multiple sources, such as interviews, observations, and art projects. Data were also gathered from multiple contexts. For example, early observations were conducted during free play times, structured group activities, and routines, such as snack time. Later observations focused on learning center times and the free play activities that followed these centers. Teacher interviews were also done in a variety of contexts, ranging from informal exchanges right in the classroom during observations to more formal taped interviews in the teachers lounge.

Observations

My primary role throughout the research study was as a participant observer. Glesne and Peshkin (1992) defined the 'observer as participant' as being predominantly an observer but having some interaction with the study participants. At times I would sit back and just observe from a distance, but I also had many opportunities to sit right at the tables or on the floor where I was able to play and converse with the children. This program is used by several college classes as a place for observation, and children were comfortable with this arrangement so there were no apparent problems with jotting down

notes as I played. Because I did act as a participant in the classroom while I was observing, the children sometimes saw me as another teacher and requested help from me in the same way they did other adults in the room. For example, children frequently asked me to play a game with them or help them get on their shoes. As Delamont (1992) has advised, "the roles which researchers have to play in order to relate successfully to informants are many and various" (p. 137). I played many roles as a participant observer, and attempted to remain conscious of how I was influencing what was happening by noting how children and teachers seemed to be reacting to me. Delamont suggests it is important for researchers to think about how they are being evaluated and to make detailed notes on how they are perceived and how this may be interacting with the data being collected (1992).

The study began with broad observations of the whole program in the spring of 1995. At this point I was interested in finding out more about formal cooperative learning activities. Were teachers using any formal cooperative learning strategies? What kinds of informal, spontaneous cooperative learning was occurring in the program? I spent time in each of the three classrooms and observed for six to seven hours a day, three days a week, for six weeks. I usually spent at least a half day in each classroom, participating in and observing all aspects of the program, including such routines as lunch time and naps. These initial observations allowed me to become familiar with the whole program.

My observations were narrowed to two classrooms very early in the study because of one teacher's reluctance to have me observe in her classroom. This occurred after approximately a week of observing. As the next five weeks went by, I began to see a need

to narrow the scope of my observations to one particular aspect of cooperative learning. I found I was more interested in children learning from other children than in how to plan and implement formal cooperative learning activities. After some discussions with teachers, I decided to concentrate on Erica's classroom as the key classroom for this closer study of children learning from other children. Focusing on one classroom allowed me to spend more time getting to know the teachers and children, and to observe the classroom as a whole. I was able to become immersed in one place (Glesne & Peshkin, 1992), concentrating on the people and the questions I was forming about children learning from other children. The teachers and children in this key classroom were repeatedly teaching me about children learning from other children through their conversations and activities, and I was able to "fit in" (Glesne & Peshkin, 1992) as a participant observer. Erica's classroom was also the best place to concentrate my observations because it provided the most consistency of teachers and children over the entire time period of this study. Other teachers and children left after the spring, and I knew I wanted to observe for a longer time period. During the final four weeks of the spring, then, I continued to observe primarily in Erica's classroom for six to seven hours a day, three days a week.

In May, as I began to make plans to also observe in the summer, two important issues came to my attention. I learned, first of all, that Erica unexpectedly decided to take the summer off. I also learned from the coordinating staff that the children would be reorganized into mixed-age groups in the fall. I decided, therefore, to go back to the center in September for one intense month of descriptive observation. Erica moved from the upstairs classroom to the downstairs room but retained many of the same children she

had the previous year, and added several younger children. See Appendix D for a list of children and their ages. The material and curriculum were kept approximately the same. See Appendix B for Erica's floor plans. During the fall, I acted as a participant observer for one month, three days a week, for approximately two hours a day, during both teacher-organized learning center time and the free play activities that followed. I concentrated on these two activities because they seemed to be providing me with the most data about children learning from other children. Erica set up specific activities on several tables or other areas of the classroom for learning center time. Children were free to move from center to center for an unspecified amount of time. When children had spent some time at each center, they were allowed to move into free play activities. Some children stayed at learning center activities far into free play, while others moved very quickly through the centers in order to do free play activities.

Interviews

While I did conduct formal, taped interviews with two of the teachers, I found these teachers to be more receptive and talkative while I was in their classrooms as a participant observer. They would often come to sit by me and relate stories or talk about certain children or the activities that were going on in the room. I was usually able to write down their comments in my field notes shortly after their remarks were made. The taped interviews were also transcribed into my notes.

Art Projects

I did collect a number of papers that were done by a group of children during a formal cooperative learning activity in the spring. However, these did not prove to be

useful to this study once I focused on children learning from other children. The child-child conversations and teacher talk provided me with more insight into what was happening as children learned from other children.

Field Notes

Descriptive field notes were taken throughout the study in order to collect what Geertz (1973) calls "thick description." Over the course of the study, I attempted to look at the children, the teachers, the curriculum, and the materials in the room. During my first days in the center, I concentrated on collecting information about the children, their teachers and other staff, and about the program as a whole. I made drawings in my field notes of the floor plans and daily schedules of each room. After the first six weeks of observations, I found myself focusing much of my time on a few children and one teacher in the one classroom that eventually became the primary observation site. I also began to concentrate on free play and learning center times because these provided wonderful opportunities to see children working and learning together.

The detailed field notes, including observations and the informal teacher discussions, were recorded and transcribed as the study progressed. I also recorded personal comments regarding my feelings, problems, ideas and impressions. The data were reflected upon and analyzed as the research progressed, allowing me to search for patterns and themes that often illuminated and informed the research.

Interpretation of Data

A number of methods described by Miles and Huberman (1984) were used to analyze the data during and after the observational study. Two of the first and most

frequent techniques I used were reflections and memoing. While transcribing raw field notes, I set aside the left hand side of my paper for reflective remarks. These included questions and concerns I had, reminders about things I wanted to pursue or think about, and flashes of insight. Most of my reflections were made while transcribing field notes, but sometimes they were also jotted down while on-site.

Glaser (1978) defined a memo as the theorizing write-up of ideas about codes and their relationships as they strike the analyst while coding. Memos helped me clarify my ideas about the specific patterns I was discovering both while collecting data and during analysis. Looking back on some of my memos, I can see how my coding changed over the course of the study, becoming more focused on incidences where children were supporting each other rather than just on incidences of children together. I started, for example, by simply noting how older children were playing with younger children and later began to describe more specifically how they were telling each other what to do. The later memos, then, were more focused on specific incidences of children helping each other.

Contact summary sheets were helpful in guiding my planning for the next observation and in suggesting new or revised codes. A contact summary is a single sheet containing a series of focusing or summarizing questions about a particular field contact (Miles & Huberman, 1984). I reviewed the transcribed field notes after every five or six days of observation in the spring and developed an overall summary of the main themes, issues, problems, and questions that I had generated during those observations. The summary sheets were not used as often during the later fall observations.

These summaries were helpful in the next stage of analysis, which was the coding of data. Miles and Huberman (1984) made a number of suggestions for coding data. Codes are categories, usually derived from research questions, key concepts, or important themes. I eventually developed both descriptive and explanatory codes. Descriptive codes are classifications of pieces of data by their attributes (Miles & Huberman, 1984). I used descriptive codes to specify a time period, activity, or child in my field notes. See Table 1 for a list of these codes. Later, as I began to look for patterns in my data, my codes became more interpretive and explanatory. Explanatory codes illustrate an emergent pattern that has developed as a result of the deciphering of events and relationships (Miles & Huberman, 1984). They added more detail to my descriptions and enabled me to group pieces of data as I struggled to understand the meaning of what I was observing. Table 1 also includes a list of explanatory codes.

As I was developing the explanatory codes, my focus during observations began to lean toward children learning from other children in teacher directed activities and in free play rather than toward formal cooperative learning techniques. I started to clump data together under such explanatory codes as *verbal assistance* and *asking for help*. It was at this point that I began to read more on Vygotsky and started to see many connections between what I was observing in the classroom and his work on shared activity. Vygotsky's work influenced my coding, and I began to look at the shared activities between children with different Zones of Proximal Development.

I also found it helpful to create some concept maps and tables while looking for patterns (Miles & Huberman, 1984). These helped me visualize where the themes were

and showed me where to find both confirming and disconfirming evidence. I started with a rough web linking various explanatory codes, then found a table that categorized

Table 1. Descriptive and Explanatory Codes

Descriptive Codes	Explanatory Codes
Learning Center	Watching, Listening, Imitating
Free Play	Verbal Assistance
Routines (lunch, nap, wash hands)	Physical Assistance
Teacher Directed Activities (circle time, story, transitions)	Asking for Help and Getting It
Mike	Asking for Help, Not Getting It
Kari	Offering Help, Acceptance
Megan	Offering Help, No Acceptance
Rob	Working Together, Supporting
Older-Younger Child Interactions	Adult Assistance
Same-Age Child Interactions	
Erica	
Beth	

each of my explanatory codes helped me to see where these incidences of assistance were occurring. See Table 2 for an example of one comparison. I listed the codes and the page numbers from my notes where examples of each of these could be found. Further, I discovered that color coding the explanatory codes in my transcribed notes and on my

Table 2. Children Assisting Other Children with ZPDs at the Same Level on the Scale of Task Difficulty

	Learning Centers	Free Play	Other
Verbal Assistance Only	Page 52, 54, 66, 128, 150, 151, 152	Page 5, 36, 51, 56, 67, 122, 140, 153, 164, 165	Page 90, 112, 117, 167
Physical Assistance	70, 89, 98, 112, 118, 162	36, 61, 98, 104 112, 117, 128, 139, 162, 209	114, 160, 186
Watch, etc. 100	88, 119	104, 106, 128, 140, 153, 154	95, 96, 97, 114, 133
Ask, Get Help	68, 79, 139, 151	28, 34, 36, 104, 124, 128	28, 161
Ask, No Help	3	49, 117, 128	28, 112
Offer, Accept Help	162	17, 27, 34, 49, 103, 163	28, 161
Offer, No Help	70, 89, 162	5, 139, 163	
Work Together	41, 47, 53, 54	13, 17, 44, 49, 120	46

tables was helpful because it allowed me to go quickly through the data during analysis and later during the writing of this dissertation.

