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INTEGRATED PRESCHOOLS AS EDUCATIONAL AND THERAPEUTIC ENVIRONMENTS: Concepts, Design, and Analysis

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The design of educational and therapeutic environments that are sensitive to the varied, complex, and often subtle needs of young children provides a critical challenge to programs that integrate children at various developmental levels, including nonhandicapped children. A decade of experience with preschool intervention programs carried out mostly in nonintegrated settings, although often producing equivocal results, has nevertheless confirmed the value of a systematic approach to developmental programming (Bronfenbrenner, 1975; Hunt, 1975; Tjossem, 1976). Components of successful classroom-based programs include a strong reliance on organization and systems related to planning, design, feedback, and evaluation while conducted within a carefully specified theoretical framework (Guralnick, 1975; Karnes, 1973; Weikart, 1972). It is likely that these findings will also be applicable to integrated programs, although demands on organizational and staff resources will undoubtedly increase. In addition, the rather unique nature of integrated programs suggests that they have the potential

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for generating new developmental strategies. It is this latter aspect that is the focus of this chapter.

The existence of substantial numbers of integrated programs reflects the influence of a complex array of factors. In part, it is a response to reverse society's historical pattern of segregating its atypical groups, and the insensitive and unresponsive treatment that apparently inevitably results. For certain groups of handicapped individuals, the effects of this pattern have been documented all too vividly (Blatt, 1970; Kanner, 1964; Martin, 1974). From this awareness and our concern about the effectiveness of even well designed and well intentioned segregated programs (Dunn, 1968; Filler et al., 1975; Kaufman and Alberto, 1976), in conjunction with labeling issues for many groups of children (MacMillan, 1973; Mercer, 1973), new concepts and ideologies have emerged, finding expression in the terms "normalization" and "mainstreaming" (Birch, 1974; Wolfensberger, 1972). Although many points need to be resolved, especially when attempts are made to translate the principles into actual programs (MacMillan, Jones, and Meyers, 1976), these concepts have provided an impetus and direction for the creation of models, techniques, and administrative procedures that can effectively accommodate children within a wide range of developmental levels.

Efforts to integrate children at the preschool level have been most prominent, perhaps because of the comparative ease with which this can be accomplished (Caldwell, 1974; Wolfensberger, 1972) and the strong federal mandates in this regard. Interestingly, we are discovering that integration not only can serve to prevent some of the deleterious effects that can result from separation, but also, from a developmental and therapeutic perspective, the presence of nonhandicapped children may well have an independent positive effect on their handicapped peers (Guralnick, 1976a). More specifically, we are finding that more advanced peers can serve as valuable resources by providing instruction, applying adaptive consequences, or modeling appropriate social, play, and communicative behaviors. In addition, benefits of a more pervasive nature exist in that integrated groups tend to alter the entire climate of previously segregated classrooms in positive ways. Factors associated with this latter effect include the facts that (1) overall, fewer inappropriate behaviors tend to occur; (2) teachers' observations of nonhandicapped children provide a framework for understanding varying patterns of behaviors within a developmental context (Bricker and Bricker, 1972); and (3) the social, play, and linguistic environments tend to be of a richer quality. Accordingly, these circumstances provide opportunities and benefits for the handicapped child that are uniquely associated with integrated settings.

In this chapter, a number of concepts, issues, and findings with regard to classroom-based integrated programs for preschool children are explored. First, a description of an integrated preschool program consisting of children with widely varying skills is presented. This provides a framework for examining certain issues and principles related to the design of integrated programs. Next, techniques that have successfully utilized nonhandicapped peers as direct resources, the design implications of these techniques, and the relevance of various developmental processes to the organization of integrated programs are analyzed. Finally, the concept of integrated preschool programs as educational and therapeutic environments and the conditions that must be established to optimize the benefits and impact of these environments are discussed.

