DOCUMENT RESUME

ED 308 991 PS 018 334

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TITLE The Case for Mixed-Age Grouping in Early Childhood Education Programs.
INSTITUTION ERIC Clearinghouse on Elementary and Early Childhood Education, Urbana, Ill.
SPONS AGENCY Office of Educational Research and Improvement (ED), Washington, DC.
PUB DATE Aug 89
CONTRACT OERI-88-062012
NOTE 87p.
PUB TYPE Information Analyses - ERIC Information Analysis Products (071) -- Guides - Classroom Use - Guides (For Teachers) (052)

EDRS PRICE MF01/PC04 Plus Postage.
DESCRIPTORS *Cognitive Development; Cooperative Learning; Day Care; Definitions; *Early Childhood Education; Educational Practices; Elementary Education; *Grouping (Instructional Purposes); Literature Reviews; Peer Teaching; Program Descriptions; *Program Effectiveness; *Social Development; *Teaching Methods
IDENTIFIERS *Mixed Age Groups

ABSTRACT

The seven brief chapters of this paper advocate mixed-age grouping in schools and child care centers. Discussion defines mixed-age grouping and examines some limitations of single-age grouping. Research findings on social and cognitive aspects of mixed-age grouping are reviewed. Social aspects are discussed by considering in turn the following statements: older children exhibit facilitative leadership, mixed-age grouping promotes prosocial behaviors, children appear to play as freely in mixed-age groups as in same-age groups, self-regulation appears to improve, social participation is heightened for younger children, older children create complex play for younger ones, older children operate well in younger children's zone of proximal development, and younger children allow isolated older children social skills practice. The therapeutic effects of mixed age interaction are also considered. Cognitive aspects are discussed in terms of effective cognitive conflict resulting from peer interaction, complex aspects of cognitive conflict, novices and experts in mixed-age groups, and children's sensitive adjustment of communication for listeners. Additionally, successful multi-age programs ar some effective teaching strategies are described, along with peer tutoring and cooperative learning. Concluding materials present recommendations for decision makers in schools and centers for young children. Suggestions for teachers implementing mixed-age grouping are appended. Over 60 references are cited. (RH)

The Case for Mixed-Age Grouping in Early Childhood Education Programs

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This publication was partially supported by funds from the Office of Educational Research and Improvement (OERI), U.S. Department of Education. Opinions expressed in this report do not necessarily reflect the position or policies of OERI.

August, 1989

In press: NAEYC

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(Illustrative Anecdotes)

Four-year-old Ryan is constructing a spaceship with heavy cardboard. He is ready to put paper clips through holes to serve as control buttons. But he becomes frustrated and upset when the paper clips repeatedly fall out of the holes. When he requests the teacher's help, she asks him to wait. When he expresses impatience, the teacher asks 5-and-a-half-year-old Rachel to help him. Ryan gladly accepts her offer to help. A few minutes later Ryan is ready to lift off.

Elisa, age 3, still cries when her mother leaves her at the child care center in the morning even though it has been three weeks since she joined the group. Elisa still spends most of her time close by the teacher. Christine, age 5, went through a similar stage last year. Although Christine often has a difficult time sharing things, she is emotionally very sympathetic. She is also very verbal. She expresses comfort and reassurance to Elisa and offers to be her friend and to show her how to make the magnets move. Though hesitant at first, Elisa responds to the teacher's encouragement and decides to trust Christine.

A group of 4-and-5-year-olds greeted the arrival of new manipulative materials with great interest. Included were plastic chain links, squares, triangles, circles, pyramids, ovals, and other parts. While the older children began linking pieces together, stretching the linked units from one end of the room to the other, they soon moved on to counting how many of each shape were in the chain. Next they started taking actual measurements of its length. The younger children continued joining various pieces together. But during the subsequent few days, as the older children moved on to labeling different shapes and cataloging them, the younger ones began counting, measuring, and keeping records of their findings, just as they had seen their older classmates do earlier in the week.

Executive Summary

Mixed-age grouping of young children in schools and child care centers is explored and advocated. Although it is not a new idea in education, the practice of teaching young children of varying ages together runs counter to the typical pattern of education in the U.S., which separates children into single-age groups. Mixed-age grouping is supported here for the following reasons:

1. Mixed-age grouping resembles family and neighborhood groupings, which throughout human history have informally provided much of children's socialization and education. Many young children now spend relatively little time in either family or neighborhood settings and consequently are deprived of this kind of learning.

2. Research, although incomplete, indicates that social development can be enhanced by experiences available in mixed-age grouping. Leadership and prosocial behaviors have been observed to increase.

3. Current concepts of cognitive development - the "zone of proximal development" and "cognitive conflict" - imply that children whose knowledge or abilities are

similar but not identical stimulate each other's thinking and cognitive growth.

4. Research on peer tutoring and cooperative learning indicates that interaction between less able and more able children, e.g., "novices" and "experts," benefits all individuals both academically and socially.

5. Mixed-age grouping relaxes the rigid, lock-step curriculum with its age-graded expectations that are inappropriate for a large proportion of children. Furthermore, mixed-age grouping might also lead to a reduction of screening and standardized testing in the early years.

6. Mixed-age grouping has been used successfully with young children in the U.S. and abroad (e.g., Britain and Sweden).

Chapter 1

Introduction

From what we can observe, children in all cultures - and doubtless all times - learn from one another. In families, villages, settlements, neighborhoods, and even transient settings such as during travel, children imitate, instruct, direct, follow, interrogate, and answer one another (Pratt, 1983; Whiting, 1975; Whiting & Whiting, 1986).

Pratt (1983) points out that the age-stratified culture in which we live is largely a product of the last two hundred years. He suggests that it is the result of many factors "including the size of communities, the specialization of work, the development of transportation, and the evolution of schools" (p. 10). For the first one hundred years or so schools were highly heterogeneous with respect to age: "Many schools consisted of a single master teaching a group of up to 200...the youngest would typically be about ten years old; the oldest might be an elderly man" (Pratt, 1983, p. 11).

Beginning around the turn of the century, when children in the industrialized nations began going to school en masse, a uniform age of school entry was established, and

progress through the grades on the basis of age became a regular practice (Pratt, 1983).

Interest in the potential benefits of mixed-age grouping was aroused by the publication in 1959 of Goodlad and Anderson's The Nongraded Elementary School, in which they argued that grouping children homogeneously on the basis of a single criterion (like age) does not produce a group that is homogeneous on other criteria relevant to teaching and learning. Pratt notes, however, that extensive research on the nongraded school movement stimulated by Goodlad and Anderson's ideas revealed that its implementation consisted of "little more than ability grouping within existing grade levels (1983, p. 17), and that in fact there were few schools actually practicing mixed-age grouping for instruction.

Curiously though, while other settings allow children of diverse ages to interact, schools (and now child care centers) almost invariably confine interaction within a narrow age range - we place "the sixes" in first grade and, even more restrictively, we divide the toddlers into "the old two's" and "the young two's." While humans are not usually born in litters, we seem to insist that they be educated in them.

Furthermore, schools and child care centers, particularly for preschoolers, are increasingly replacing families and neighborhoods as sources of child-child interaction. This is due to both smaller family size and out-of-home employment for both parents, which leads to children spending most of their waking hours in schools and centers (Katz, 1988). Hence many children have little access to other-age children.

Does this matter? Are children losing anything by not being able to interact with older and younger children? Are young children being especially or unnecessarily limited? How can these questions be answered? In this book we propose that age grouping does matter, and we make a case based on research and the accumulated experience of many early childhood educators for incorporating mixed-age grouping into schools and centers for young children because of its potential social and cognitive benefits. We also refer to empirical studies of mixed-age grouping and other related research.

A few indications of renewed interest in this topic have appeared in recent educational and developmental literature. In 1988 Goodlad and Anderson's The Non-Graded Elementary School was reissued. In addition, the Royal Commission on Education of the Province of British Columbia in Canada recommended "legislation and policy changes to

enable schools and school districts to establish ungraded primary divisions" (1988, p. 28). It should be noted, however, that there is a major distinction between the concept of non-graded schools and mixed-age grouping: the former is intended to homogenize groups for instruction by ability or developmental level rather than age; the latter is intended to optimize what can be learned when children of different ages and abilities have opportunities to interact.