This study involved an ongoing, ever-changing process of observation and analysis. The focus of my observations and the codes for analyzing these observations changed often as I identified what was important to my research question. I began with a general question about cooperative learning as a teaching technique and narrowed my focus to ask, more specifically, how do preschool children assist other children to learn in

shared activities during teacher designed learning centers and child-directed free play? A discussion of the findings of this study will be provided in the next chapter.

CHAPTER IV

A DESCRIPTION OF SHARED ACTIVITY

Vygotsky believed that mental functions can be shared. Shared activity is a social context for learning that provides the assistance children need at the higher levels of their Zones of Proximal Development, or ZPDs, as they learn and grow (Bodrova & Leong, 1996). These shared activities are not restricted to adult-child interactions. Shared activities may be interactions between more and less knowledgeable partners or peers of equal ability. These different types of peer interactions support different facets of development. Some may benefit children socially, cognitively, physically, or even emotionally.

The children in this study were engaged in many shared activities. In this chapter, I will explore the many interactions I observed in this program to highlight how children can potentially learn from other children. I will first look at interactions when children's ZPDs were at approximately the same level on the scale of task difficulty and when the ZPDs were at different levels; then discuss the many modes of learning in shared activity, such as verbal and physical assistance, demonstration, and modeling; and finally cite incidences of how teachers influenced children learning from other children in their shared activities. These incidences all helped me to find answers to my research question, which

was: how do preschool children assist other children to learn in shared activities during teacher designed learning centers and child directed free play?

Child Interactions

Each child has her own Zone of Proximal Development for each activity or skill. One child may, for example, be able to do an activity independently while another child needs assistance to do the same activity (Bodrova & Leong, 1996). See Figure 3 for an example of children at different levels on the scale of task difficulty for puzzles. An

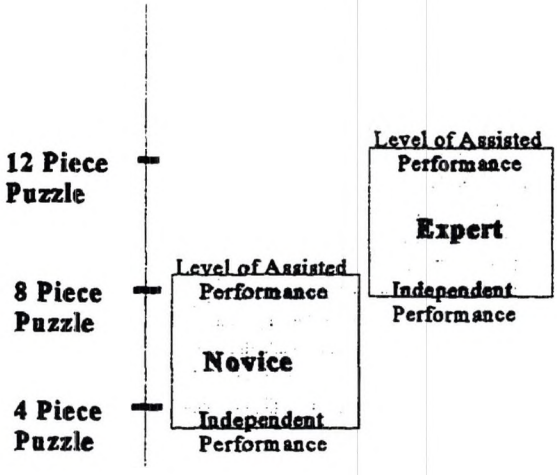


Figure 3. Placement of Expert and Novice on Scale of Task Difficulty

'expert' may provide assistance in shared activity to a 'novice' as long as the assistance is within the 'novice's ZPD. The different positions on the scale of task difficulty are determined by what children can do alone and what they can do with assistance. The

classrooms in this study were made up of mostly same-age children in the spring when I was observing the whole program and were mixed-age in the fall. Often, but not always, children who were different ages were also at different positions on the scale. For purposes of this study I found there were three general categories that were useful in identifying how children were influencing the learning of other children in terms of the placement of their ZPDs on the scale of task difficulty. The first category was cognitive and intellectual ability, the second was physical and motor skill level, and the third was experience. I will call children at approximately the same level on the scale 'peers' and those at different levels 'partners'. Table 3 includes information about the number of incidences that were found in this study where peers and partners assisted each other in learning centers, free play activities, computer play, and 'other' activities. The 'other' activities included outside play, teacher directed activities, and transitions from one activity to another. Table 3 does not include all child interactions observed in this study. It only includes those interactions where assistance was clearly evident.

Table 3. Number of Times Peers and Partners Assisted One Another

	Peers	Partners
Learning Center	19	30
Free Play	28	22
Computers	9	6
Other	14	18

Partner Interactions in Shared Activities

Many of the shared activities involved interactions between partners with different degrees of cognitive and intellectual knowledge, such as understanding classification causality, or numbers. The following examples show how children helped each other acquire these types of understandings.

> Erin and Larry were playing a dinosaur game with two other children that required them to do counting and matching colors. Larry, the oldest in this group, counted out chips for each player to start the game. He led the play, telling the others when to go, and if they didn't know, telling them where to put their dinosaur game pieces. At one point Erin rolled the dice, then asked, "How many is this?" He touched the place where she should put her piece, and she placed it there; then she said, "I'm this many." She held up four fingers. Larry said, "Four," and Erin repeated, "Four." (5/4/95)

> Megan and Dennis were painting with little fly swatters on a table covered with paper. Megan smeared her paint (red and yellow), then said to Dennis, a younger child, "Look, mix your colors up. You can make orange." Dennis looked at her paint and said, "You don't do that," as he demonstrated smearing, "You do that," and he patted his swatter on the paper. Megan said, "Uh huh, you can make patterns more." Dennis looked at her patterns and smeared his paint a little also. Later they got some blue paint, and Megan smeared that in, then said to Dennis,

"Do this, we're making brown." Erica, the head teacher, was listening and talked to Megan and Dennis about mixing colors, asking them what other colors can be mixed. Megan answered her as Dennis listened, occasionally glancing at Megan or Erica as he continued painting. (9/14/95)

Some children were more skillful in performing certain tasks, such as eye-hand coordination, jumping, and balancing. Partners were potentially able to learn from each other in activities where these skills were being practiced and performed. Mike frequently assisted other children who were having trouble doing something.

Cory was trying to get a spinner to work on a game that he and Mike were playing, Mike said, "Flick it, like this," and demonstrated. Cory did it the way Mike showed him, and it worked. They continued the game. (5/14/95)

Anthony and Greg were in the bathroom washing their hands and talking about things they could do in the swimming pool . Anthony said, "Remember when you taught me how to do a flip?" Greg said, "Yea." Anthony crouched down and jumped up as if demonstrating the flip while Greg watched and said, "Yea, like that." Anthony: "I can flip." (5/17/95)

Karen asked Erica, the teacher, to draw a horse for her. Mike was sitting next to her and said, "I'll help you, I know what a horse looks like." So Karen gave him

her paper and watched as he drew a horse on it. She looked up at Erica and said, "He's helping me make it." When Mike was done, he pushed the paper back to her and returned to his own paper. She drew lines over the horse. Erica asked her about her paper, and Karen said the horse was in a cage. Erica wrote the word h-o-r-s-e on the paper. Mike leaned over and asked, "That says horse?" Erica said, "Yes. You two worked really hard together on it." (5/4/95)

During the fall of this study the groups changed from mostly same-age children to mixed-age. While some children, like Mike, continued to help peers and partners in both situations, other children reacted very differently to being in a group with younger or older children. Megan was one child who responded positively to having younger children in the room. In the spring she spent all her time with her peers, but in the fall when the groups were mixed-age, she interacted much more with younger children. Several times Megan sat down to listen to a story tape, and Bonnie came and sat with her, as in the following incidence.

Megan was at the Listening Center. Bonnie came over and sat in the chair next to her. Megan moved her chair over, got Bonnie earphones, pointed to the correct page, and held the book so they could both see. Sometimes Megan would point to a picture on the page and look at Bonnie, smiling at her. Megan started to sing along with the song at the end of the story and told Bonnie to sing also. They both sang and danced in their chairs. When the story was over Megan got out

another story and set it up for them. They continued for about 20 minutes. (9/14/95)

Megan and Bonnie also played for several days in a row with the Beauty Shop. Before the groups were mixed, Megan had spent time standing behind the teacher's and aide's chairs, fixing their hair. In the fall, with the addition of younger children, Megan took the place of the adults.

Megan sat in a chair and told Bonnie to fix her hair. She directed Bonnie, telling her, for example, "Put on lipstick...now comb my hair...I need a curler." After about 10 minutes, Megan got out of the chair to pick up something she saw on the floor, and Bonnie quickly sat down, telling Megan to fix her. Megan worked on Bonnie for a few minutes, then said it was her turn again. Bonnie changed places with her, and the play continued. (9/28/95)

Some children were more familiar with the classroom procedures because they had been in the program longer and had more experience with the routines. They had a sense of the way things were supposed to work in the classroom and a general understanding of what was expected of them. One day Megan gave a lecture to David, a new boy in the classroom.

David was standing in the middle of the room during free play, swinging a block around. He knocked a toy off a shelf, just as Megan was picking up another toy. She turned to a student teacher and said, "Look what he did." Then she looked up at him and said, "You don't want to hurt anybody, do you? You can't do that." David just looked at her. He was still holding the block, but not swinging it. Megan sat down and began to play but then picked up a block like the one David was holding, swung it a little, and said, "If you hold it like this, see what happens." She sat down again. David dropped the block and walked over to another table. (9/5/95)

This is also an interesting example of Vygotsky's notion of how children use play experiences to act at more independent levels of their ZPDs than they can in real situations. He said that children learn to regulate the behavior of other people before regulating their own behaviors (Vygotsky, 1978). Megan frequently had trouble staying within the limits defined by teachers. Yet she was able to define very clearly what the proper behavior of another child should be during this free play activity. She was able to practice other-regulation in the process of learning self-regulation.