THE EXPERIMENTAL PRESCHOOL

Framework for Individualization and Togetherness

Nicholas Hobbs (1975) has pointed out that an enlightened application of the mainstreaming principle does not at all imply a melting pot concept where special needs tend to lose their identity, but rather that meaningful integrated programs require numerous arrangements, each geared to unique child and group needs with children remaining in as close contact with one another as possible. He states:

In schools that are most responsive to individual differences in abilities, interests, and learning styles of children, the mainstream is actually many streams, sometimes as many streams as there are individual children, sometimes several streams as groups are formed for special purpose, sometimes one stream only as concerns of all converge. We see no advantage in dumping exceptional children into an undifferentiated mainstream; but we see great advantages to all children, exceptional children included, in an educational program modulated to the needs of individual children, singly, in small groups, or all together. Such a flexible arrangement may well result in functional separations of exceptional children from time to time, but the governing principle would apply to all children: school programs should be responsive to the learning requirements of individual children, and groupings should serve this end (p. 197).

Over the past few years, the Experimental Preschool of the National Children's Center has provided an integrated model demonstration program primarily supported by the Bureau of Education for the Handicapped and constituting part of what is referred to as the "First Chance" network. In doing so, we have explored a variety of arrangements in an attempt to optimize the developmental environment for a diverse population of pre-

school children in a manner that is consistent with Hobbs' position. To demonstrate this, four- to six-year-old children were specifically selected to ensure representation of a wide range of developmental levels. Although preschoolers with severe sensory or orthopaedic handicaps were not included, the program consisted of children exhibiting a considerable range of handicapping conditions, from those with little or no communicative or appropriate social behaviors to a group (twenty-five to thirty-five percent) with no developmental delays whatsoever.

The design of the integrated setting was intended to optimize resources such that: (1) the needs of individual children were met through specialized curricula, programs, and activities; (2) interactions among peers at various developmental levels would occur in a manner that maximized the potential value and satisfaction of those contacts; and (3) the instructional and social environment was sufficiently flexible to accommodate specialized peer-peer programs to benefit the handicapped child.

Structural Aspects of the Integrated Preschool

The architectural design of the preschool is compatible with the "many streams" concept and lends itself to numerous arrangements. Large double classrooms that can be divided if necessary are separated by a central area for indoor gross motor play. The size of the classrooms provides adequate space for play and lesson activities, and large observation rooms with one-way mirrors permit unobtrusive observations by parents, staff, and visitors. Children with relatively mild handicaps and the nonhandicapped children occupy one double classroom and are completely integrated for all activities. Children with severe handicaps and those with more moderate delays, characterized by emerging speech and poorly developed social behaviors, are located in the second double classroom and are involved with more advanced peers on a selective basis.

Decisions regarding the extent of each child's involvement in integrated activities are based on the child's responsiveness to social interactions and reinforcement, the level of development of his or her observational and imitative repertoires, and the severity and extent of any behavior problems. Although it has been suggested that these factors tend to limit the benefits derived from integrated experiences (Evers-Pascale and Sherman, 1975; Guralnick, 1976a; Strain, Shores, and Kerr, 1976), the proportion of time spent in integrated activities, even for children with extremely underdeveloped skills in this regard, is nevertheless quite substantial in our program. Moreover, as discussed below, more advanced children are frequently employed in assisting less advanced children to develop in these areas so as to enable them to benefit more fully from integrated activities.

Classroom events consist of a variety of structured and unstructured activities common to most preschool programs but with a strong emphasis on systematic observation, planning, and evaluation-feedback systems for each developmental area (Guralnick, 1975). Lessons, with a primary focus on cognitive and language development, are arranged for children grouped in terms of their progress in particular curriculum components. In addition, heterogeneous groups of children participate in lessons, often with the composition of the group and the selection of specific lesson activities designed to foster the development of the less advanced children in the group. Within the group format, planned interactions are geared to each individual child. Observations of these lessons would find the teacher moving from one child to another, adjusting her interactions to each, asking questions of the entire group from time to time, providing for extensive utilization of materials, requiring action sequences and child-child interactions whenever possible, and in general, orchestrating the elements of the lesson for all children as a social unit.

In addition to instructional or therapeutic teacher-child interactions conducted on a one-to-one basis as needed, numerous less structured activities, including various play, music, art, and other events, form additional key components of the program and constitute the majority of the day's activities. In these latter instances, especially play activities, children from all developmental levels, without restriction, are integrated, and the processes and techniques related to reaping the potential benefits from the interactions of children at various developmental levels are systematically applied. The extensive involvement of children at different developmental levels during play and other social and cultural activities reflects both the relative ease with which integration can occur in these more dynamic and free-flowing activities as well as the potential benefits of these interactions for the less advanced children. It should be noted, however, that the principles of peer modeling, peer reinforcement, peer support, and other social learning processes, discussed in detail at a later point, are applied in lesson situations as well as in the less structured activities.