Along the lines of mixed-age grouping, the 1988 Task Force report of the National Association of State Boards of Education recommended that "early childhood units be established in elementary schools, to provide a new pedagogy for working with children ages 4 - 8..." (1988, p. vii). Furthermore, recent research on children's intellectual and social development discussed in the chapters that follow reflect increasing attention to the nature and consequences of cross-age interaction. This renewed interest in the educative potential of mixed-age grouping is welcomed on both empirical and philosophical grounds.

Pratt synthesized the results of twenty-seven empirical studies of the academic and social outcomes of mixed-age grouping reported between 1948 and 1981. Pratt's summary is presented in Table 1 below. On balance, the table suggests that for both academic achievement and social development outcomes multi-age grouping in the primary schools offers

advantages over age-graded grouping. It is our hypothesis that those benefits are likely to be even greater for younger children (e.g., children 4 to 6 years old) than for older elementary-age children. However, realization of these benefits for any age range depend to some extent on both the curriculum and teaching strategies employed.

Table 1. Empirical Studies in Multi-age Grouping: 27 Studies

	Academic Achievement	Social Development
Studies favoring conventional grouping	3	0
Inconclusive Studies	12	6
Studies favoring multi-age grouping	10	9

(Based on D. Pratt, 1983, p. 18)

We first define mixed-age grouping and examine some limitations of single-age grouping. We then review research on social and cognitive aspects of mixed-age grouping, describe successful multi-age programs and some effective teaching strategies and peer tutoring and cooperative learning. Finally we present recommendations for decision makers in schools and centers for young children.

Chapter 2

What Is Mixed-Age Grouping?

Mixed-age grouping is placing children of varying ages into classroom groups. It has been used in different ways in early childhood and primary school classes (Stahl, Stahl, & Henk, n. d.). Montessori classes, for instance, have traditionally been made up of children of different ages. Montessori's rationale for mixing the ages was that younger children could learn much from older ones. Paradoxically, peer interaction was not especially encouraged, perhaps because the children for whom Montessori developed her methods typically had a surfeit of peer interaction.

In recent times, mixed-age grouping has been known by various names: heterogeneous and multi-age grouping, vertical grouping, family grouping, ungraded or nongraded classes in primary schools. The best-known example was found in British infant schools during the 1960's and 1970's, where 5- 6- and 7-year-olds were taught in the same classes. Cross-age tutoring has been used, in one way or another, for hundreds of years (Zindell, PS 017595). Though such tutoring is not quite the same thing as mixed-age classroom instruction, tutoring is an instructional strategy designed

to make use of the differences in competence of children of different ages as they work in pairs.

Resemblance to Family and Spontaneous Grouping

Family units typically include heterogeneous ages. The family group provides all members with the opportunity to observe, emulate, and imitate a wide range of competencies in all domains. Family members also have the chance to offer leadership and tutoring and to assume responsibility for the less mature and knowledgeable in the group. Furthermore, it is assumed that the wider the range of competencies manifested in a mixed-age group, the greater will be the participants' opportunities to develop relationships and friendships with others who match, complement, or supplement the participants' own needs and styles. The greater diversity of maturity and competence that is present in a mixed-age group, as compared to a same-age group, provides a sufficient number of models to allow most participants to identify models from whom they can learn.

Ellis et al. (1981) observed the composition of children's spontaneous groups in an urban setting with a population that was large enough to allow homogeneous age groups to form spontaneously. Ellis et al. reported that for all age groups strict age segregation was less common than would have been expected on the basis of common-sense

notions of children's preferences. The target children were with same-age peers in only 6% of the observations and with child companions who differed in age by at least 1 year in 55% of the observations; they were observed to be with adult companions in 28% of the observations. In this study, more often than not, children spontaneously gravitated toward heterogeneous age grouping.

Disadvantage of Single-Age Grouping: Normative Pressures

If children spontaneously form heterogeneous peer groups, why do we adults typically segregate them by age? One justification might be that similarity in age increases the chances that children can profit from the same learning experiences. But this is questionable. Impressions we have gained from our experience suggest that the closer in age the pupils are, the more teachers and parents expect them to be ready to learn the same things at the same time. Such normative pressures are currently associated with extensive screening and testing before and after the kindergarten year for the purpose of reassigning to special classes children who are deemed not ready to succeed in the academic curriculum (Shepard & Smith, 1988).

On the other hand, when classes are mixed so that, for example, the children range in age from 4 to 6, a wider range of behavior is likely to be accepted and tolerated

than in a same-age group. In mixed-age classes, it may be easier for kindergarten and preschool teachers to resist the "push down" phenomenon -- the trend to introduce the primary school curriculum into kindergarten and preschool classes (Connell, 1987; Gallagher & Coche, 1987) Some administrators report that, in mixed-age grouping, teachers' tendencies to teach all pupils the same lessons at the same time are reduced. Furthermore, because mixed-age grouping invites cooperation and other forms of prosocial behavior, discipline problems that are inherent in competitive environments can often be substantially minimized. The cooperation that can flourish in a mixed-age group can generate a class ethos marked by caring rather than competitiveness.

Unidimensional Versus Multidimensional Classes

Single-age classes with a strong academic focus are comparable to two types of classes identified by Rosenholtz and Simpson (1984) as unidimensional rather than multidimensional. According to Rosenholtz and Simpson, a unidimensional classroom is one that narrowly defines academic ability and work and uses a restricted range of performance criteria. In such classes, the assigned tasks tap only a limited range of students' abilities, and students are evaluated on a restricted set of performance criteria. On the other hand, multidimensional classes -

whether they are single or mixed in age - offer a wide range of activities in which a variety of skills can be applied and appreciated. In such classes, a variety of performance criteria are valued and accepted as legitimate. According to Rosenholtz and Simpson, in the unidimensional classroom, the "absence of alternative definitions of what constitutes valued work prevents each student from choosing the definition that most enhances the self" (1984, p. 22). Therefore a larger number of children are "forced to accept low self-evaluations" (p. 22) than would be the case in multidimensional classes. In a multidimensional class in which children have some real choice about what work they do, and when or how to do it, they are more likely to make ego-enhancing choices that lead to positive self-evaluations. The classification of classes as to whether they are uni- or multidimensional is not simply dichotomous; it is likely that there are many degrees of dimensionality. However, when early childhood groups or classes are composed of a single-age group, the likelihood is great that its purpose is to narrow the range of learning activities and performance requirements offered, based on the faulty assumption that children of the same age can learn the same things at the same time in the same way.

Mixed-Age Groups Allow for children's uneven development

Depending on the variety of backgrounds and experiences of the individuals in a class, the range of competence within an age cohort in the early years may not be much different from a group with a two-year spread. Thus homogeneous age grouping may mislead teachers into believing that the group's members can benefit equally from the same instruction and from activities offered at the same time, simply on the basis of their common age.

On the other hand, the wider the age range within a class group, the greater the range of social and intellectual competencies likely to be manifested within it. Children in a class with a 24- to 30-month age range are likely to be able to interact with others whose competencies vary, so that all children find that there are some classmates they can learn from, some classmates they can teach, and some classmates at a similar level with whom they can simply apply knowledge and skills already in their repertoires.

Most young children's development is uneven because all children are not equally mature in all domains. For example, a child might be considerably more able in verbal reasoning but less socially adept than his age-mates. The mixture of ages may increase teachers' awareness of developmental discrepancies within a particular child. The manifestations of uneven developmental levels may also be more acceptable

to teachers and caregivers in mixed- than in single-age groups. A wider range of behavior is likely to be accepted and tolerated in a mixed- than in a same-age group.

A mixture of ages within a class can be particularly desirable for children functioning below age-group norms in some areas of their development. These children may find it less stressful to interact with younger peers in areas where they lag behind their age-mates. Such interactions with younger peers can enhance children's motivation and self-confidence (Kim, 1989).

Summary

Mixed-age grouping resembles the fundamental grouping patterns of the fam..y and spontaneous neighborhood groups. It shelters the naturally uneven development of young children rather than placing age-based expectations on all children.

Chapter 3

Social Effects of Mixed-Age Grouping

One of the many reasons for bringing groups of children together in the early years is to facilitate and enhance their social development. Indeed, the serious long-term consequences of early social difficulties demonstrated by recent research suggest that the first of the "4 R's" in education should stand for Relationships -- particularly peer relationships (Asher & Parker, in press; Mize & Ladd, in press).