Jill also liked to help the younger, new children. She was an older child who had been in the program for a couple of years. Jill could frequently be seen telling or showing children what they were supposed to do. In the following examples, it was clear that Jill performed these duties without expecting or receiving any external reward from adults.

> One day after cleanup the children were to sit down in a group for a story. Dennis was wandering around the room instead of sitting down. The teacher had not noticed him yet, but Jill got up from the carpet and held him from behind, steering him to the carpet, saying, "You have to sit down now." They both sat down, and the story started. (10/2/95)

There were also children with special needs in this classroom whose ZPDs were often at different positions on the scale of task difficulty in terms of knowledge, skill and experience. There were children with special needs in the classrooms in both the spring same-age groupings and in the fall mixed-age groupings. One child who was frequently a partner to other children was Rob. The children often assisted Rob during learning centers and teacher directed activities, but not as often in free play. In the following example, Jill helped Rob during a teacher directed transition.

> Children were all sitting around Beth. She was calling them up one at a time to find the first letter of their own name on a picture of butterflies shaped into alphabet letters, and then go into the bathroom to wash hands. When it was his turn, Rob stood up and looked at the picture. After a moment, Jill reached up and touched the R, then looked at Rob and said, "R for Robbie, see?" He touched the letter and left to wash his hands. (4/13/95)

During learning center time, stamps of animals were set out at one table. Sara and Rob were stamping on an ink pad and then onto paper. Rob picked up a lion stamp, and Sara said, "That's a lion, Rob." Later Rob was stamping onto the ink pad without looking at what he was doing. He wasn't getting much ink on his stamp. Sara said, "Keep it inside." He looked a little more carefully at where he was putting the stamp, and it worked better. (3/15/95)

The above incidences show how children whose ZPDs were at different positions on the scale of task difficulty willingly shared activities. But sometimes children started out not wanting to work with a partner and then changed their minds. This was especially evident in the fall when the groups were mixed-age.

Bill was playing with Legos at free play and William came over. He was carrying around a blanket and dropped it near Bill. Bill said to me, "Get him out of here, he's too little," as he tossed the blanket away from his Legos. As soon as Bill threw the blanket, William picked it up and threw it back. They repeated this again. Then William hid behind a shelf and peeked around the edge at Bill. Bill got in closer to the shelf and peeked back. They continued this game for several minutes, until Bill went back to his Legos and William wandered away. (9/7/95)

Peer Interactions in Shared Activities

Some children in this classroom were at the same level of cognitive knowledge,

skill, or experience during their shared activities. Peers were also able to learn from each other, both in the spring when the groups were same-age and when the groups were mixed-age in the fall. Table 3 shows the frequency of incidences when peers assisted each other. Peers were usually, but not always, approximately the same age.

> Megan was playing with a puppet that could be turned inside out and changed from a caterpillar into a butterfly. She showed it to Greg saying, "Look, I made a butterfly out of a caterpillar." Greg asked, "How did you do that?" Megan said, "I turned it into a butterfly," as she demonstrated. Megan continued to turn the puppet back and forth from a caterpillar to a butterfly for another minute. Greg walked away without saying anything else but picked up the puppet later during clean up and turned it inside out once before putting it down again. (4/13/95)

The computer was frequently chosen by peers as a shared activity. Some children used the computer more often than others, and some were more interested in just watching someone else. Brian was often seen watching other children and talked almost constantly while he watched.

> Brian went over to sit by Ted, who had the mouse and was playing a matching game. The computer played music each time he got a correct match. Brian began a running dialogue, telling Ted what to do and making comments such as "It's probably here...Yahoo, you did it," and then danced around when the music

played. Most of Brian's suggestions were accurate, but Ted did not always follow his suggestions. This continued for about 10 minutes, until Brian went to the bathroom. Ted stayed at the computer for another few minutes. (9/19/95)

Neal and Bill were at the computer. Neal had the mouse, and Bill sat next to him. Erica, the teacher, found a game, then told them they needed to find a way to share. Bill said, "First Neal has a turn, then I do." When Neal's turn was done he immediately gave the mouse to Bill. During Bill's turn Neal said, "Push that one," and touched the screen. Other comments by Neal during this time included, "Hey, how did you do that?...It's here...Remember this?" He frequently touched the screen as he talked. During Neal's turn, Bill just watched. They took turns for about 15 minutes. (5/22/95)

Peers were more often seen working together in free play than in learning centers, but there were incidences of peers assisting each other during learning center times as well.

Jill and Larry were at the table with alphabet stamps. Larry said, "I need a 'A'," and Jill passed it to him. He continued with other letters, spelling out the rest of his name, then asked, "How do you spell dog?" Jill told him as he spelled it out with stamps. As he was finishing, Larry said, "I knew that." (4/25/95)

Brian and Mike, both older 4-year olds going to kindergarten in the fall, were sitting at a table during learning center time, working on some coloring pages. Both boys had chosen pictures of a tiger holding the number three. Mike finished coloring his tiger and turned the page over to trace the tiger from the back. Brian had spent most of this time talking and looking at the other children's pages. Erica told Brian to at least color in the stripes, but Brian said, "Mike, you flipped it over like this," as he turned his paper over also. "You better show me how you did it." Mike, who had hear what Erica said, reached over and turned Brian's paper back to the front and said, "Do the stripes." Brian did one stripe, then turned his page over and copied what Mike was doing. (4/19/95)

While the above events do indicate peers at the same level of knowledge or skill engaged in shared activities where they could learn from each other, occasionally assistance by peers was not appreciated. Peer conflict sometimes occurred in these situations.

Ted and Bill were doing a craft activity during learning center time. They were decorating wooden hearts with buttons to make Mother's Day pins. As they were working Ted said, "This one's red." Bill: "No, it's not." Ted: "Yes, it's red." Bill: "No." Ted said, "Yes it is, teacher is this red?" Erica nodded yes. Ted said, "I told you." Bill didn't say anything. (5/11/95)

George was at the computer when clean up was called. Greg walked by and said, "You gotta shut it off." George said, "I know, but first I have to close this." He clicked on the wrong place and had to click it off again and retry. Greg watched this a moment, then leaned over and shut off the power. George: "You can't do that, you'll ruin the computer." Greg exclaimed, "You have to shut it off." He walked away and so did George, after a heavy sigh. (5/11/95)

Greg did not use the computer very much, and I never saw him turn it off again, but I did see George use it often and turn it off properly when done. George also helped other children close programs before shutting off the power.

Partners who were at different positions on the scale of task difficulty and peers who were at approximately the same position were all able to engage in shared activities. Children were apparently learning from other children in these shared activities. Vygotsky believed that collaboration in mixed-age groupings was very important (1978), and the child interactions observed in this study confirm this notion. Piaget, on the other hand, emphasized the need for same-age interactions (Tudge & Winteroff, 1993), and this was also occurring in this classroom. Both viewpoints, then, are important when looking at how children can learn from other children.

Assisted Learning

Another way to look at the data is to study the many ways children assisted each other in their shared activities. These ways included verbal assistance, physical assistance, demonstration, and nonintentional modeling. Verbal assistance included offering

suggestions and giving hints about how to do something. Physical assistance included actually doing something for another child. Physical assistance may or may not be accompanied by verbal communication. Demonstration referred to showing another child how to do something and then letting her try it herself. Nonintentional modeling included opportunities for a child to watch or listen to something another child is doing or saying. For example, a child may listen to another child answer a question that a teacher has posed about a story. I have included working together and supporting each other with praise as a part of nonintentional modeling because not all of the assistance used by a child is deliberate. Table 4 provides information about the frequency of these types of assistance.

Table 4. Number of Incidences of Assistance by Types

	Learning Center Time	Free Play	Computers	Other
Verbal Assistance	19	14	10	9
Physical Assistance	18	5	3	11
Demonstration	11	5	4	4
Unconscious Modeling	6	5	3	8

Verbal Assistance

Verbal assistance included giving hints or directions, and explaining how to do

something. There were many incidences of verbal assistance in all types of shared activities.

> Megan asked Zoe for help during free play. Megan was trying to get a child's tape recorder to work. She went to Zoe and said, "We can't get this to work." Zoe said, "You need a tape in there." Megan: "But I want to use this," and pointed to the microphone. Zoe said, "You still need a tape." Megan put a tape in it, but it still didn't work. She asked Beth, the teacher, to help her. Beth told her the batteries were dead and helped her replace them. (5/22/95)

Verbal assistance was understandably a big part of computer play, because only one child could use the mouse at a time and children could not easily physically assist each other.

> Sara was at the computer. Rick came over to watch. Sara stayed in her place in front of the screen but offered the mouse to Rick. She could read, and Rick could not. The game was matching pictures to words. As Rick tried to make matches, she said, "No, it's this one, push that one up." She was distracted by someone walking by, and Rick asked, "Where's the bug?" Sara looked back at the screen and pointed to it, saying, "Bug, see Rick?" Later she was distracted again, and he faltered. She looked back and said, "Try this one." They continued a few more

minutes until Sara wandered off. Rick glanced up at her as she left and also left the computer. (4/4/95)

One part of verbal assistance that I found very interesting was the initial offering of help. The following incidences provide examples of how children offered to help each other. Usually the offer of help from peers whose ZPDs were at approximately the same level was willingly accepted. Partners at different levels were not as receptive to offers of help.

The children in Beth's classroom were doing puzzles while waiting to be called into the bathroom (right across the hallway) to brush teeth after lunch. Anthony and Greg had a large floor puzzle of wild animals. Anthony said, "I'll find the tigers." Greg said, "I'll look for pieces for you." Jill came over to them and watched awhile. Anthony was called to brush his teeth, and Jill said, "I'll save it for you." He glanced at her as he left. She didn't actually put in any pieces, just moved some around. When he came back, he said, "You two can pick [an animal]." They all put pieces in until it was done. (4/13/95)

While peers usually accepted help from each other, occasionally the offer of help by partners who were older or more experienced children was rejected by the younger, less experienced children. Erica's group was made up of mostly four year olds in the spring, but there were two part time kindergartners in the class. One of these was Kari.