The content and sequence of the curriculum components themselves are based on data derived from the structure and strategies associated with normal developmental patterns and have been subjected to various empirical tests. In general, our approach can best be described as a cognitive learning model (see preceding chapter). The organization of the curriculum accentuates the role of the social context, facilitates individualizing even in group lessons, and provides a systematic basis for structuring interactions in an integrated setting. Our series of language programs provides a good example. Based upon a variety of semantic, syntactic, and functional as-

pects of language development (see Bloom, 1975; Brown, 1973; MacDonald and Blott, 1974; Miller and Yoder, 1974), and utilizing a highly individualized instructional format within a behavioral framework (Guralnick, 1975, 1977), the program focuses on the development and generalization of linguistic concepts and the spontaneous use of language. Intrinsic to the program is an emphasis on communication in a social context, both in the lesson format as well as in play and other social and semistructured activities. In fact, many of the more advanced peers directly assist teachers in encouraging the application of newly acquired concepts and in arranging natural appearing circumstances for formalized probes with respect to the generalization of language concepts and usage.

Accordingly, the design of the preschool provides for varying degrees of integration carried out in proportion to the expected benefits that can be derived from such interactions; at the same time, it is governed by the principle of responsiveness to individual needs and the recognition of the critical importance for the sharing of physical and psychological space. This structure also establishes a means whereby small groups of children tend to be more frequently linked to one or two teachers ("home room"). This occurs to a greater degree for those with more severe delays and reflects an awareness of the fact that significant social agents (parents, teachers, etc.) require intense contact across diverse circumstances to enable them to recognize the developmental significance of and to build upon each child's emerging and often idiosyncratic characteristics. This is especially true with regard to the interpersonal aspects of communicative behavior (Mahoney and Seely, 1976).

Approaches to Facilitate Integration

In the design of our program, we were aware that integration efforts with primary age children have produced equivocal results. In general, sociometric and observational data (Gottlieb and Davis, 1973) have indicated that handicapped children are not readily accepted by their nonhandicapped peers regardless of whether the context is a nongraded elementary school (Goodman, Gottlieb, and Harrison, 1972), a regular classroom with supportive services (Iano et al., 1974), or a no-interior wall nongraded school (Gottlieb and Budoff, 1973). On the positive side, however, recent gains have been achieved in identifying the characteristics of children and conditions that will increase the likelihood of success (Budoff and Gottlieb, 1976).

Similarly, existing research with preschool children has documented that, especially for widely heterogeneous groups of children, spontaneous interactions are not likely to occur (Allen, Benning, and Drummond, 1972;

Feitelson, Weintraub, and Michaeli, 1972; Ray, 1974; but see Ispa, 1976). The available evidence suggests that the systematic arrangement of events and other specialized procedures to encourage and support integration may need to take place, especially if peer interactions are intended to serve as an educational or therapeutic resource (Guralnick, 1976a). Within the overall structure and design of the preschool described above, two general approaches have been adopted in order to maximize interactions among children at different developmental levels. The first approach includes attention to the following structural, organizational, and programmatic characteristics: (1) a careful selection of social play activities and related games and materials (see Quilitch and Risley, 1973), (2) a flexible design of the content and organization of the curriculum, (3) the matching of children's interests, (4) the provision for and arrangement of certain spatial layouts and equipment (see Twardosz, Cataldo, and Risley, 1974), and (5) systematic modeling and prompting activities by teachers. Conceptually, these activities are compatible with a broad-based ecological approach (Gump, 1975) in that the proper structuring of the social and physical environments is designed to set the occasion for the occurrence of frequent and productive interactions among handicapped and nonhandicapped children.

The second approach is to build the observational, imitative, group involvement, and social interaction skills of the less advanced children. Gains in these areas would increase the probability of productive interactions. To some degree this can be facilitated with the help of more advanced peers (Guralnick, 1976a; Hartup, 1970), but especially for children with very limited skills or severe behavior or emotional problems, techniques implemented by staff members for gradually developing these behaviors, such as those described by Koegel and Rincover (1974) for achieving group involvement, may need to be employed. In general, an entire range of social learning and direct reinforcement principles and techniques can be utilized to build specific skills and to establish peers and adults as meaningful social agents (Bandura, 1969; Kozloff, 1974).