In this chapter we examine social development as it is seen in children's interactions in mixed- rather than single-age groups. A majority of studies reported here use experimental methods in which children interact in mixed- or single-age groups, and comparisons are made between the quality of the interaction in the two conditions. Most of the studies were conducted in classrooms or similar environments where children spent substantial amounts of their time. Studies reported focus on (1) how children perceive one another, adapt their behavior and expectations accordingly, (2) how children exhibit specific prosocial behaviors in mixed-age situations, and (3) how children's participation in the group varies.

Social perceptions have a significant role in the development of social competence. These social perceptions are related to the function and purpose of the group and to the roles that individuals hold within it. Social perceptions are an essential part of the young child's increasing social awareness and competence during the preschool years. The formation of friendships is often based on perceptions of the roles of peers in various social contexts. For example, French (1984) asked groups of first- and third-grade children to assign various role labels to photographs of same-age, younger, and older peers. Both older and younger children indicated that they associated specific expectations with each age group. Younger children assigned instructive, leadership, helpful, and sympathizing roles to older children. In return, younger children were perceived by older ones as requiring more help and instruction. Age seemed to be a significant perceptual cue as to what role behavior is appropriate in a given context. However, age was not an important factor in friendship choice, a result which suggested that friendships are not necessarily affected by the age range within a class, but are influenced by other important aspects of social interaction.

This difference in perception of the proper role for younger and older peers corresponds to the notions of

symmetry and asymmetry in interaction. Hartup (1982) defined symmetry as a type of behavior that frequently occurs between individuals who are of similar power and status. In contrast, asymmetry is a type of behavior that occurs between two individuals who are of different status and power. Asymmetric patterns of behavior are complementary but not similar. Thus age may be a significant perceptual factor that preestablishes the parameters within which children form relationships with peers of different ages.

Older Children Exhibit Facilitative Leadership

French, Waas, Stright, and Baker (1986) observed asymmetrical patterns of behavior among school-age children with regard to leadership roles. Children in mixed- and same-age groups were observed and interviewed during a decision-making process that concerned an issue related to their classroom activities. Verbal interaction, time-on-task, and similar classroom behaviors were studied. The results indicated that patterns of leadership were asymmetrical. That is, older children were more likely to exhibit leadership behaviors than were younger children. Overall, children engaged in behaviors that were oriented towards task completion. Asymmetries were most pronounced among the older members of the mixed-age group. This finding should not be misinterpreted as an indication of dominance since leadership behaviors were primarily those that

facilitated group processes, e.g., the solicitation of children's opinions. There was in fact less opinion-giving among older children in the mixed-age group than in the same-age group.

Brody, Stoneman, and MacKinnon (1982) investigated asymmetries in interaction among school-age children. Patterns of behavior among younger siblings, their friends, and school-age peers were evaluated according to the quality of the interactions. The researchers observed the various roles children assumed in different combinations of the dyads and triads when the children were playing a game. The assumed roles were: teacher, learner, manager, managee, and playmate. The researchers found that in each dyad, the older children assumed the dominant role when playing with younger children. When older children played with a best friend, however, they demonstrated an equalitarian role, perceiving the best friend as an equal. In the case of the triads, older children assumed a less dominant and more facilitative role. This finding indicates that in a strict older-younger interactive pattern, dominance is demonstrated; however, in triads a more equalitarian distribution of roles is observed. For some children leadership is easier among younger than same-age peers.

Stright and French (1988) followed up the French, Wass, Stright, and Baker (1986) study in order to take a closer look at leadership behavior in groups of children 7 and 9 years old and 9 and 11 years old. The children were observed while they were in the process of reaching consensus regarding the appropriate order of a set of pictures. The observations showed that in the presence of younger peers, 9-year-olds exhibited more organizing statements, solicitations of preferences, group choice suggestions, and engaged in less following behavior than when they were with older peers. According to Stright and French, the older children in the mixed-age groups facilitated and organized the participation of younger children "and did not utilize simple dominance to control the decision" (1988, p. 513). They point out that "many children do not possess the skills and characteristics that enable them to emerge as a leader in a group of peers. With sufficient age disparity, however, any child can attain leadership status with younger children" (p. 513). Mixed age groups then provide appropriate contexts in which children can practice leadership skills.

Mixed-Age Grouping Promotes Prosocial Behaviors

Prosocial behaviors are often treated as indices of social competence. These behaviors, such as help-giving,

sharing, and turn-taking, facilitate interaction in the group setting and promote socialization. Graziano, French, Brownell, and Hartup (1976) studied peer interaction in mixed-age groups of first and third graders. Social competence was assessed through a cooperative task (building with blocks), in which triads of mixed- and single-age children participated. Both group and individual performances were studied in the two kinds of groups. Individual performance was assessed by the number of blocks a child used in his or her building; the kind of vocalizations used; who placed the first block; and who straightened the blocks. Group performance measures included the same variables as well as the number of blocks that fell and alterations made by the members of the group. The individual's performance differed according to the age composition of the specific triad. In particular, older children seemed to accept more responsibility than did younger children for the overall performance of the triad. Children interacting in a mixed-age triad demonstrated overall task awareness and showed sensitivity by assuming responsibility for task completion as a function of the age differences of the group. Graziano et al. (1976) suggest that older children might be more sensitive to the complexity of interaction when they are in mixed- rather than in single-age groups. The initiative and assumption of responsibility could be seen as accommodating to the group's

building task when children perceive themselves as more proficient builders.

Children Appear to Play as Freely in Mixed-Age as Same-age Groups

Spontaneous positive and negative social behaviors were assessed by Lougee, Grueneich, and Hartup (1977). Preschoolers and kindergartners were observed together during free-play sessions in homogeneous and mixed-age groups. Positive social behaviors included spontaneous attention to peers, affection, submission (yielding), and reciprocation. Negative social behaviors were derogations, interferences, noncompliances, and attacks. The appropriateness of children's verbal interaction and the time they devoted to a given task (free play or play with a board game) were also studied. The amount of social interaction did not seem to vary according to the ages of the children. However, verbal communication was consistently adapted to the age of the listener. The younger children's linguistic maturity, as measured by the length of utterance, improved as they addressed older peers. No significant improvement was reported for the older children.

Self-Regulation Appears to Improve

In a review of research related to non-age-mate peer relationships, Lougee and Graziano (1986) point out that

when children are cast in the role of rule-enforcer, their subsequent self-regulation appears to improve. Thus when older children in a mixed-age class are encouraged to remind younger ones of the rules, their own self-regulation may be enhanced. Lougee and Graziano suggest that acting as a rule enforcer may be one of several ways in which children learn to obey rules and to control their own behavior and the "joint influence of age relationships and the role requirements that facilitate the development of self-regulation" (Lougee & Graziano, 1986, p. 23). Lougee and Graziano also point out that the role of mixed-age rule enforcement may be useful for a child who is having difficulty learning to comply with the rules. Thus if older children who are resistant to adult authority are encouraged to assist younger ones in observing the routines and rules of the setting, the older children may become more compliant themselves.

Social Participation Is Heightened For Younger Children

The frequency and type of participation of children in group-related activities varies with the group composition. To examine the effect of mixed-age interaction on social participation, Goldman (1981) studied 3- and 4-year-old children in mixed-age groups which formed spontaneously in the classroom. By using an adapted form of Parten's (1933) play categories, Goldman observed that younger children

spent less time engaged in parallel play and required less teacher direction when they were placed in mixed-age triads. Goldman suggests that this finding has important implications for the design and organization of environments for young children. Namely, younger children can engage in more interactive and more complex types of play when older peers are easily accessible to them than when they are in homogeneous age groups.

Older Children Create Complex Play For Younger Ones

In a similar manner Howes and Farver (1987) examined the complexity of social pretend play in an investigation of the social participation of 2- and 5-year-olds playing in a mixed group. Two categories of social pretend play were used. Simple social pretend play was scored when both participants engaged in pretend actions. The category of cooperative social pretend play required the participants to assume complementary roles such as mother-baby or driver-passenger. The study also included observations of the children's metacommunications about play, teaching, attempts to direct play, and imitation. Howes and Farver observed that 2-year-olds engaged in more cooperative social pretend play with older peers than with same-age peers. However, 2-year-olds were more effective in their cooperation with age-mates than with older children, a result which "suggests that children may be more assertive

with younger children and with age-mates than with older children" (Howes & Farver, 1987, p. 311).