Several children were making decorations and then putting strings in them so they could be hung up. A little girl sitting beside Kari was struggling. Kari said, "I'll make you a knot." But the girl shook her head, and Kari went back to her own decoration. (4/20/95)

William was doing a puzzle, and Megan came over to watch. He asked me, "Where does this one go?" Megan pointed, and he put the piece in. She then picked up another piece, but William said, "No, don't help me." She went to play somewhere else. (9/19/95)

The children were finishing watching a video, and Jill turned on one light. Bonnie, a younger child, went to turn on the other light, but Jill rushed over, saying, "I'll turn it on, Bonnie, cause you're too little." Bonnie hurried to the light first and turned it on. They both went back and sat down with the other children. (3/23/95)

Frequently offers of help by partners were not rejected outright, but were simply ignored. Children at the computer would often ignore the offer of help from another, especially with the more creative, open-ended activities.

Neal was watching Kari at the computer. She was 'decorating' a dog, putting on a face, earrings, and so on. Neal made suggestions such as "Put lipstick on the

dog...He should have green hair...Put on that thing." Kari ignored all his suggestions and continued decorating her own way. (5/22/95)

Sometimes children would first reject an offer of help but then would accept the child into the activity. This seemed to happen often with partners.

Mike was watching Bill doing a counting game. He was matching numerals to pictures with that number of objects on it. Bill had the numeral 2 and was looking for the card with two objects. Mike pointed to the correct card and then said, "You want me to help you?" Bill shook his head no and continued. Mike watched as Bill picked up the 8. Bill looked briefly for the matching card, then asked, "Mike, is this 3?" Mike said, "No, 8," and then counted on the card with 8 objects. Bill put those cards together and continued the matching, picking up each of the other numerals. Mike pointed to the correct cards, sometimes counting the objects, as Bill watched. When they were done they each went to a different center. (10/2/95)

Kari wanted Lisa to come play with her, but Lisa was putting toegther some two-piece foam puzzles. Kari: "Do you want to play house?" Lisa: "Not yet." Kari: "Should I do this one?" Lisa: "No, I can do them all." Kari watched a moment, then Lisa said, "Put them in a pile like this." Kari put some in a pile, then put

together several more puzzles. They both worked on the puzzles, piled them up, then went together to the housekeeping area. (5/22/95)

There were many incidences similar to the examples above where children made no comments after assistance was given. Most children had a very casual, easy-going relationship. After assistance, each child would usually go back to what she had been doing without any other remarks.

Linda was trying to get on a dress-up skirt during free play. Megan was also in this area of the room and came over to her, helping to pull the skirt over Linda's head. No comments were made by either girl as they continued their parallel play activities. (4/4/95)

There were several incidences of children asking other children for help, which is the counterpart to children offering help.

Linda and Larry were building with Legos. Larry asked, "Hey, these go here, right?" She looked at his work and said, "No, on the other side." He moved one piece, and they continued. (3/16/95)

John was doing an alphabet floor puzzle. The pieces were spread out around the floor, and John told Brian and Cole to get the pieces for him as he then put them

in alphabetical order. John called out the letter he wanted next so Brian and Cole could look for it, then put it in the puzzle. As he got further up in the alphabet he began to sing the alphabet song each time he needed a new piece to help him know what letter he needed next. His comments to the other boys included: "I need a G, don't you know what a G is?...Ok, you guys, get a H...That's not a O, that's a M." He continued until they were all done. (5/16/95)

Usually children at the computer only offered help to each other, but one day Larry also asked for help.

Larry was doing a matching game on the computer, and Linda and Mike were watching. Larry asked, "What does this say?" Mike pointed to the correct match, but Linda said, "He doesn't need help." Larry exclaimed, "Yes I do!" Both Linda and Mike stayed, occasionally touching the correct match on the screen when Larry hesitated. (3/16/95)

There were many incidences of verbal assistance in this classroom. Even the physical assistance and demonstration that will be discussed next were frequently accompanied by verbal help.

Physical Assistance

Physical assistance in this classroom often occurred with partners whose ZPDs

were at different levels on the scale of task difficulty. This assistance included physically doing something for another child. Often the child giving assistance was potentially learning as much as the child being given assistance. The following incidences provide examples of physical assistance.

> Mike stopped on his way to his room after outside play to help Bonnie buckle her shoes. She was sitting on the bench with her shoes in her hand, and Mike took them from her. She watched as he put on one shoe and tried to buckle it. She wiggled, and he said, "I haven't got it yet." When he finally got them both on, he said, "Bonnie, I got your shoes on!" She raised up both her feet and looked at her shoes, then got up, and they both went into their rooms. (4/20/95)

> Zoe helped Tara, a special needs child, get on her jacket and zipped it for her before outside play. Then she worked to put on Tara's gloves. This took several minutes. Tara watched Zoe or looked around at other children while Zoe worked. When done, Zoe nonchalantly took her hand. They went outside together. (4/13/95)

When children went for walks, they were often partnered so that older children could help younger ones. Because classrooms often went together on walks, this partnering of older and younger children was seen both in the spring when the classrooms

were composed of same-age children and in the fall when the classrooms were mixed-age. Jill, Mike, and Zoe were often asked by teachers to hold hands with a younger child.

> Jill was holding onto a young girl's hand during their walk around the campus. When they came to a puddle, she helped the younger child to jump over. Occasionally the little girl would wander onto the grass, and Jill would pull her back onto the sidewalk. There was no conversation between these two. (3/15/95)

Demonstration and Verbal Assistance

Older or more experienced children often both told and demonstrated to younger or less experienced children how to do something. Megan frequently gave directions to children in the fall, when the group was mixed-age.

> Dennis, Megan, and two other children were going to paint during a learning center time. Erica had put out a large piece of paper on the table and some special new paint. She demonstrated first to the children, saying, "Look what happens if I do this...just brush back and forth...wipe your brushes before getting a new color." She gave them brushes, and they started. Dennis was slapping on his paint. Megan looked at his painting and said, "Just go back and forth, she said, you wipe it off." He glanced at her paper and copied her movements, then said, "Look what I made." Megan: "What is it?" Dennis: "Cat." Megan: "A cat?" He nodded, Erica walked by, and Megan looked up at her saying, "He's making a cat,

he told me." Erica said, "Oh, yes." Megan to Dennis: "Is that its tail?" He nodded, and they continued. (9/7/95)

Even though the computer was more conducive to verbal than to physical assistance, sometimes children would try to both tell and demonstrate how to do something.

Dennis was at the computer, and Bill was watching him. Dennis was having trouble, and Bill asked, "You have to do this one; want me to show you?" Bill put his hand over Dennis' on the mouse and moved it. Dennis pushed at Bill, and he sat back again to just watch. (9/7/95)

Bill, like Megan, was frequently reprimanded by teachers for not staying within limits, yet he demonstrated to younger, less experienced children how to do things. In the following example, he is interacting with a younger child during the fall observations when the group was mixed-age. Bill had been in the same group the previous year, and Jeff was new to the group.

Bill made a road with the rectangular blocks during free play. He had a small car that he drove on the road. Jeff got out a car and started to drive on the road also, but was crashing the cars and breaking apart the road. Erica said, "Bill, show Jeff how to drive cars," and to Jeff she said, "Can't crash." Bill drove his car, glanced

at Jeff, who was crashing again and not watching him, and then said, "Jeff, not like that, watch me." He demonstrated again. This time Jeff watched Bill's car and did it the same way as Bill. Later Bill wanted the cars to go side by side down the road. He said, "When I go up this time you go with me, we both go." He paused as Jeff put his car next to Bill's, then called, "Go!" But Jeff didn't go, so Bill said, "No, when I say ready set go, you go too." They did it again, and Jeff went along with it. Bonnie, another young child new to the class, was watching them, holding on to another car. She put her car on the road, but Bill said, "You have to watch us and do like we do." Bonnie: "No." Bill: "You have to." Bonnie shook her head no again. Bill called out to the whole class, "Hey, who wants to go on my road, raise your hand." Bonnie raised her hand and said, "Me." Bill said, "Then you have to do it like me." Bonnie did follow his directions for a few minutes, but then got more blocks out and laid them by the road. She didn't get to do any more because clean up was called. (9/26/95)

There were several other children, besides Bill, who gave verbal assistance while demonstrating something. In the following incidences, Jill and Larry provided both demonstration and verbal support.

During learning center time the children were taking turns pounding pegs into styrofoam with shapes outlined on the styrofoam. Jill had just finished, and Dennis came over to the table. Jill asked, "Do you want to do that pounding?

Should I start it? Here, I'll start it for you." She put in a peg and quickly pounded it once, then said, "Now you pound it." Jill left, and Dennis tried the hammering. He was unable to do it and wandered off to do something else. (4/4/95)

Larry and Rob were at the water table, one on each side. They each had plastic fish. Larry asked, "Robbie, does it go like this?" He bounced his fish a little in the water. Robbie watched him and vigorously splashed his fish. Larry: "Don't splash, Robbie." Robbie continued to splash, and Larry repeated his rebuke. When Robbie did not stop, Larry said, "Teacher, Robbie is splashing." Beth said, "Robbie, you have to listen to Larry, he knows the water table rules." Robbie looked at Larry's fish and stopped splashing. They continued to play, although a few minutes later Larry again told Robbie "No," when he was splashing too hard again. Rob again slowed down his splashing. (5/4/95)

Nonintentional Modeling

Another way children could potentially learn from each other was through watching and listening to what others were saying and doing. Other children were not deliberately providing assistance, but there was potential for children to learn in these unintentional situations. Rob spent much of his time watching other children, often at very close range. He would get up as close as he could to them and look into their faces.