NONHANDICAPPED PEERS AS POTENTIAL RESOURCES

Social Play Interactions

A variety of techniques have been successfully used to foster social interactions among preschool children. These have included systematic and direct reinforcement of play behavior through contingent praise and attention by adults (Allen et al., 1964; Buell et al., 1968; Hart et al., 1968), by peers (Nordquist and Bradley, 1973; Wahler, 1967), through the use of toys and

games (Quilitch and Risley, 1973), by providing certain types of play equipment (Keogh, Miller, and LeBlanc, 1973), through symbolic modeling (O'Connor, 1969), and by direct training in sociodramatic play (Strain and Wiegerink, 1976).

The diversity of these methods is a reflection of the significance we attach to the growth of reciprocal social play interactions among young children and the development of the child's constructive use of toys and materials. It has been suggested that play activities permit exploration of actions and interactions in nonthreatening situations, and provide an atmosphere conducive to the practice of subskills and the testing of contingencies that will be employed later as part of a more complex and integrated behavior pattern (Bruner, 1972; Slobin, 1964; Weisler and McCall, 1976). It appears that the absence of social play interaction skills has a significant negative impact on later personality development (Bandura, 1969), and a number of observers have traced the development of social play and provided useful descriptive information of both normative and theoretical interest (Barnes, 1971; Eckerman, Whatley, and Kutz, 1975; Mueller and Lucas, 1975; Parten, 1932, 1933). Accordingly, despite some cloudy conceptual and empirical issues regarding exploration and play, Weisler and McCall (1976, p. 492) point out that "... it is widely acknowledged that such behavior is a key ingredient in... adaptability, learning, cognition, education, and social behaviors...".

Structuring Social Interactions The existence of integrated programs provides a potential and perhaps unique opportunity for using nonhandicapped peers as an additional resource for promoting social development. Prior work by O'Connor (1969), Nordquist and Bradley (1973), and Wahler (1967), and the observations by Hartup (1970) suggesting the feasibility of systematically utilizing peers as agents of change, have provided a framework and point of departure for our efforts directed toward children manifesting more severe delays and a wider range of handicapping conditions.

Our early exploratory work on the effects of integrating handicapped and nonhandicapped children in a free-play setting produced a number of interesting results (Devoney, Guralnick, and Rubin, 1974). As might be expected, we found that simply introducing nonhandicapped children into a play setting had virtually no effect on the quality of play of a heterogeneous group of handicapped children. However, when the teacher structured the setting so as to promote interactions (by arranging equipment and other prompts), a substantial increase in the proportion of associative and cooperative play was noted for virtually all of the handicapped children.

Perhaps the most striking aspect of this demonstration, however, was anecdotal evidence suggesting the occurrence of substantial changes in the nature of the play of the handicapped children. Specifically, the teachers observed that, especially in the absence of the nonhandicapped children, the play of the handicapped children was more sophisticated, organized, and contained more fantasy play elements than ever previously noted. Interestingly, there is some evidence (Freyberg, 1973) to suggest that changes such as these are associated with gains in the cognitive and social-emotional domains.

Additional work (Guralnick, 1976a) analyzed in more detail the procedures and effects of utilizing nonhandicapped peers to modify less advanced peers' social play behavior. A setting was arranged whereby two nonhandicapped peers focused on promoting the social play of a designated handicapped child. The experimental procedures were based, in part, on Wahler's (1967) experimental analysis of child-child interactions in free-field settings in which he established the important role of contingent peer attention as a means of controlling a diverse set of preschool children's social behaviors. In our work, through role playing and direct training, nonhandicapped children were instructed to model and encourage interactive and constructive play with a particular toy and to selectively reinforce only the appropriate social play behaviors of the handicapped child. Observations and recordings of the handicapped child's behavior were carried out on a time-sampling basis utilizing the social play categories described by Parten (1932) and validated by Wintre and Webster (1974).