Howes and Farver (1987) also compared the differential effects of asking a 5-year-old to teach versus play with a 2-year-old. The results confirmed the finding of the previous study that in a mixed-age group the toddler engages in complex pretend play "because the older partner has the skills to structure the roles for both partners. The toddler, limited in pretense and communicative skills, is less able to create the same complex play when interacting with age-mates" (Howes & Farver, 1987, p. 313). The authors suggest that child care enters that "serve toddlers as well as preschool-age children may modify their curricula to include opportunities for structured, mixed-age interaction" p. 313). Cooperative social pretend play with more mature partners can help young children acquire new social skills and concepts as they are demonstrated through the emerging forms of social pretend play. For older children interaction provides opportunities for practice and mastery of social skills. This happens because mixed-age grouping offers older children occasions to organize the play activities with and for less mature playmates. In a mixed-age class, dramatic play activities can yield benefits to all participants.

In a similar study, Mounts and Roopnarine (1987) compared the play patterns of 3-and 4-year-olds in mixed-age

and same-age groups. Younger children in the mixed-age groups engaged in more complex play than did their same-age peers in homogeneous age groups. Children were able to participate in play situations that were too complex for them to initiate, but were not too complex for them to participate in, when a more competent peer initiated the situation. Mounts and Roopnarine (1987) argue also that one advantage of mixed-age classrooms is that they have a closer resemblance to children's homes and the social milieux to which children are more accustomed than are age-segregated classes. When a caregiver creates environments at school that are similar to those at home, the sense of continuity that results may ease many young children's adaptation to the school environment.

Older Children Operate Well In Younger Children's "Zone of Proximal Development"

The findings reported by Howes and Farver (1987) and Mounts and Roopnarine (1987) invoke Vygotsky's "zone of proximal development" as a useful explanatory concept. The "zone of proximal development" is defined as "the distance between the actual developmental level as determined by independent problem-solving and the level of potential development as determined through problem-solving under adult guidance or in collaboration with more capable peers" (as cited in Wertsch, 1985, p. 24). The adult's guidance has

been referred to as "scaffolding." According to Brown and Palincsar (1986), the "metaphor of a scaffold captures the idea of an adjustable and temporary support that can be removed when no longer necessary" (p. 35). In the studies cited here, the older children in the mixed-age groups appear to provide scaffolding for the play of the younger ones (Wertsch, 1985, p. 25), and in this sense operate within the zone of proximal development or "region of sensitivity to instruction" (Brown & Palincsar, 1986, p. 148) of the younger children. A more extensive discussion of the zone of proximal development is presented in a later section.

Therapeutic Effects of Mixed-Age Interaction

Several studies of children's behavior in mixed-age groups suggest that such groupings may provide therapeutic or remedial benefits to children in certain kinds of "at risk" categories. It has been established, for example, that children are more likely to exhibit prosocial behavior (Whiting, 1983) and offer instruction (Brody, Stoneman, & Mackinnon, 1982; Ludeke & Hartup, 1983) to younger peers than to age-mates. Children are also more likely to establish friendships (Hartup, 1976) and exhibit aggression (Whiting & Whiting, 1975) with age-mates, and imitate (Brody et al., 1982) and display dependency with older children.

Younger Children Allow Isolated Older Children Social Skills Practice

The therapeutic effects of mixed-age interaction are indicated in a study by Furman, Rahe, and Hartup (1979). In their study, withdrawn preschool children participated in mixed-age groups for rehabilitative purposes. These children were paired with younger peers and with same age-peers, and were compared to a "no peer" control group. Those children who interacted with younger peers made the greatest gains in sociability. The results suggest that lack of leadership skills may be a cause of social isolation. When older isolated children, had an opportunity to interact with younger children they could practice leadership skills. This study has significant implications in light of the enormous concern about the social adjustment of many children.

It is hypothesized that the availability of younger and therefore less threatening peers in mixed-age groups offers the possibility of remedial or therapeutic effects for children whose social development is "at risk." In fact, the leadership which older children exhibit in mixed-age groups (French, Wass, Stright, & Baker, 1986) is recognized as one of the social skills involved in improving general ability to develop social relationships (Mize & Ladd, in press). Modeling, reinforcement for social approach, social perspective-taking, and social skill training have been used

with varying degrees of success (Mize & Ladd, in press). In all of these remedial programs, the adults have played the role of reinforcer and trainer. However, the concepts are difficult for trainers to teach young children directly. It seems reasonable that a preschooler who has little confidence in his own social skills might be more easily rebuffed by age-mates than by younger, less socially mature children. Thus social interaction with younger less socially sophisticated peers might give children with such low confidence opportunities to practice and refine their interactive skills in a relatively accepting social environment. However, it may be that the potential benefits of mixed-age groups for children with social difficulties depend upon the nature of the specific difficulties addressed. The benefits may be greater for children who are isolated than for those who are rejected by peers because of their aggressive tendencies.

Summary of Social Effects Research

The evidence discussed thus far suggests that children of different ages are usually aware of the differences and attributes associated with age. Consequently, both younger and older children in mixed-age groups differentiate their behavior and vary their expectations, depending on the ages of the participants. Mixed-age group interaction elicits specific prosocial behaviors such as helping, sharing, and

taking turns, which are important in the social development of the young child. Mixed-age groups provide older children with leadership opportunities, which may be especially important for some at risk children, and provide younger children with opportunities for more complex pretend play than they could initiate by themselves.

Chapter 4

Cognitive Effects of Mixed-Age Grouping

Studies related to mixed-age grouping and cognitive development suggest that the effect of mixed-age grouping on cognition is likely to derive from the cognitive conflict arising out of interaction with children of different levels of cognitive maturity. It is assumed that optimal cognitive conflict stimulates cognitive growth by challenging participants to assimilate and accommodate to the new information represented by their differences in understanding.

Effective Cognitive Conflict From Peer Interaction

Brown and Palincsar (1986), in their discussion of cognitive conflict, make the point that the contribution of such conflict to learning is not simply that the less informed child imitates the more knowledgeable one. The interactions between those who hold conflicting understandings lead the less informed member to internalize new understandings in the form of "fundamental cognitive restructuring" (p. 31). Along the same lines, Vygotsky (1978) maintains that internalization occurs when concepts are actually transformed and not merely replicated. Thus the kinds of cognitive conflict likely to arise during cross-age

interaction provide contexts for significant learning for younger children as these children strive to accommodate to the different understandings manifested by older peers. For example, in an experiment on conservation, Botwin and Murray (1975) demonstrated that non conservers gained significantly in conservation of number, mass, weight, and amount by either observing conservers or engaging in resolution through social conflict. However, similar results have been difficult to replicate.

Cognitive Conflict Is a Complex Condition

The precise cognitive stage and the socialization patterns of those involved must also be considered. Specifically, the perspectives of both children as well as the conditions under which conflict occurs should be addressed (Tudge, 1986, a,b). As Brown and Palincsar (1986) point out, conflicts that arise in peer interaction can be vehicles by means of which one child can learn effectively from another only when the less informed child already has a partial grasp of the concept in question. That is, for cognitive conflict to be effective, the concepts being learned must exist between the points of the child's actual and potential ability or, in Vygotsky's term, within the child's "proximal zone of development."

Slavin (1987) points out that the discrepancy between what an individual can do with and without assistance can be the basis for cooperative peer efforts that can result in cognitive gains. In his view, "collaborative activity among children promotes growth because children of similar ages are likely to be operating within one another's proximal zones of development, modeling in the collaborating group behaviors more advanced than those they could perform as individuals" (p. 1162).

"Novices" and "Experts" in Mixed-Age Groups

If learning tasks involve children working together instead of individually or competitively, fruitful collaboration between "novices" and "experts" can occur. Research by Brown and Reeve (1985) and Brown et al. (1983) adds support to Vygotsky's contention that learning best enhances development when children's activities are socially directed by "experts," more capable persons who can provide prompts to increasingly advanced solutions, direct leading questions, and cause "novices" to defend or alter their theories. The notion that supportive social contexts create new levels of competence, then, lends support to the use of mixed-age grouping in which ranges of competence offer varying degrees of cognitive support.

In a study of peer collaboration, Azmitia (1988) examined problem-solving. The children in the study were not mixed in age, but they were selected specifically as "novices" and "experts" on a given task as it related to the issue at hand. Such novices and experts may be considered as analogous to the kind of competence differences that often exist for children of different ages. Azmitia found that experts, even at the preschool level, positively influenced novices' learning during cooperation and were able to offer information, guidance, and new viewpoints. The dynamic interaction that resulted had an effect on novice children's acquisition of cognitive and social skills such as negotiation, argumentation, and cooperative work skills (Azmitia, 1988).