On Annie's first day, Robbie went over to the table where she was playing with a dress up doll, putting clothes on it. He leaned over close to look at her face and looked down at her doll as well. Erica said, "Robbie, Annie; Annie, this is Rob," as she pointed to each child. Annie looked up briefly and went back to her play. Rob looked at her a few more seconds, then went off, but returned two more times in the next few minutes to again look at her face and watch what she was doing. When she left that table, he played a few minutes with the doll, doing some of the same things she had been doing. (9/14/95)

Three children were standing at the water table, which was filled today with pinto beans. They were using funnels to pour beans into jugs. Linda was across from Ted at the table. She poured some of her beans into Ted's funnel. He said, "Watch, if you do this it gets fuller." He pushed the beans down to make more room as she watched, then they both continued to pour more beans into the jug. (4/20/95)

An aide set up an apple peeler for one of the learning centers. Each of the children were encouraged to peel an apple, cut it into pieces, and then put it into a big bowl. William picked up an apple and tried to put it on the peeler. George took it away from him and twisted it on as William watched. When it was peeled the aide took it off, and William cut it into pieces. Later William took an apple, put it on the peeler, and peeled the apple himself. When all the apples were

peeled, the aide had the children take turns putting in other ingredients for apple crisp. (9/28/95)

Children were frequently expected to listen to other children, especially during more teacher directed activities. Teachers often had a short circle time or story before learning centers. As part of this, children were individually asked questions about the story or activity while others listened.

After reading A Very Hungry Caterpillar by Eric Carle (1969), Erica asked the children what happened first. One child answered, "Caterpillar eats and gets fat." Brian said, "No, first it's an egg, then it eats, then it goes into a cocoon, and then it's a butterfly." Most children looked at the book Erica was still holding up as they listened, but Megan turned around and looked at Brian as he explained. (9/19/95)

Grandma and Jeff were working at the play dough table, and Robbie was on the other side of the table. Grandma and Jeff were talking together and putting their play dough cookie shapes on a plate while Robbie watched them. The two of them discussed the kinds of cookies they liked, and Grandma told Jeff what kinds to put on the plate. Robbie also had some play dough that he squeezed or rolled on the table occasionally, but he spent most of that 15 minutes listening and watching Grandma and Jeff. (9/14/95)

Children sometimes modeled or copied what other children were doing. There were many incidences of this during both free play and learning center times.

Several children were playing a dice game during learning center time. John was rolling the dice and calling out colors while the other four at the table put markers on their game cards. Sometimes he would say the color twice if someone was not paying attention and didn't put a marker on the card. The aide came to do a health check on John, and Mike took over John's place, doing the same things he had been doing and saying. (5/4/95)

At the water table, Kari and Carol were standing beside each other. They had plastic dolphins. Kari held her dolphin way up in the air, and Carol watched, then did the same. Kari twirled hers on the table, and Carol also did it. This copying continued for several minutes. No comments were made by either child. Not all of Carol's movements were copies of Kari's movements, but Kari did not imitate any of Carol's movements; it was only Carol copying Kari. (5/16/95)

Bill and Jill were coloring at a table. Bill looked at what Jill was doing and said, "I'm copying you." She didn't say anything, and he did try to make some of the same things, but then got involved in his own paper and didn't copy anything else. (5/10/95)

Occasionally children did not want to be copied. Jill and Zoe frequently played together, but also frequently had arguments about telling each other what to do.

> Jill was making a square with the rubber bands, and Zoe was watching and copying her. Jill noticed Zoe's board and complained to Beth, a teacher sitting nearby, "She's copying me." Beth said, "She likes your ideas." The two girls were sitting side by side, very close. They continued working, and later Zoe said, "I'm not copying you." Jili looked at Zoe's board, then continued on her own board. (4/25/95)

There were many examples of children spontaneously working together without any specific requests or offers of help. These incidences, then, could also be categorized as nonintentional modeling because children did not purposefully assist each other. While partners at different positions on the scale of task difficulty did sometimes work together, peers did so more often.

> A student teacher had set up a bingo game with a food theme for one of the learning centers. There were only three bingo cards, but four children came to play. Larry sat down beside Greg. Greg moved over a little, saying, "Here." They played together on the same card, taking turns putting on markers. Sometimes Greg would touch the place for Larry to place the marker if he

hesitated. He often used the word 'we'. The teacher would call out a food, and Greg would say, "We have that one." (3/28/95)

Greg and George were in the library corner together. They were sitting side by side, each with half of a big Richard Scarry book on their laps. Greg said, "You look on this side, and I'll look on this side." They were trying to find a hidden rabbit. This lasted at least 15 minutes. Sometimes it was Greg who decided when to turn the page, and sometimes George did. There was no arguing about this. Occasionally they also pointed to other things, as when George said, "Look at that tiger." (3/28/95)

Carol was following Kari around. Kari got out a paper and colors and sat down. Carol sat next to her. Kari moved the paper and colors closer to her, and they both colored on the same paper. Carol said to Erica, who was walking by, "We're sharing," then went back to coloring. They worked together for several minutes, then Kari moved to another play activity, and Carol followed her. (5/15/95)

Problem solving is another type of shared activity where children can potentially learn from other children. An example of group problem solving occurred when George and Megan were at the water table.

George and Megan were standing at the water table, one on each side. They had bowls, but no other utensils. George was trying to scoop water into the bowls, but there was not much water left in the table. George said, "Erica, this doesn't work, see this doesn't get any water." Greg was watching and said, "I know, put it in your hands and then put it in the bowl." They tried this, and it worked for a while, but in the meantime another child, Jill, had found them some glasses to use. She brought them over and dumped them into the table, without any comment. George and Megan each took one and started filling them with water. (3/23/95)

Erica told a story during an interview about John, Mike, and Tara. John was in kindergarten at the time; Mike was a year younger; and Tara was a special needs child the same chronological age as Mike. John and Mike had made a stack of Legos, then were measuring each other to see how tall they were in comparison to the tower. They asked Tara, who was quite short, to come over so they could also measure her. At first Tara was reluctant to come over, but then John said, "Come on, Tara, come and see," in a very gentle, coaxing voice. She went over, and the boys moved her to stand next to the tower. After they measured Tara, they also measured Erica in comparison to the tower and to themselves. (5/4/95)

Besides these watching, listening, and modeling incidences, I have also included children praising and complimenting as a part of nonintentional modeling. Children

praising each other may potentially be a motivator to continue working. Brian and Neal often praised and complimented others when they were at the computer.

> Carol was doing a matching game at the computer, and Neal was watching. When she would get a match, he would clap and sing, "Carol got a match." Later she got another match, and he said, "Wow, did you see that? Yay, yay." (5/17/95)

Children also demonstrated support for each other by defending someone in trouble. This is a prosocial behavior that was seen only occasionally in these observations.

> During rest time, John and Evan were teasing Carol. Kari watched a moment, then got up, took Carol's hand and led her over to the teacher, saying, "They were being mean." The teacher took Carol in her lap and thanked Kari for helping. Kari smiled and sat down beside the teacher and Carol for the rest of the time. (4/13/95)

As can be seen by these examples, there were many kinds of assistance occurring in this classroom in many kinds of shared activities. Children assisted each other by offering help verbally, by physically doing things for other children, by demonstrating to other children, and by unconsciously modeling for other children. These aids to learning occurred in structured, teacher directed activities, in learning centers, and in free play activities. The adults in the room were very influential, both directly, and indirectly, in this

learning. The next topic for discussion will be adult assistance in children learning from other children.

Adult Influence on Children Learning from other Children

Teachers and other adults in the room (aides, volunteer grandmothers, and student teachers) supported children as they learned together in a number of ways. Adults verbally assisted children in their efforts to help one another, intentionally set up opportunities where children could assist each other, and served as models to children on how they could assist each other. The following incidences provide examples of the many ways teachers and other adults influenced children learning from other children.

Verbal Assistance

One way adults supported children learning from other children was by intervening and encouraging children to help each other after a request for assistance had been made by a peer or partner.

> During afternoon free play, Erica went on a break, and Andy asked another child where Erica was. He had been walking around the room, looking at what the other children were doing. The aide was across the room but heard Andy ask about Erica and said to John, who was near her, "Go tell Andy that Erica went on a break." John went over to Andy and told him. Andy stopped walking around and listened to John, then sat down in the block area to play. (3/15/94)

Rick asked me to help him with a play dough toy that presses out different shapes. Megan, sitting on the other side, offered, "I'll do it." He said no, but I said, "Let her try," and he gave it to her. She got it together, pushed it back to him, and he continued to play. Later Rick said to me, "Now I want the circle." Megan immediately said, "You can do it, slide it in." He repeated that he wanted the circle, and she told him again to slide it. He followed her suggestion and continued to play. Neither of them made any further comments. (4/6/95)

The children had made a rain stick together during learning center time. Each child got to push in a nail and put some ribbon on the tube. Bill was not in the room at this time, and when he came in later he saw John holding the tube so the rice ran through it, making a rain sound. Bill said, "Erica, he's playing with that." She nodded and said, "You listen to it; tell him what it is, John." John said, "A rain stick. It has nails, see." He touched a nail head. Later Bill's mom came in while Bill was holding it. He held it up to her, saying, "It's a rain stick. You know what, it has nails in it. It's dangerous." (4/6/95)

While not very frequent, there were a few incidences when adults were not very supportive. This happened most with aides or volunteer grandparents. As has been noted, Robbie was a special needs child who was frequently and willingly assisted by other children.