Figure 1 illustrates the various components and sequence of this procedure. During baseline sessions, the handicapped child engaged primarily in solitary play and addressed very few positive comments to the nonhandicapped children (percentage data are based on the number of time-sampled intervals in which the behavior occurred). No effect was noted by simply having the handicapped child observe his peers playing associatively or cooperatively in the modeling condition (panel 2). Consequently, the peer modeling and selective reinforcement procedure was initiated and, as is evident in panel 3, a rapid and marked change occurred in the percentage of intervals in which the handicapped child engaged in associative and cooperative play. In addition, a substantial increase in the number of positive verbalizations occurred as well. Since there were three toys in the setting, we were able to assess the nature of control by the peers by having the nonhandicapped children select a second toy (toy B) and carry out the same procedures that were in effect when toy A was the focus of activity. Again, the handicapped child's social play shifted from solitary to that

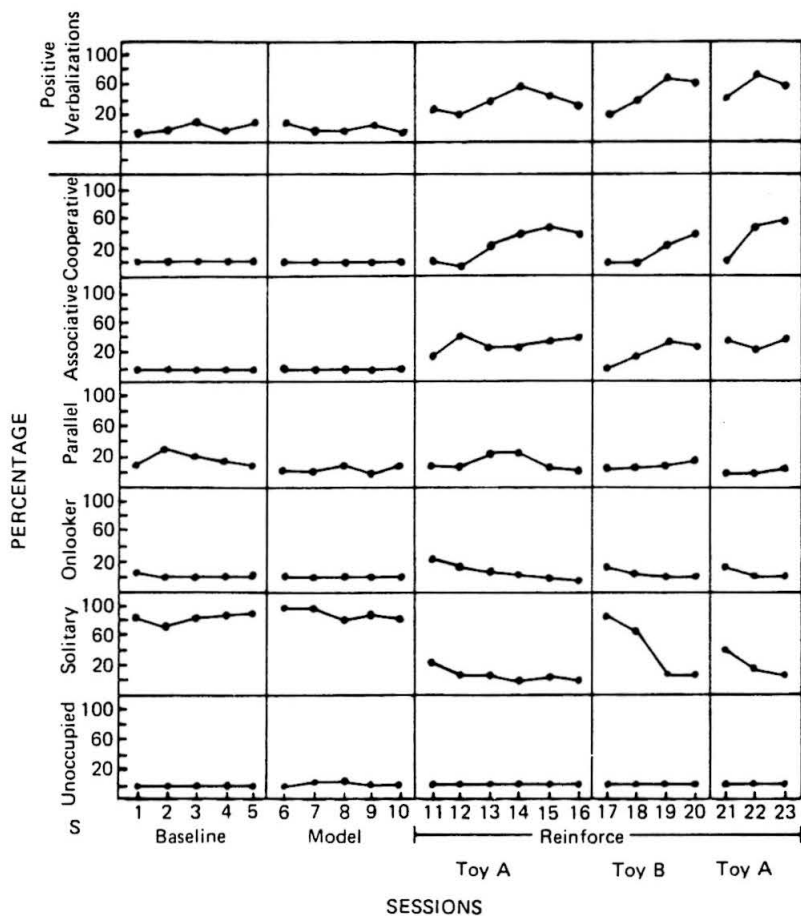


Figure 1. Changes in social play behavior and positive verbalizations for a handicapped child as a result of peer modeling and reinforcement. (Based on Guralnick, 1976a.)

categorized as associative and cooperative. A final return to toy A again replicated these findings, as did a similar procedure carried out with a different group of children.

This technique has worked well for children with both mild and moderate developmental delays. An observational analysis suggested that the social play interactions of the handicapped children were facilitated by a sequential process that was frequently repeated by the nonhandicapped children. Specifically, it included encouragement to interact, demon-

strations of appropriate toy use and play roles, and then the provision of appropriate social and activity consequences.

Need for Further Analysis Unquestionably, further analysis of this process is warranted. It remains to be determined how durable these changes are and to what extent they generalize to other settings and children. The compatibility of the groups, the willingness of the nonhandicapped children to participate, as well as the developmental levels and interpersonal characteristics of the handicapped children are factors that are likely to affect that efficacy of this technique. In fact, our current research strongly suggests that generalization of these play patterns to other more diverse free-play settings tends to be reduced by the presence of competing activities, especially those involving other advanced peers. Perhaps the application of the aforementioned technique with larger groups of handicapped and nonhandicapped children will reduce the impact of these competing variables. In any event, it is important that we recognize the value of improved social development that occurs even in the small play groups, since the development of social skills and constructive play in these settings is likely to facilitate generalization to more complex environments.