Children Adjust Communication for Listeners

Communicative competence has also been found to make a significant contribution to cognitive development (Gelman & Baillargeon, 1983). For an experimental study of communication skills and syntactic adjustment, Shatz and Gelman (1973) grouped 3- and 4-year olds together. They studied the ability of the children in the two groups to alter their linguistic behavior according to the age of the listeners. Sentence length and complexity were found to differ depending on the age of the listener. The findings of Shatz and Gelman support the hypothesis that children are

sensitive to the age and assumed level of verbal ability of the listener and adjust their verbal behavior accordingly. Furthermore, the closer the speaker's age was to that of the listener, the fewer adjustments the speaker made. Shatz and Gelman conclude that communication, as being an interactive process, requires participants to adjust to each other in order to create a favorable communicative environment.

In another study of mixed groups of preschoolers and kindergartners (Lougee, Gruenich, & Hartup, 1977), the younger children's linguistic maturity, as measured by the length of utterance, improved as they addressed older peers. No significant improvement was reported for older children.

Summary

The issues concerning cognitive development and mixed-age interaction are not yet fully understood by psychologists and educators. Perhaps more qualitative data are needed to document mixed-age interaction and its effect on cognitive development. Nevertheless, the concepts of cognitive conflict and the zone of proximal development provide some theoretical justification for experimenting with mixed-age grouping in the early years.

The implication of the theory and research on cognitive conflict for the use of mixed-age grouping is that careful consideration must be given to the precise conditions under

which its benefits can be fully realized. Structuring learning tasks so that "novices" and "experts" can collaborate is one promising approach. More research on the interactive processes involved and the teacher's role in them is needed.

Chapter 4

Strategies for Mixed-Age Learning: Peer Tutoring and Cooperative Learning

Although developmental research related to mixed-age grouping is rather limited in scope and size, and the conclusions are still tentative, research on the strategies of child-child tutoring and cooperative learning is extensive.

Peer Tutoring

Peer tutoring is defined as a "one-to-one teaching process in which the tutor is of the same genera. academic status as the tutee" (Cohen, 1986, p 175). Cohen suggests that the two important aspects of tutoring are the academic and the interpersonal characteristics of the participants. Both the tutor and the tutee gain academically and interpersonally through the interaction. The exposure to and rehearsal of the material, and the presentation and concentration on the lessons involve the active participation of both members of the pair.

The fact that there is a great deal of cognitive closeness in peer tutoring suggests that the tutor can operate in the "zone of proximal development" of the tutee (Slavin, 1987). Learning is facilitated by the fact that the

distance between peer tutors' and tutees' understandings is smaller than the distance between the understandings of children and adults; the tutor and tutee's cognitive frameworks are more similar to each other than are the frameworks of the tutee and an adult. Furthermore, the tutors are thought to be more sensitive and empathetic than teachers are to the predicament of the tutees. It is also worth noting that the tutor is less likely than an experienced teacher to have firmly formed self-fulfilling prophecies and expectations about the outcome of the interaction.

In a meta-analysis of 65 studies of school tutoring programs, Cohen, Kulik, and Kulik (1982) found that the majority of the programs had a positive effect on the academic performance and attitudes towards tutoring of tutees. Twenty-eight of these studies involved mixed-age tutoring. The evidence indicates that both tutors and tutees gain academically and interpersonally through the interaction that occurs during tutoring sessions. It is assumed that the exposure to and rehearsal of the material, and the presentation and concentration on lessons in which both members are active participants accounts for the positive effects of tutoring.

Lippitt (1976) suggests that cross-age tutoring is actually an extension of the otherwise natural tendency of

human beings to interact with and learn from those who are older and more knowledgeable. Both younger and older children can benefit from tutoring. While younger children can be enriched by individualized instruction by older peers, the latter can adapt their behaviors in such a way that they can approach younger peers in their "zones of proximal development." The older children's learning is enhanced when they review the material taught and perform competently during the act of helping younger peers. These experiences also increase the self-confidence and sense of worth of many tutors.

Tutoring offers firsthand experience of the teaching and learning process to both tutor and tutee; such experience can be useful in modifying attitudes toward learning and studying. Tutoring offers participants an opportunity to experience schooling from the perspectives of both tutor and tutee. Tutoring also benefits teachers in that it provides additional instruction in the classroom.

Cooperative Learning Structures

As indicated by Russell Ford (1983), peer tutoring encompasses many elements found in cooperative learning (Johnson, Maruyama, Johnson, & Nelson, 1984; & Slavin, 1987). Cooperative learning involves children in face-to-face interaction and in sharing responsibility for

learning. It also involves shared leadership and positive interdependence among group members. Individual accountability is likewise crucial in promoting achievement in cooperative learning groups (Johnson et al., 1984).

In a meta-analysis of 122 studies on the comparative effects of cooperative, competitive, and individualistic goal structures on achievement, Johnson et al. concluded that cooperation is by far the most effective in enhancing achievement. In view of the larger issues of social adjustment, and given the increasing concern with students' motivation, the search for goal structures that enhance learning and prosocial development is timely.

The effects of cooperative learning on positive interdependence are demonstrated in a study conducted by Lew, Mesch, Johnson, and Johnson (1986). Isolated students experienced gains in achievement, interpersonal attraction, and in the use of collaborative skills in cooperative learning groups. The researchers contend that the acquisition and application of collaborative skills by the isolated students during the cooperative learning activities developed their self-confidence which, in turn, resulted in more interaction with peers. These findings demonstrate some of the potential of cooperative learning to bring many students with social difficulties into a positive <u>recursive cycle</u> (Katz, 1988) in which their acceptance by others leads

to greater confidence in approaching them and greater acceptance increasing their confidence which, in turn, increases their acceptance by peers.

While the cooperative learning approach is not directly concerned with the ages of the participants, it is related to the exploitation of the differences between participants in the service of learning. The maximization of differences between participants is one of the rationales for our recommendation of mixed-age grouping in early childhood education settings.

Summary

Interaction in mixed-age groups holds the potential for enhancing children's social, cognitive, and personality development, because it resembles more natural environments such as those found in families. While empirical data on the educational principles that should guide instruction in mixed-age environments are not yet available, we propose that the principles of cooperative goal structures (Ames & Ames, 1984) and peer tutoring could be useful in mixed-age situations. Under classroom conditions marked by cooperative (versus competitive) goal structures, a range of competence in all developmental domains that concern teachers is accepted. Furthermore, substantial evidence indicates that the motivation of children is enhanced when working in

cooperative learning groups, and that can improve the quality and equality in relationships and achievement in education (Nichols, 1979).

Chapter 5

Mixed-Age Settings: Some Successful Examples

Research evidence regarding mixed-age grouping is complemented by the existence of mixed-age programs both in the United States and other countries. Historically, the Progressive Education movement in the U.S. has fostered multi-age grouping. The most extensive contemporary use of mixed-age grouping has been in Britain in infant classes for children 5 to 7 years old.

In an experimental program to examine the effects of cross-age interaction on social behavior, Roopnarine (1987) implemented a summer preschool program at the University of Wisconsin Mixed-Age Laboratory School. The first objective of the program was to provide children with

> ample opportunity for observational learning, imitation, and tutoring, and to provide the environment for engaging in simple to complex modes of cognitive and social play. Older children would be provided the opportunities to sharpen skills already learned, while younger children would be exposed to the behaviors of more competent older peers. (p. 147)

The second objective of the program was to give teachers experience in implementing a curriculum for mixed-age groups. The teachers were required to develop lesson plans that "would lead to group participation and cohesion rather than social segregation" (p.148). Roopnarine (1987) describes the curriculum as having an "open classroom" orientation (p. 148) offering the range of activities and experiences associated with traditional nursery and kindergarten education.

On the basis of the findings, Roopnarine proposes that mixed-age classrooms can indeed function as an instructional and curricular model because classrooms yield increased levels of cooperation and greater complexity of interaction than do single-age classrooms. Roopnarine suggests that:

> Across a range of social/cognitive constructs and in different settings, children appear quite sensitive to their peers' ages. The mixed-age grouping appears to elicit a number of social behaviors among children of varying developmental status. Thus, cross-age peer relations may serve various adaptive functions that are central to the process of cognitive and social development. (Roopnarine, 1987, p. 147).

These adaptive functions, which are examined in a number of studies, involve play behaviors, language modification, and social rehabilitation.