Greg and Grandma were watching Robbie do a large puzzle on the table. Greg moved a piece over near Robbie's hand, and Grandma said, "No, let him do it. He wants to do it." Robbie continued his puzzle without saying anything. Greg left to do something else. (4/25/95)

Intentional Opportunities

There were many examples of adults setting up activities so that children would have to help each other. Sometimes these were planned activities, and sometimes teachers took advantage of unexpected events.

Karen asked Erica to get a game down from the shelf during free play. Erica got it down, put it on the table, and asked Mike and Kari, who were walking by, if they wanted to play. Then she asked Mike, "Can you tell them how to do it, because I don't remember." Mike proceeded to set up the spaghetti and meatball game as Karen, Erica, and Kari watched. When it was ready he said, "You take one off at a time till the meatballs fall in." Karen pulled out a spaghetti. Mike said to Kari, "Now you do it." Kari took her turn, and the game continued. When the first round was over, Mike invited me to play. I asked Mike, "How do you lock it?" He showed me, and we played again. (4/6/95)

The children were coming into the room from washing their hands and were supposed to sit down on the carpet for a story. Erica was in the bathroom, and the

aide was telling the children to sit quietly. She said, "I see some children sitting really nice; Erica will be so surprised! I know what we could do. We could sit really quiet and surprise Erica when she comes." Robbie came in, and she said, "Rick, tell Rob the surprise." Rick looked at him and said, "Be quiet and surprise Erica." There as not a sound until Erica came in and some children jumped up, saying, "Boo.!" (3/21/95)

Sometimes the assistance of a child to another child would be refused until a teacher intervened. A typical example of this occurred with three girls playing on the flannel board during a free play time.

When clean up was called, Sara started to put the flannel board pieces into a bag, but Jill and Zoe wandered away. Sara pulled Jill over and said, "Help me clean up," but she walked away. Sara, "Hey, you guys, we're cleaning up, didn't you hear the bell?" The other two girls looked at books until a student teacher walked over and said, "Help clean up." The girls quickly put the books away and helped Sara. (3/21/95)

Occasionally teachers did set up formal cooperative activities during circle time or learning center time. Beth was particularly interested in trying some formal cooperative learning activities with her group of 5-year olds in the spring.

Beth conducted a game of cooperative learning musical chairs. Chairs were taken out, but children stayed in the game and they had to share chairs. As she conducted the game, Beth occasionally reminded children to help each other because everyone had to be sitting. When there was only one chair left, the children sat on each other's laps in a row. After the game, Beth asked, "Was that fun?" All the children nodded and said, "Yeah." Beth: "How did you help each other?" Jill raised her hand and said, "We shared the chair." Beth: "That's cooperation, can you all say that?" They repeat. (4/16/95)

The children in Beth's class went over to the campus science building to do some cooperative science activities planned by two education students. The children were put in teams of two. Each team had one magnifying glass and one scale. Anthony asked, "Why doesn't everyone have one?" Beth said, "Because we're going to share." The children took turns putting rocks on the scale to see how many little rocks made a large rock balance. Some of the teams worked together putting little rocks on until it balanced, and some team members worked separately, each putting on her own rocks while the other watched. (4/19/95)

Beth also made special arrangements to have some of her children take turns going into the toddler room down the hall to help with the younger children. Sara really enjoyed this and asked often to go. She usually did this during free play time.

Beth told Sara to take a puppet and some books along to the toddler room so she could read to the children. Sara gathered these up and went into the room. She sat down on a little cloth couch. Several toddlers came over to stand by her. The toddler teacher told the children that Sara had some books to read. One little girl sat down beside Sara on the couch, and two others sat on the floor. Sara opened her book and began to tell the story. At first she just looked at the book but later relaxed and looked at the children also. Sometimes she would hold the book up so the children on the floor could see the pictures. She propped one book up on the couch beside her while she told that story. The toddlers came and went while she read several books. They also brought her their own books to read. After about 20 minutes, the children had all lost interest, and there were books all over the floor. Sara picked them all up. She took her own books back to Beth and said, "I had to clean up when they made a mess." Beth thanked her and said, "Wow, it's a good thing you were there to help." Sara said, "Yea," and went off to play. (4/10/95)

Modeling

The adults in this program also asked children to help them, which served as a model for them on the importance of helping each other. Erica, for example, often made comments like "I need everyone to help me," when she was going to do a fingerplay or do some other activity with the group. She also asked individual children to help her do things like clean out the water table or set things on the tables to start learning center time

and expressed her thanks to children for their help. These types of comments were made frequently in the spring and fall, during free play, learning center, and teacher directed activities.

> A teacher aide asked two girls to help her pass out napkins and cups before lunch. The girls willingly did this. Later, after the children were seated, she asked Bill to count how many children were at his table. He counted seven children, then went up to where she was organizing things for lunch in the front of the room. She gave him forks to pass out at his table. The aide continued this with the other tables. (4/6/95)

> Brian accidentally knocked a container of powdered sugar off the table. The aide asked him to help her sweep it up, and he willingly did. She said, "It's easier together, it's a bummer to do things alone." (4/10/95)

Several of the older children liked to take over as teacher during transition times. The teachers sometimes allowed children the opportunity to 'try out' this teacher role.

> Erica was helping the last children wash hands, and the other children were sitting on the carpet for a story. The aide was also sitting on the carpet. A big book was standing ready with a chair beside it. Mike sat in the chair and said, "I'm going to read. I can read." He proceeded to tell a story using the book's illustrations.

Some of the children listened to him and some talked to each other. When Erica came in, she knelt down and told him to keep going. When he finished he sat on the floor, and Jeff, who is much younger than Mike, jumped up to sit in the chair. He talked a little about one picture, and then Erica took over when he was distracted. (9/14/95)

Lunch was almost over. The aide had to step out of the room for a moment and asked, "Who will be in charge of this table while I go do something?" Kari raised her hand, so the aide said, "Ok, Kari is in charge." Kari appointed Brian as her helper. (5/11/95)

The teachers in this center frequently worked to help children learn to share and work together. They often used phrases like, "You have to share...You two figure out a way to work on this together...We are all friends." Children picked up on these phrases and used them as well.

Greg and Anthony were each making something with Legos, and Greg said, "Let's work together on this." Anthony continued with his own for a while, but eventually they did put them together. (3/28/95)

Zoe, Sara, and Jill were arguing about who was friends with whom. Sara stalked off and sat down, scowling. When Beth asked her to tell her what was wrong, she

said Zoe and Jill wouldn't be friends with her. Beth talked privately to each of the girls, and later they were playing together in the housekeeping area. They told Beth when she walked by that they were friends now, and they were sharing the toys. (3/28/95)

Sometimes the teacher did not even have to say anything. Her presence seemed to influence children to be more cooperative. The following incident presents an example of how children use assistance not always intentionally provided by an adult.

Beth took several children to the dramatic play room while her student teacher took the others to the library. Three children used toy brooms and mops to 'wash' the toy car that Megan was sitting in. Greg put down his mop and took the broom away from Sara. Sara started to say, "Teacher, I want...," but Greg gave her the mop. She said, "Oh, thanks," and they continued their play. (4/13/95)

While the adults in this center may have been more conscious of shared activity because of my presence, they did appear to be genuinely supportive and cognizant of children learning from other children. They took advantage of opportunities to encourage children to assist each other and provided models on how to help. The adults were aware of how children were working together and shared many other stories with me while I was doing my observations. Erica often interrupted my observations to tell me stories.

> While I was sitting outside watching play, Erica came and sat by me, pointing out a girl whom I had not seen before. She told me a story about how this particular girl liked to have the younger children play with her. One day a few months back she was really trying hard to get a group of children organized to do a dramatic play activity. The others were ignoring her, and she was getting frustrated. Erica told me she went over and said, "You guys need to figure out how everyone can play." The girl told Erica, in a very grown up voice, "I'm trying but they just won't listen!" (5/17/95)

Another day Erica came to tell me another story. This was early in the study, and she was giving me examples of cooperative learning activities that she had noticed. They were not formal cooperative learning activities but were informal collaborations between children.

> We were observing several boys playing with plastic bugs when Erica came to sit by me and told me about how the boys had helped each other when she first brought these bugs and magnifying glasses into her room a few weeks ago. She said Mike and others who knew what to do were really helpful and patient, showing the others, like Brian, how to look in the glasses. (3/21/95)

Erica and the other adults, then, knew that it was important for children to work together. They were able to design their classrooms so that informal cooperative learning

occurred on a regular basis.

The children in this study interacted with each other in a variety of shared activities. There were many potential opportunities for children to learn from other children in these activities. It was not just the person being assisted who was potentially learning but also the person giving the help. Regardless of where each child's ZPD was on the scale of task difficulty, then, they had the opportunity to learn from the other children with whom they were sharing activities. In the final chapter I will summarize the findings from this chapter and present some implications for early childhood educators regarding this potential for children learning from other children.

CHAPTER V

SUMMARY, CONCLUSIONS, AND IMPLICATIONS

This study supports the notion that young children can potentially learn from other children in many types of shared activities (Bodrova & Leong, 1996). The children in this descriptive study were engaged in many types of shared activities that provided possible opportunities for young children to learn from other children. Some of these activities were planned by teachers, and some occurred spontaneously. Shared activities can provide a social context for learning. The purpose of this descriptive study was to investigate the process of preschool children learning from other children in a wide variety of shared activities during teacher designed learning centers and child directed free play. The study was not intended to provide evidence that specific learning had occurred in shared activities but rather to reveal the types of activities where children may potentially learn from other children. What I discovered through this study was both that children were already in situations where they could learn from other children and that the potential exists for even more shared activities. The study heightened my awareness of what was happening in the classroom and of what teachers could do to take advantage of children learning from other children.