In addition, it is important to establish the extent to which this process simply facilitates the occurrence of play and social play interaction skills already existing in the handicapped child's repertoire and to what extent new learning, both in terms of toy use and interpersonal skills, actually takes place. This latter analysis relates to observational learning studies in which efforts to tease out the processes of vicarious desensitization, vicarious reinforcement, and the acquisition of new behaviors (and ultimately direct reinforcement procedures) are vital issues (Bandura, 1971; Keller and Carlson, 1974; O'Connor, 1972).

Peers as Therapeutic Agents

The development of social play skills using peers as agents of change actually consists of many processes and could be categorized equally well as a "therapeutic" intervention in which peers prompt others, serve as models, and provide feedback for appropriate interpersonal behaviors. The therapeutic value of peers in this regard has not gone unrecognized. Early efforts by Mary Cover Jones (1924) explored a number of techniques designed to eliminate fears of young children. She observed that the method of social imitation, in which nonfearful children were used to induce actions in others incompatible with the fear response, was an extremely valuable technique. The work of O'Connor (1969, 1972) on vicarious processes that promote social interactions is relevant here as well. Further

documentation for the potential therapeutic significance of peer relationships can be found in the remarkable account by Freud and Dann (1951) on the group upbringing of children orphaned during World War II (highlighted by Hartup in the second chapter of this volume) and the review by Hartup (1970) of a variety of studies establishing the significance of peer influence during early childhood. Taken together, these efforts and a number of direct and systematic attempts to induce therapeutic change by peers that have been developed recently appear to have important programmatic implications for integrated settings.

Reducing Severe Avoidance and Self-Directed Behaviors Through Peer Contact Although less directive and more symbolically oriented techniques can be effective in reducing even the extreme social withdrawal of many young children (O'Connor, 1969, 1972), for those with more generalized deficits and maladaptive behaviors, including highly developed self-directed behaviors, other more direct treatment procedures are generally necessary. One technique that has served as a prototype for our efforts in this area can be found in the work by Suomi and Harlow (1972) in which isolate-reared monkeys, who normally manifest profound and generally irreversible social deficits as a result of their isolation, were successfully rehabilitated through the use of "therapist" monkeys. The rehabilitation procedure consisted of the selection of nonisolate peer monkeys in order to deliberately and persistently force contact with the isolates whose behavior was dominated by a variety of self-directed activities. In order to achieve the therapeutic effect, Suomi and Harlow chose therapist monkeys that were younger than the isolates such that their emerging social repertoire matched, in a predictable fashion, the stages of the therapeutic program. The results showed that social rehabilitation was complete after twenty-six weeks of this form of intervention. An analysis of the processes involved led Suomi and Harlow to suggest that the constant clinging by the therapist monkeys was responsible for the breakdown of the self-directed behaviors. Following this, opportunities arose for the therapist monkeys to reinforce alternative prosocial behaviors and to assist in the development of a complex social repertoire.

In an application of this general technique in the preschool, we used systematic instructions to nonhandicapped "therapist" peers in order to increase the appropriate social interactions of a child who displayed many severe isolate behaviors. Specifically, during certain activities, we asked some of our nonhandicapped preschoolers to tag along with the designated child despite the fact that he exhibited a complex repertoire of bizarre, self-directed, and well devised pattern of avoidance behaviors. The analysis of the program revealed that by having the nonhandicapped chil-

dren remain physically close, to constantly initiate interactions, and to respond to any positive overtures on the part of the designated child, we were able to produce a substantial change in a behavior pattern of that child that had previously resisted all other efforts. In addition, these changes set the occasion for the child's introduction into the natural reinforcing environment provided by the preschool community (Baer and Wolf, 1970).

Although this procedure can be used only on a limited basis, since it requires the extensive involvement of nonhandicapped peers and certainly varies with their patience, understanding, and willingness to participate, it suggests the availability of a treatment approach that, even in modified form, may have extraordinary potential. In practice, this technique is likely to be most useful in conjunction with other direct and vicarious procedures, many of which may also involve more advanced peers. However this is accomplished, a systematic structuring of many of the peer-peer interactions appears essential to ensure a successful outcome.