University of Northern Iowa Malcom Price Laboratory School

Since the mid-1970's, the Malcom Price Laboratory School at the University of Northern Iowa has operated a two- year kindergarten that mixes 4- and 5-year-olds. The program operates on the assumption that "the greater the difference among children in a classroom, the richer the learning environment for the child" (Doud & Finkelstein, 1985, p. 9). The authors claim that there are many advantages to the mixed-age kindergarten. Mixed-age grouping allows for richer verbal behavior and better language development, the enhanced self-confidence needed to master new tasks, and opportunities to achieve developmental potentials. Additional benefits include opportunities for immature 5-year-olds and mature 4-year-olds to interact at similar developmental levels, and the minimization of retention of those children deemed unready for first grade, and thus the social stigma that often goes with retention. Doud and Finkelstein (1985) also suggest that the fact that the teachers have two years with each child is an asset of the program.

While Doud and Finkelstein (1985) claim that the Malcom Price Laboratory School has been successful, there is little specific information about the curriculum and not much data to support claims of success. The authors do caution that it would be a major error to integrate 4-year-olds into kindergartens that formally teach reading and writing and place premiums on basic academic skills rather than in-depth learning. The key function of the mixed-age kindergarten is to enhance intellectual growth in general rather than accelerate the acquisition of academic skills alone.

Fajans School in Sweden

The practice of mixed-age grouping is not uncommon in other countries, especially in locations where the numbers in each age cohort are too small to constitute a whole class. Papadopoulos (1988) describes the Fajan School in Sweden in which 220 elementary-age children were not organized into age or ability groups. Instead there were three classes at junior and three at intermediate level that were vertically integrated:

> Children at [the school] are not graded according to age. They belong instead, to a colour unit. In each unit there is a nursery department, a junior class and an intermediate class. Ages in each colour unit range from 9 months to 12 years. Each

> colour unit has its own team of staff, including teachers, recreation leaders and some kitchen and cleaning staff. There is full co-operation between the staff and the children of the various units of the planning and organization of the various school activities. (Papadopoulos, 1988, p. 3)

According to Papadopoulos's report, the objectives of the school are to create close contact between the preschool and primary units; to create a homelike atmosphere; and to maintain the same peer groups from the nursery to the primary years. Papadopoulos points out that even the physical facilities are designed to encourage the achievement of these objectives. For example, there is no large dining room because the children eat in their rooms. The building is designed to "facilitate flexibility and free movement of pupils in the classrooms" (p. 4), and each classroom has "a cosy reading area with comfortable chairs and ample bookshelves for working materials and a large area where pupils can work in small groups..."(p. 4). Teachers collaborate in regular planning meetings alternating within and across grade meetings. The classes are organized so that there are students from three grades in every class. At the beginning of each school year, 10 new pupils replace the old ones. "Thus, no teacher is faced with the problem of having 30 new pupils every third year" (p. 4). Based on the brief

description of the school, the curriculum appears to offer a mixture of formal, informal, spontaneous, and assigned activities similar to those recommended by Katz and Chard (1989).

> Pupils collaborate across "school borders" working on practical themes. Also classes from the main school work together with the nursery school to organize various activities, such as traffic training, woodland paths, story times, etc. (Papadopoulos, 1988, p. 4)

The description of the school's atmosphere and of the children's work suggests that, while mixed-age grouping is only one unique aspect of this school, it is one that contributes substantially to the "warmth, openness, friendliness...freedom of movement, freedom of exchange of ideas" (p. 5) noted by the observers (Papadopoulos, 1988).

Summary

Mixed-age group interaction can have unique adaptive, facilitating, and enriching effects on children's development (Lougee et al., n.d.; Graziano 1986; Hartup, 1983). Mixed-age grouping programs demonstrate the advantages and possibilities of the practice. While existence of the programs indicates that the idea is neither novel nor rare, it may be increasingly appropriate for young children, given recent trends in child rearing and family size, the increasing lengths of time children spend in child

care outside of the home; and the increasing academic demands on young children in preschools and kindergartens.

Chapter 6

Questons About Implementing Mixed-Age Grouping

Research indicates that cross-age interaction among young children can offer a variety of developmental benefits to all participants. However, merely mixing children of different ages in a group will not guarantee that the benefits described in the preceding discussion will be realized. Four areas of concern are 1) the optimum age range, 2) the proportion of order to young children, 3) the time allocated to mixed-age grouping, and 4) the appropriate curriculum. None of these concerns has been examined by empirical studies. We attempt here to explore these questions in a preliminary way.

What Is the Optimum Age Range?

Although evidence has been found concerning the effects of the age range within a group, experience suggests that the range is likely to affect the group in several ways. We hypothesize that there is an optimal age range and such that, beyond a certain point, children too far apart in age will not engage in enough interaction to affect each other. If the age span within a group goes beyond the optimal range, then the models of behavior and competence exhibited

by the oldest members may be too difficult for younger members to emulate. Indeed, there may be a risk that the youngest members of a wide age-range group will be intimidated by the oldest children. Evidence of the potential benefits of mixed-age groups already discussed suggests that in some groups the age range may be too narrow for effective cooperative learning. We suggest that customary age-segregation practices provide too narrow a range of competence for maximum learning across much of the curriculum. For example, a class composed entirely of 3-year-olds may not be able to engage in play as complex as they would engage in if they were in a class which included some 4-year-olds. However, in many schools and centers the mixture of age groups is likely to be determined by the actual enrollments than by empirically derived formulae.

Research is needed to illuminate the dynamic factors that operate in various age ranges. Comparative studies of classes with a two- versus a three-year age spread is needed to identify the effects of age range on the frequencies, structure, and content of cross-age interaction. It would also be useful to know whether the types and frequencies of prosocial behaviors (e.g., nurturance, leadership, tutoring) that older children exhibit in interactions with younger ones are related to the spread in ages. Of course, in many situations, the age range may not be a matter of choice, but

rather a function of uncontrollable demographic factors. The advantages or risks associated with age ranges are not clear from any available data.

What Is the Best Proportion of Older to Younger Children in a Class?

We have found no research concerning the possible effects of variations in the proportion of older to younger children in a group. It is possible that younger children would be overwhelmed if the proportion of older to younger children exceeds a certain level. It may be that older children in groups with large proportions of younger children engage in more domineering, bullying, or bossy behavior than they would if they were in groups in which the proportions are reversed or equal. However, it may be that when the proportion of older children to younger children is large, the older children adopt a protective stance toward younger peers and engage in more helping and nurturing behavior than when proportions are reversed or equal. It is also possible that in groups in which older children constitute a small proportion of the group, older children regress to less mature behavior than they exhibit in the company of peers and older children. However, the effect of the proportions of older to younger participants may vary according to the nature of the curriculum or the teacher's behavior.

The only indirectly related evidence on these issues comes from cross-cultural studies on peer interaction (Whiting & Whiting, 1975). The Whiting's classical study describes a wide age range of peer interaction found in other cultures. The Whitings report that prosocial behaviors tend to emerge, and relationships among children of all ages are characterized by cooperation. However, smaller, less industrialized societies tend to have clearly defined age boundaries and privileges so that negative interaction is less pronounced. A schoolroom climate is somewhat different from village life in an agrarian society; by contrast, a classroom, especially if there are many pupils and resources are limited, tends to be unidimensional (Rosenholtz & Simpson, 1984), is pervaded by competition rather than cooperation; and emphasizes compliance rather than spontaneous, divergent, or creative behavior.

Depending upon the age spread and proportions of older to younger children in a mixed-age group, some older children may become overly self-conscious or self-confident; indeed, some may experience success in several areas too readily and hence lack sufficient challenge. Because they compare themselves to younger children and have to share adult attention, older children may resort to dominance and bullying. As suggested earlier, there is always a risk that some older children will respond to competition for

attention with younger ones by adopting behaviors more characteristic of younger classmates and may regress t· behavior that is less mature than that of which they are capable.

What Proportion of Time Ought to be Spent in Mixed-Age Groups?

There is as yet no evidence to indicate what proportion of the time children spend in an early childhood setting should be spent in mixed-age groups. In our effort to demonstrate this, let us consider the possible mixture of ages in an early childhood and elementary school. An ideal elementary school that has provisions for 4-year-olds is organized so as to provide an early childhood section or department for children 4 to 6 years old, although the National Association of State Boards of Education (1988) recommends a unit composed of 4 to 8-year olds. In such a department, the children might have a home room for several periods of the day. For example, the children might be in mixed-age groups during the opening hc during an extended and rest time period at midday, and during the last hour of school. One period might be set aside for specific learning and instructional activities for groups constituted of members with relative homogeneity of abilities, knowledge, and competence; members of these groups might work specific individual assignments and receive individual systematic instruction as needed.