In this chapter I will summarize my findings, offer conclusions about these findings, and suggest several tentative implications to educators. This is primarily a study

of one classroom in one preschool program. It is not possible to make broad generalizations that will be applicable to many other classrooms or preschool programs. However, the study is not without some value to educators interested in how children learn from other children. Each person reading this will bring into it her own experiences and take from it what is valid and useful for her own particular situation. The conclusions and implications discussed in this chapter are meant to be treated as tentative guides, ideas to be considered, not as prescriptions to be followed.

This research, then, may be used by educators as they make important decisions about the organization and structure of a preschool classroom that is conducive to young children learning from other children. The guiding question for the study was: how do preschool children assist other children to learn in shared activities during teacher designed learning centers and child directed free play?

Summary

This descriptive study began with an investigation of a whole preschool program, including several classrooms and all activities of the day. It started with an interest in formal cooperative learning for young children but became focused on one aspect of cooperative learning, which was children learning from other children. The study was later condensed to one classroom and to shared activities in teacher designed learning centers and child directed free play activities.

A number of patterns emerged from the data. Partners whose ZPDs were at different positions on the scale of task difficulty were able to engage in shared activities as described by Vygotskians. These partners sometimes possessed different degrees of

cognitive and intellectual knowledge, skills in performing tasks, and levels of experience. Placing children in mixed-age groups helped allow for this kind of collaboration. Peers who were at approximately the same position on the scale of task difficulty also engaged in shared activities. Sometimes these activities resulted in the kind of cognitive conflict Piaget has condoned as important for children's learning.

The data also highlighted the many different ways children assisted each other. Children provided verbal assistance, physical assistance, demonstration, and nonintentional modeling. This modeling included children praising and complimenting each other as well as copying each other.

The data also showed that there were many incidences when children wanted to work alone, did not want assistance from other children, and in fact did not need assistance. When the assistance from one child to another was not within the child's ZPD, it did not seem to promote learning.

The adults in this study played a very important role in children learning from other children. They provided verbal assistance to children, set up opportunities for children to learn from each other and served as models for such prosocial behaviors as sharing and helping.

Conclusions

A study of the patterns that emerged from the data reveals a number of conclusions about children potentially learning from other children in shared activity. It is valuable to note, for example, that while some of the older children in this particular classroom did do things in groups of three or four, by far most of the shared activity was

between pairs of children. Sometimes there were other children nearby, but the conversations and activities most often occurred in this program between two children.

Vygotsky believed that children acquire an inner mental understanding by first sharing it through external collaboration (1986). Another conclusion that may be made about the children in this study was that placement into mixed-age groups worked well because it provided many opportunities for children to learn from other children, especially in learning centers. Table 5 includes the number of times assistance was given in Erica's classroom over a period of one month when the group was same-age and later when the group was mixed-age. I believe that, for the most part, mixed-age groups benefited both younger and older children in this study. There were even changes in behavior for some

Table 5. A One Month Comparison of Assistance by Same-age Groups and Mixed-age Groups in Erica's Classroom

	Same-age	Mixed-age
Learning Centers	9	15
Free Play	18	12
Computer Play	5	4

children as a result of being in mixed age groups. Megan, for example, was much more helpful and cooperative in the fall when the groups were mixed-age than in the spring when the groups were same-age.

Children were placed in mixed-age groups, but also had the opportunity to work with same-age peers. The cognitive conflict between same-age peers that occurred

provided occasions for children to potentially learn about their own misconceptions as they clashed with other children's viewpoints. Piaget regarded same-age peers as more valuable than adults for stimulating cognitive change in children. Tudge and Rogoff (1989) state that the clash of peer opinion results in children reflecting on their own thinking and adapting to the perspectives of others.

It was also important for a child acting as an 'expert' to provide assistance to another child, a 'novice,' within the novice's ZPD. Jill, for instance, tried to help Dennis with his hammering by quickly starting a peg and then leaving, but this assistance was not within his ZPD and was not helpful. On the other hand, Mike gave assistance to Bill as he was doing a counting game. As Bill chose cards, Mike counted with him to find the matching card. With this help, Bill was able to complete his task.

There were many incidences of verbal assistance occurring in this classroom. Preschool children are often characterized as being better at 'doing' than at 'saying.' Lay-Dopyera and Dopyera (1993) state that children only gradually learn to explain their ideas and actions. They communicate first with actions but find that they must learn other ways to communicate. The children in this program engaged in a high degree of verbal communication. Even their nonverbal assistance and demonstrations were usually paired with verbal help. The children in this classroom both asked for and offered assistance to other children on a regular basis, although it seemed to be easier to offer help than to ask for it. Offering assistance occurred in both free play situations and in teacher directed activities. Older children frequently offered help to peers and younger partners, although very few of the younger children offered or asked for help. Special needs children in this

classroom often recieved assistance from partners, and this assistance was willingly accepted. The special needs children were integrated into the classroom and were accepted by the other children.

Another unexpected facet of this study was the use of computers as a shared activity. Children were seldom at the computer alone. There was usually at least one other child watching and talking with the child who was using the mouse. This use of computers by young children confirms Fite's 1993 report on computer use in early childhood education. She visited schools in a number of cities in the southwestern United States and in Mexico and concluded that it might be a mistake to use computers solely for an independent activity. Fite found that young children working in pairs at computers increased their vocabulary, improved socialization skills, and expanded their understanding. Clements, Nastasi, and Swaminathan (1993) also have reported that young children are not only capable of working together at the computer, but prefer working with one or two partners to working alone. They contend that the computer elicits more social interaction and different types of interaction than more traditional activities, such as puzzles. High levels of language and cooperative play activitiy occur simultaneously in the computer environment.

Shared activities provided children with opportunities to learn self regulation by first learning other regulation. Children were often able to tell other children what to do or how to act before they could do it themselves. Shared activities provided a place for children to express themselves and to practice skills.

While it cannot be denied that there are children with serious social problems, this study of one group of children working together presents a different picture. There were incidences of children not getting along, as in most preschools, but there were also many more incidences of children supporting each other, praising each other, and showing real concern for each other. It was especially interesting to note how often children complimented each other while at the computer. The definition of prosocial behavior includes any action intended to benefit or help another without expectation of external reward. While it may be that children sometimes assisted others because of self interest, they seldom received any sort of external reward for their help and support. Children who were able to act prosocially both offered assistance and received assistance from other children.

Teachers both directly and indirectly fostered children learning from other children. One indirect method used by these teachers was to set up the classroom environment so that cooperation could occur. The key classroom in this study was divided into centers that allowed small groups of children to work together. Learning centers designed by the teachers provided opportunities for children to make choices but also placed them in situations that encouraged collaboration. Children were sharing time and resources, helping each other, and giving information to each other.

Teachers sometimes set up activities so that it was imperative that children work together, as in the science activities and formal cooperative learning games. As more of these types of activities were introduced into the program, children became accustomed to being placed in groups and seemed to enjoy the experiences. Anthony, for example,

protested the first time he had to share a scale in the science cooperative learning activitiy, but never did so again. Very few children in this study rebelled against working with a partner in these special activities. It should be noted, however, that even without these planned formal cooperative learning incidences, children were collaborating in many shared activities during unstructured free play and the teacher designed learning centers.

Teachers also directly influenced children learning from other children by taking advantage of opportunities to encourage children to help each other. Rather than always helping a child themselves, teachers often asked another child to help. Teachers worked with children by asking one child to be the 'expert' in a tutoring type of situation or by helping them to resolve a conflict by thinking about how they could work together to do an activity. Teachers also provided models to children by helping children and asking children to help them. Research has shown that how caregivers and parents act influences young children to imitate them (Wittmer & Honig, 1994). Perhaps one reason the children in this study gave so much verbal assistance was because the teachers modeled verbal assistance themselves. Yarrow, Scott and Waxler (1973) concluded that a helpful model must be nurturant, must say how they have helped someone, and must actually model the prosocial behaviors they tell a child to do. The adults in this center were usually very supportive and conscious of how their own behaviors affected children.

The children in this study had many opportunities to learn from each other. They were engaged in many types of shared activities and provided many types of assistance to each other. The following implications, based on these concluding statements, will give

tentative ideas about how teachers can take advantage of what is already happening in their classrooms and build on that to promote more learning in shared activities.

Implications for Teaching

The task of intensely focusing on one part of preschool life, the shared activities of young children, gave me insights into a phenomenon that I had previously taken for granted. It is my hope that others reading this study will also feel compelled to look more closely at what is happening in their classrooms with an eye to promoting more shared activity where children can learn from other children.

This study was not intended to show that it is more important for children to work and learn together than to learn independently. Children need time to wrestle with learning alone as well as with other children. Early childhood education must focus on each child -- but not each child in isolation -- each child in relation with other children, the family, the community and society, the teachers, and with the environment of the school (Gandini, 1993). In the Reggio Emilia Schools described by Gandini, the environment is set up so that children may be with the teachers and many children, or with just a few children, or even alone. Educators in the Reggio Emilia approach go on to say, however, that children do learn from their peers in small groups so this is also purposefully built into the system. My intention was to learn more about the processes that occurred when children were placed in shared activities with other children. The following suggestions are offered to educators who are interested in promoting more shared activities in their classrooms.

1. Preschool children need time to work together. They need opportunities for spontaneous shared activity in free play and also more contrived situations such as teacher-designed learning centers and formal cooperative learning activities. Shared activity can potentially occur in almost any event in the child's day. This study indicates that computers, in particular, need to be viewed by teachers as a potential shared activity where chilren may be able to learn from each other.