Language Usage

The results of the social play study summarized earlier (see Figure 1, top panel) revealed increases in the frequency of positive speech addressed by handicapped to nonhandicapped children which correlated with increases in advanced social play. This finding suggests that perhaps other aspects of the handicapped child's language can be similarly altered through interactions with more advanced peers. In general, integrated settings provide a much more diverse and complex linguistic environment for the handicapped child than is normally available in nonintegrated settings. It is this characteristic, unique to integrated settings, that suggests the possibility for formulating new strategies to promote the language development of handicapped children.

Peer Modeling of Advanced Speech The heterogeneous grouping of children in lesson and nonlesson activities affords numerous opportunities for handicapped children to listen to the speech of more advanced peers as well as to observe any consequences related to that speech. Given the availability of these language models, one question that can be asked is whether and under what conditions the modeling of more advanced speech can affect the language usage of handicapped children.

Although there are many controversial issues regarding the roles of modeling and reinforcement by adults as techniques for facilitating language development (Mahoney and Seely, 1976; McNeil, 1970), evidence does indicate that modeling of appropriate speech, in conjunction with feedback highlighting that the more advanced speech is the desirable form, can be an effective technique. In fact, even though investigations focusing

exclusively on the role of peer models as a means of facilitating language are only at the early stages of development, some recent research has indicated that, by systematically reinforcing a more advanced peer for using a particular class of a well developed syntactic construction, the frequency of usage of that form by handicapped children who observed the interaction will increase (Guralnick, 1976a). It is important to note that the effectiveness of this procedure, perhaps best described as vicarious expansion, may be limited to circumstances in which comprehension of the linguistic concepts is already part of the handicapped child's repertoire (Whitehurst, Ironsmith, and Goldfein, 1974; Whitehurst and Novak, 1973). Of course, children's observational skills and current levels of expressive language development are critical variables moderating this effect, but teachers who properly and judiciously employ this procedure will have available a very efficient instructional strategy.

Kazdin (1973) has indicated that vicarious learning in situations such as this can occur as a direct result of the fact that the observer simply imitates the model who was reinforced or that reinforcement contains cue properties that indicate to the observer which behaviors will be reinforced. These explanations are, of course, not mutually exclusive, and it is likely that both processes, in conjunction with other variables known to influence modeling (Akamatsu and Thelen, 1974), operate in governing the effects of the observations of advanced language by handicapped children.

Whatever processes may be operative, it is important to underscore the potential significance of language models in integrated settings. As Whitehurst, Ironsmith, and Goldfein (1974) point out:

Language development certainly involves processes other than modeling and selective imitation and these processes themselves have prerequisites and corequisites such as comprehension and reinforcement. Nevertheless, a full account of language development must have at its core a consideration of the frequency with which models use language that displays particular characteristics, the contexts in which that language is modeled, and the situations in which the observing child is encouraged to respond (p. 301).

Clearly, integrated preschool settings are likely to provide greater opportunities for handicapped children to benefit from language models.

Adaptive Communication

The work outlined in the preceding sections has clearly revealed that, through the proper arrangement of events and activities, environments can be organized to increase the frequency and quality of interactions among children at different developmental levels, thereby setting the occasion for a variety of additional learning experiences. For the most part, the interac-

tions discussed thus far have been directed or arranged by adults through specific instructions, training, or systematic reinforcement. However, it would also be useful to obtain more detailed information regarding the nature of these contacts, especially language interactions, as they occur under conditions in which adults do not specify the form or precise nature of the interactions that the more advanced children are expected to provide.

It is quite common in integrated settings to find the more advanced children, especially nonhandicapped children, engaged in instructional interactions with less advanced children. In some instances the teacher has directly requested that some instructional help be given, while on other occasions these interactions develop spontaneously. In either instance, it is hoped that the quality of these interactions would be such that the handicapped child would derive certain benefits. Before discussing some experiments that bear directly on this issue, it may be useful to highlight some findings for normally developing children in order to provide a relevant framework.