If a group includes 5- and 6-year olds in a family grouping arrangement, some fives will be closer to 6-year-olds than to other fives in a given skill and will profit from small group instruction that involves 6-year-olds alongside them. Similarly, some 6-year-olds may benefit from small group experiences that involve certain activities with 5-year-olds for a while. The composition of the groups can be fluid, depending on the tasks and the rate of progress of each child.

The teaching staff of an early childhood department can allocate some time each day that cooperative learning groups can use to work on assigned learning tasks. We suggest that the staff plan together the allocation of time and their own efforts in such a way that a balance of grouping results. When such a balance exists, there is opportunity for the formation of spontaneously occurring groups that are mixed and unmixed in age, and for designated assigned groups (more or less mixed in age) that are organized for specific instructional purposes. The organization of the department would be such that each child would spend his first three years in it. During three years each child would participate in a variety of organized or unorganized peer groups. In this way, the uneven development and progress of many young children could be addressed by the flexibility in placement in both same-age and within mixed-age groups. One of the

important potential advantages of a mixed-age early childhood department is the minimization of the need for grade retention and repetition. Any child who has spent two or three years in such a department and was still judged unable or unlikely to profit from the subsequent grade (ideally second grade) could be referred for special services. Any curriculum for which more that 10% to 12% of the age-eligible children were judged unready is probably an inappropriate curriculum.

Efforts to maximize family grouping seem to be especially appropriate in the child care centers in which many young children spend the majority of their waking hours. A class in a day care center could be mixed with 3-, 4-, and 5-year-olds. The early part of their day could be spent participating together in the morning meal. The children could take a real role, appropriate to their level of competence, in setting the table and cleaning up after the meal, and could undertake real household chores before they were encouraged to play. This plan would enhance the homelike quality of child care settings and reduce the temptation to "scholarize" the lives of very young children in child care. If, as is often the case, their siblings are enrolled in the same child care center, increasing the opportunities for sibling contact are desirable. Many young

children in institutions may find contact with siblings during the day a source of comfort.

Thus far, there are no data that suggest the optimal allocation of time to mixed- versus homogeneous-age grouping. There is therefore no reason to believe that time must be allocated to either one or the other age-grouping arrangement. Maximizing the advantages and minimizing the risks of mixed-age grouping and making proper use of time will depend largely on the judgment and skillfulness of the teacher.

What About Curriculum and Mixed-Age Groups?

It has been suggested that one of the possible benefits of mixing ages in the early childhood classroom may be a reduction of teachers' and administrators' tendency to adopt a unidimensional curriculum that all pupils are expected to complete within a given time. We suggest that, instead of a formal academic curriculum for a whole class or age cohort, an informal curriculum in which systematic instruction is available for individual children as needed and ample group project work and opportunity for spontaneous play constitute the core of the curriculum.

Unless the curriculum has a significant amount of time allocated to informal group work and spontaneous interactive

play in naturally occurring groups, the benefits of the age spread are unlikely to be realized. Katz and Chard (1989) have proposed that the curriculum for all young children should include opportunities for children to work on extended group projects in which individuals contribute differentially to the effort at many different levels of competence.

Summary

Although mixed-age grouping is a straightforward concept, the practical details of implementation are not well researched. Experience and some research, however, suggest 1) an optimum age range is larger than that customary in current classrooms yet not so wide that children cannot share intersts, 2) that the proportion of older to younger children should be large enough to keep the older children from regressing, 3) that there is no particular proportion of time that ought to be allocated to mixed- and same-age grouping, and 4) an informal multidimensional non-age - based curriculum is most appropriate to a mixed-age group.

Chapter 7

Conclusion and Recommendations

The research reviewed suggests that multi-age grouping in early childhood education settings may benefit participants by providing contexts for interaction in which a variety of models of behavior, levels of social, and intellectual and academic competences are available. In such contexts, children may benefit from the opportunity to interact with others who have more or less knowledge and skill than they do. It is assumed that a range of competences within a mixed-age group gives rise to cognitive conflicts, opportunities to lead, instruct, nurture, and to strengthen skills and knowledge already acquired in the course of tutoring others. Thus, a mixed-age group is potentially a very rich educative environment.

Mixed-age grouping is especially desirable for young children who spend the majority of their waking hours in child care programs. In such environments family- and sibling-like relationships can be fostered and become a source of affection, comfort, and closeness for all children involved.

Mixed-age grouping in the early years of elementary school can also minimize the need for grade retention,

repetition, and segregated classes for children deemed "unready" for the next grade.

Special benefits may also accrue to the teachers of mixed-age groups. It seems likely, for example, that the wider range of maturity available in mixed-age groups, compared to single-age groups, would decrease the extent to which younger children would be dependent upon the teacher for attention and assistance; more mature peers can be sources of both. Similarly, for a variety of tasks and chores, helpers are available to the youngest members from among the older ones. This expanded availability of help is likely to be especially beneficial to the staff of child care centers who are responsible for virtually all aspects of children's functioning throughout the long day.

Clearly more research is needed; but evidence that has been reported thus far gives us confidence in the value of developing appropriate curriculum and teaching strategies for mixed-age grouping in the early years.

On the basis of the foregoing we recommend that

* mixed-age grouping be implemented in classrooms serving young children

* curriculum be broadly conceived and designed so that children working together will be understood by

their teachers, principals, and parents to be learning multidimensionally

* curriculum be oriented toward projects and activities that encourage and allow children to work collaboratively using the structures of peer tutoring, cooperative learning, and spontaneous grouping characteristic of young children's play settings

* teachers be provided with support and assistance in implementing mixed-age grouping because most current, sequential academic curricula do not support mixed-age grouping

* parents be provided information and guidance about the benefits of mixed-age grouping as their children move into such experiences

Appendix

Suggestions for Teachers Implementing Mixed-Age Grouping

Placing children into mixed-age groups does not automatically assure the realization of all its potential benefits. Among the factors to be considered are the staffing patterns, program organization, and teaching strategies.

Staffing Patterns

Ideally, all classes with anywhere from 25 to 35 five and six-year-olds should be staffed by two adults. For children 4 years old and younger, the size of the total group should be smaller, and at least two adults are required. If the class is mixed in age (e.g., 4 and 5 years, 5 and 6, 4 to 6 years old, etc.), the size of the group may be somewhat larger than a class of all 4-year-olds, but at least two full-time staff members are required.

The two staff members may work as equal partners or as lead and assistant teachers, depending upon their qualifications and preferences, characteristics of the children, the program, and other considerations. If there is a choice between a class that is a mix of 5- and 6-year-olds versus three classes (one for fives, one for sixes, and a transition class for the "unready" children in between), we recommend the latter. This recommendation

reflects our view that two adults with a larger class that is mixed in age and ability has greater potential educational benefits and is less likely to yield the negative effects produced by the segregation of children into junior kindergartens or transitional classes on dubious "readiness" criteria (Shepard & Smith, 1988).

Program Organization

With at least two adults to a class (more if the group includes under-4-year-olds), the curriculum can achieve several kinds of flexibility that can maximize the advantages of mixed-age grouping.

Family group. Each teacher could have her own "family" of half the class spanning the whole age range (or a third each for a staff of three). For example, in a class of 30 children ranging in age from 4 to 6 years old, each teacher could have a "family" group of 15 that spans the age range.

In a child care center serving 50 children between the ages of 2 and 5, for example, each of 5 staff members could have her own "family" of ten children (some of each age). The group would come together as a "family" with their teacher or caregiver at regular times of the school day for informal discussion of mutual concerns, to plan activities, snacks and meals, story and music times, and any other occasion as appropriate.

In child care centers and all-day kindergartens, the "families" can assemble for meals, snacks, and nap times, helping with setting the table, serving the meals, cleaning up, putting away dishes and pots, setting up cots or mats for sleeping, "reading" bedtime stories, folding blankets after naps, comforting and reassuring each other when appropriate, and so forth. Children should be encouraged to participate in and assume responsibility for as much of the real work of the center as possible.