2. Enrolling smaller numbers of children in this preschool classroom may help promote a variety of shared activities where children can potentially learn from each other. A memo I made the second week into this study notes that while I observed many instances of collaboration the first week, that was not as true the second week. This may have been because in the first week there were fewer children in the classrooms when there was a spring break. This occurred again in late May when there were fewer children in the classrooms because of school closing. Young children seemed to work well in pairs and in classrooms with smaller numbers of children.

3. There should be opportunities for preschool children to interact in both same-age and mixed-age groups. Same-age groups allow children to engage in the kinds of interactions that Piaget proposes as important for intellectual development, and mixed-age groups promote the kinds of collaboration that Vygotsky has supported.

4. Verbal assistance needs to be tied with demonstration and physical assistance whenever possible. Language development was seen to be a critical component in young children assisting other children. Language is an important tool for developing other mental competencies. Language can facilitate the shared experiences necessary for

building cognitive processes (Bodrova & Leong, 1996). Interaction with peers is effective in enhancing language development (Lay-Dopyera & Dopyera, 1993), and conversely talking about prosocial behavior strengthens the prosocial behaviors that are needed for children to assist other children in their learning.

5. Preschool teachers need to be aware of their own impact as models of assisted learning and prosocial behaviors. Children indirectly take their cues from teachers. When teachers provide a warm, caring environment where helping and sharing are expected, children also expect to be helped and reciprocate by helping other children.

6. Preschool teachers also need to take advantage of unexpected teachable moments. When an opportunity arises for one child to assist another, teachers can encourage and guide children as they learn to take on the roles of expert and novice. Katz et al. (1990) provide suggestions for enhancing development with mixed-ages. They propose, for example, that teachers need to alert children to their peers' interests, alert children to their peers' skills , encourage children to read to others and listen to others read and help older children think through appropriate roles for younger children.

7. Teachers must also be sensitive to individual preschoolers and their needs. Not all children will be ready or able to engage in these types of roles. Children should not be forced to learn from other children but should be presented with this option when it is appropriate. Many children will need teachers to guide and perhaps even train them on how to perform in these roles.

Implications for further research

This study has raised a number of questions that have yet to be addressed. A

classroom with children, teachers, aides, volunteer grandparents, and student teachers is complex. Understanding what is happening takes time. This study has only touched on the intricacies of children learning from other children. Further research is called for in the following areas.

1. I was only able to observe for one month in this classroom when it was changed into a mixed-age group of children. An additional longitudinal qualitative study of this type of grouping would aid in understanding the peer relationships that build up over time and how those relationships in turn affect children potentially learning from other children. More specifically, a close study of the older children and the younger children in a mixed-age group might answer questions about advantages and disadvantages to each.

2. A more intense case study of individual children, including children with special needs, would also be helpful. A closer look at the dynamics between partners whose ZPDs are at different positions on the scale of task difficulty would give insight into how shared activities can most benefit children's learning.

3. A comparison of the interactions between peers and partners during free play and learning centers could give insights into why, in this program, peers were more often together in free play than in learning centers.

Preschool children learn from other children in many types of shared activities in both teacher designed learning centers and child directed free play times. These shared activities include many kinds of assisted learning, from verbal assistance to unconscious modeling. Children need opportunities to work together. They are active participants in

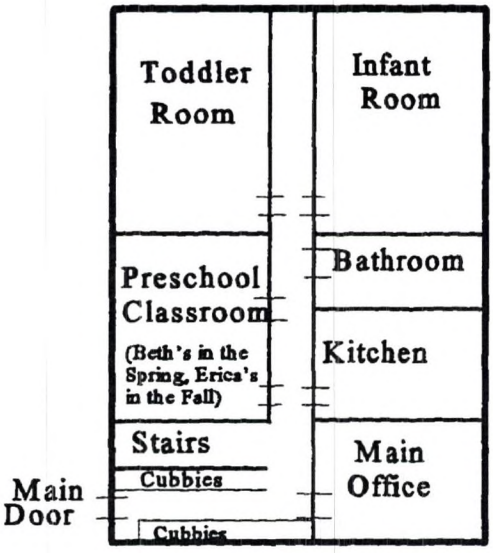
the learning process and must be able to make choices about what they learn, how they learn, and with whom they learn.

APPENDICES

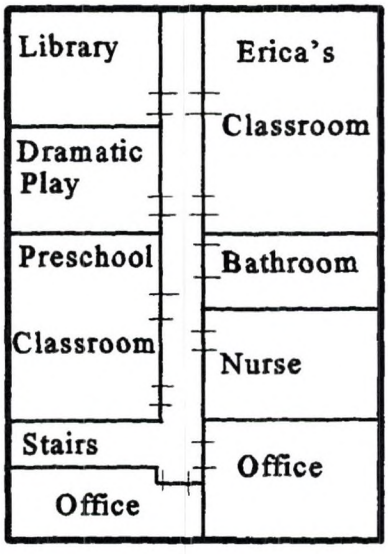
APPENDIX A

BUILDING FLOOR PLANS

DOWNSTAIRS



UPSTAIRS-SPRING



UPSTAIRS-FALL

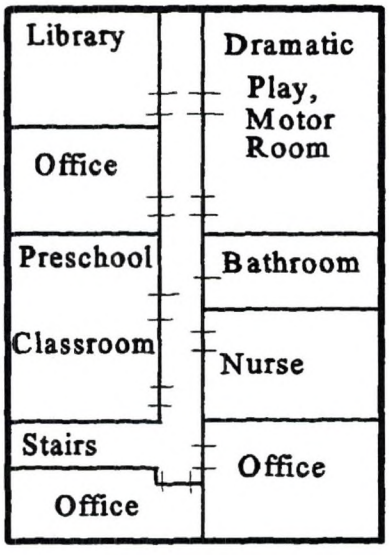
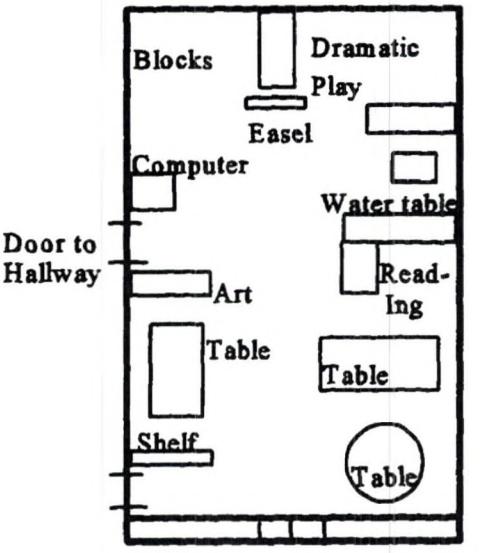


Figure 4. Building Floor Plans

APPENDIX B

ERICA'S CLASSROOM FLOOR PLANS

SPRING-EARLY OBSERVATIONS



FALL-LATER OBSERVATIONS

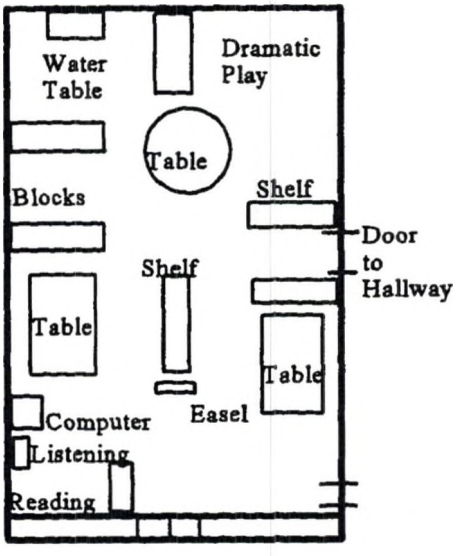


Figure 5. Erica's Classroom Floor Plans

APPENDIX C

ERICA'S DAILY SCHEDULE

ERICA'S DAILY SCHEDULE

7:30- 8:50	Arrival/Free Play (All hildren in One Classroom)
8:50- 9:00	Clean Up, Wash Hands
9:00- 9:30	Breakfast in Own Classroom, AM Toothbrushing
9:30- 9:40	Circle Time/Story
9:40-10:00	Learning Centers
10:00-10:30	Free Choice
10:30-11:00	Library/Dramatic Play, Motor Room
11:00-11:30	Outside or Videos (Often with One Other Class)
11:30-11:40	Wash Up for Lunch
11:40-12:30	Lunch in Own Classroom
12:30-12:40	Wash Up, PM Toothbrushing
12:40- 1:00	Quiet/Rest Time
1:00- 1:10	Circle Time/Story
1:10- 1:30	Learning Centers
1:30- 2:00	Free Choice
2:00- 2:20	Library/Dramatic Play, Motor Room
2:20- 2:30	Clean Up, Wash Hands
2:30- 3:00	Snack
3:00- 4:00	Outside (Usually All Children)
4:00- 5:30	Departure/Free Play (Usually All Children in One Room)

APPENDIX D

CHILDREN AND THEIR AGES

CHILDREN AND THEIR AGES

Erica's group (Spring)	Age
Age	
Neal	4
Mike	4 1/2
Cory	4 1/2
Karen	4
Bill	4
Ted	4
John	5 1/2
Kari	5
Cole	4
Carol	4
Brian	4 1/2
Linda	4
Lisa	4
Andy	4

Erica's group (Fall)	
Megan	51/2
Mike	5
Cory	5
Dennis	2 1/2
Bill	4 /12
Ted	4 1/2
Bonnie	3 1/2
David	4
Jill	4 1/2
Rob	4 1/2
Brian	5
Jeff	3
George	5
Annie	4
Rick	4 1/2
William	2 1/2

Other Children-Age	
Sara	5 1/2
Greg	4 1/2
Zoe	5
Anthony	4 1/2
Larry	5 1/2
Erin	4
Tara	4 ½

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