During the "family" time, which functions something like a home room, the teacher can encourage children to seek and to give help to each other on all relevant matters, e.g., helping each other dress to go outdoors, finding a book or other materials for work or play, listening to each other read, soliciting suggestions from others concerning next steps in an investigation, and so forth.

From time to time the whole group of both "families" could also come together for meetings for appropriate occasions. But such whole group sessions are less than ideal for meetings, although they serve well for announcements or performances by groups or individuals. When the group is larger that 12 to 15, especially if the age range is wide, the interchanges are rarely real discussions. Indeed, whole class discussions in many preschools and kindergartens of 20 to 25 children are often pressured and have to be rushed.

Twenty to twenty-five minutes may be needed for every member of the group to participate. Under such conditions children are rarely listening to each other except to determine when their own turn will come! Only the children who are quick and articulate are likely to get a word in when the group is large; this tends to strengthen their articulateness and undermine it in the less assertive and capable ones.

Assigned work. In a class that includes a wide age range, for example 4- to 6-year-olds, some will benefit from assigned work designed to promote specific aspects of their intellectual and academic development. During some periods of the school day, individuals, pairs, or small groups of children from either of the two or three "families" in the center or early childhood unit can work on assigned tasks as required by the school or district wide curriculum. One of the staff members can take responsibility for guiding and consulting with these workers. During this period the teacher can give individuals or pairs of children with similar instructional needs systematic instruction as required to complete the assigned tasks.

Other children who have caught up with their assignments or are too young for them may be engaged in spontaneous play or may be working on specific projects in groups of their own choosing. While one teacher supervises the assigned work, another can supervise the outdoor and/or

the spontaneous play of the others and can be available as a consultant to groups working on extended projects.

Teaching Strategies

Teaching strategies appropriate for mixed-age groups are the same as those applicable in any early childhood setting. However, if all the potential benefits of the mixture are to be maximized and the potential risks minimized, some teaching strategies may deserve special emphasis. They are described briefly below.

Enhancing social development. In a mixed-age class, deliberate intervention by teachers may be required to stimulate cross-age interaction, especially at first. In this way the teacher lets children know that she expects them to notice and act upon what they learn about each other's concerns. Teachers' appreciation of constructive cross-age interactions will stimulate its occurrence, and cultivate a nurturing family like ethos in the class or center.

1) Suggest that older children assist younger ones and that younger ones request assistance from older ones in social situations.

Aside from helping children to become acquainted with each other, the teacher can help by suggesting that older children help younger ones to enter group activities, etc., and that older ones accommodate to the needs of younger

ones. It may also be helpful for teachers to suggest to younger children that they solicit help, advice, attention, directions, and other kinds of assistance from older children in participating in group play, etc.

2) Encourage older children to assume responsiblity for younger ones, and encourage younger ones to rely on older ones.

The teacher may also play a role by prompting older children to assume responsibility for a younger one and, similarly, by advising a younger child to depend on an older one for certain kinds of assistance or when the situation warrants it. For example, a young child new to the group with little or no experience of other children can often be helped to enter it or to feel at home by an older experienced child's reassurance and advocacy.

Occasionally a teacher has to be on guard against cases of excessive zeal on the part of a responsible older child; occasionally they take their responsibilities a little too seriously! It takes some children time to learn the fine distinction between being helpful and being domineering. In such cases the child can be encouraged to supervise in a friendly rather than oppressive manner.

3) Guard against younger children becoming burdens or nuisances for older ones.

There is often a temptation to exploit older children as helpers and teachers such that their own progress might be impeded. Regular observations and reviews of each individual child's progress and experience in the group will help to minimize this possibility.

4) Help children accept their present limitations.

Mixed-age settings provide contexts in which younger children can learn what their (temporary) limitations are, how to accept them; they can also learn to anticipate future competences and strengths observed in older classmates. Young children should not be encouraged to see a limitation (due to age, inexperience, etc.) as a tragedy; some limitations can provide challenges, and others must be accepted gracefully - perhaps for the moment.

5) Help children develop appreciation of their own earlier efforts and progress.

Teachers can use appropriate opportunities to help older children learn from their observations of younger ones about their own progress and how far they have come; such appreciation of their own less mature behavior may strengthen children's dispositions to be charitable toward the less mature they inevitably encounter. This in turn may reduce the negative effects of a common tendency of teachers to over praise a child for being a "big boy" or "big girl" and to intimidate children by indicating that their

undesirable behavior is not fitting for the class they are in, but rather for the one from which they have been promoted.

6) Discourage stereotyping by age.

If older children exhibit a tendency to disparage the efforts of younger ones by calling them "dummies" or "cry babies," the teacher can discourage them from doing so and can teach them instead how to be helpful and appreciative of younger ones' efforts. Occasional gentle and friendly reminders of their own earlier behavior can also strengthen acceptance of others' efforts. If two children are sent to convey a message to the director of the center or principal of the school, it should not always be the older one who carries it; he or she may be asked simply to observe and make sure that the task was carried out properly while the younger child was the one actually making the request or giving the explanation.

Enhancing emotional development. There is abundant evidence that children respond to the feelings and moods of those around them very early in life (see Radke-Yarrow, Zahn-Waxler, & Chapman, 1983).

1) Alert children to their peers' needs, feelings, and desires.

The teacher can help children's emotional development by interpreting children's feelings, wishes, and desires to each other. The teacher explains or describes to one child or a group the feelings, wishes, or desires she believes another child has in a matter-of-fact way, conveying information and insight clearly and respectfully.

2) Encourage children to give and to accept comfort from each other at times of special stress, separation anxiety, and so forth.

The teacher can arouse sympathy by suggesting to one child that he or she probably knows what it feels like to miss someone or to experience sad times. This can be communicated matter-of-factly, without attributing thoughtlessness to the child in question and without sentimentality.

Encouraging intellectual development. When the curriculum encourages children to work together on a wide variety of tasks, projects, and other activities, the teacher can use cross-age interaction in the mixed-age group to promote a range of intellectual and cognitive benefits.

1) Alert children to their peers' interests.

This can be facilitated when teachers refer children to one another. For example, if a child reports with great enthusiasm to the teacher about some interest or event in his life, she can remind him that child X is also interested

in the same thing and might be glad to hear about it. Similarly, in discussion with small groups of children, the teacher might ask one child to respond to what another has said, simply by asking something like, "What do you think about X, Annie?" Or she can ask the group, "Have you any suggestions for child A's project on X?" Such strategies indicate to the children that the lines of communication can go from child to child as well as from child to teacher and teacher to child.

2) Alert children to their peers' skills as appropriate.

When one child asks for help with writing something on her painting or feeding the class rabbit, the teacher can recommend a particular classmate whose assistance can be requested because he or she can write well, or who can probably show the requester how to do the chore, etc. Occasionally such suggestions fail; sometimes the requester insists that he or she wants the teacher's help and not another child's, and occasionally the recommended helper is too busy or for another reason unwilling to help. In the first case the teacher has to use her judgment in deciding whether to insist on her first suggestion, or whether to accede to the child's demand. In the second case it is important to respect the other child's wishes and to explain to the requesting child that the other is busy at the moment and either wait awhile or try an alternative approach.

Part of project work includes making books about what has been done, what has been learned, etc. (see Katz & Chard, 1989). Some of the older and more experienced children get tired of doing the illustrations and coloring the pictures; these tasks can be given to the younger ones while the former can work at the writing and binding of the book.

Similarly, if a group decides to make labels, graphs, or pictures of something related their work, older children could be encouraged to do the labeling and take dictations from the others, while younger children continue with less demanding but equally important aspects of the collaborative effort. Those who can write or spell can take responsibility for helping those who cannot yet do so. These kinds of activities are similar to those that Clay (1979) refers to as socially guided literacy.

3) Encourage children to read to others and to listen to others read.

The reading that one child does for another may be no more than story-telling on the basis of the pictures in the book, but it cannot fail to encourage the child to see reading to another as important. Furthermore, the appreciation - if not admiration - expressed by the younger listener may strengthen the "reader's" motivation to progress with learning to read.

4) Help older children think through appropriate roles for younger ones.

Imagine a group of children working on a play, for example, and the producers dismiss the youngest members of the class as lacking sufficient or pertinent abilities to participate in it. The teacher can help by encouraging the director to think of simple easy roles or by pointing out special abilities of the younger children than she is aware of.

While these practices are especially useful in mixed-age and mixed-ability groups, they can probably be adapted for use in any class. These practices also tend to reduce the children's dependency on the teacher.

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