Expectations from Language Interaction Research There is a considerable body of research on mother-child interactions with normally developing children that indicates that mothers carefully adjust the complexity of their interactions in accordance with their child's cognitive and linguistic abilities (Broen, 1972; Mahoney and Seely, 1976; Moerk, 1977; Snow, 1972). In addition, detailed analyses have suggested that these interactions are arranged in such a manner as to facilitate language acquisition of the developing child. For example, Mahoney (1975, pp. 142-143) notes that "... simplified and redundant language to young children may serve to facilitate language acquisition by providing children with a linguistic model which is within their range of semantic and syntactic complexity." Although data have been reported that mothers of handicapped children provide a linguistic environment that is less complex and generally not as adaptive or progressive as that of mothers of nonhandicapped children (Howlin et al., 1973; Marshall, Hegrenes, and Goldstein, 1973), Rondal (1976) has recently suggested that parents of Down's syndrome children do indeed make appropriate linguistic adjustments when delayed and nondelayed children are matched in terms of mean utterance length.

The mother-child interaction studies clearly recognize the significance of the nature of the linguistic input and its relationship to the development of language competencies. However, the nature of child-child interactions in this regard has not been explored to any substantial degree, although there are a few notable exceptions (e.g., Shatz and Gelman, 1973; see Bates, 1975, for a review). This is an unfortunate omission since it is likely

that child-child interactions will take on even more significance given the current and projected extent of day care and preschool programs. Moreover, the nature of these interactions is especially significant for programs that integrate children at various developmental levels. Interestingly, the results of the study by Shatz and Gelman (1973), which compared the verbal interactions of four-year-olds when addressing adults, other four-year-olds, and two-year-olds, revealed that the four-year-olds do tend to adjust their speech as a function of the listener and that these adjustments parallel the adjustments mothers make when addressing children at different ages (Broen, 1972; Snow, 1972). For example, they noted that, "When talking to two-year-olds as opposed to peers or adults, four-year-olds produced shorter utterances, they were less inclined to use coordinate constructions, subordinate conjunctions, and certain forms of predicate complements; and they were more inclined to use words which attracted or maintained attention" (Shatz and Gelman, 1973, p. 30).

Verbal Interactions Among Handicapped and Nonhandicapped Children Accordingly, focusing on the language that occurs during instructional interactions, it is important to ask if nonhandicapped children do in fact adjust their communications as a function of the listener's developmental level. Some adjustments certainly appear necessary in order to achieve effective communication and, given that these modifications occur, it is important to ascertain whether these adjusted forms of linguistic input are likely to benefit the handicapped child.

In an effort to answer some of these basic questions, Guralnick and Paul-Brown (1977) recently analyzed the speech of nonhandicapped children in an instructional setting as they addressed children at different developmental levels. Specifically, for experimental purposes, children were classified as evidencing either mild, moderate, severe, or no handicaps whatsoever. Classification was based jointly on the American Association on Mental Deficiency's classification scheme (Grossman, 1973) and utterance length. For reference, children in the moderate group expressed a maximum of three words per utterance with children comprising the severe group expressing a maximum of one word per utterance. For the mild group, utterance length generally ranged from four to seven words, most often characterized by complete grammatical phrases, although a number of speech problems were evident.¹

¹The mean IQ's (and chronological ages (CA)) for the mild, moderate, and severe groups were 62.5 (5-6), 51.75 (5-2), and less than 30 (5-5), respectively. For the nonhandicapped children, we selected the most verbal children and recorded their speech (mean IQ = 105; CA = 4-3) to the handicapped groups as well as to a group of nonhandicapped children (mean IQ = 90.25; CA = 4-3).

The speech of a group of designated nonhandicapped children only was recorded in a setting in which the "speaker" was asked to provide instruction on certain drawing tasks to children in each of the four "listener" groups on an individual basis. This speech was then analyzed in terms of forty-one linguistic parameters. The results clearly revealed that the nonhandicapped children did make communication adjustments. In general, their speech was more complex and more diverse, with a greater overall output (words and utterances) when speaking to the more advanced children. Results for two key variables are illustrated in Figure 2 and represent the pattern of results common to the other language variables that showed significant changes. For the instructional setting, the figure notes the effect of the developmental level of the listener for mean length of utterance (MLU) and total complex sentences. These and related data are based on the group means for each of the four developmental levels.

Interestingly; the same pattern of results occurred when the nonhandicapped children's speech was recorded in a separate experiment during free play. Figure 3 illustrates this similarity for the MLU and total complex sentence measures. It is important to note that no instructions whatsoever were provided during free play, yet similar communicative adjustments

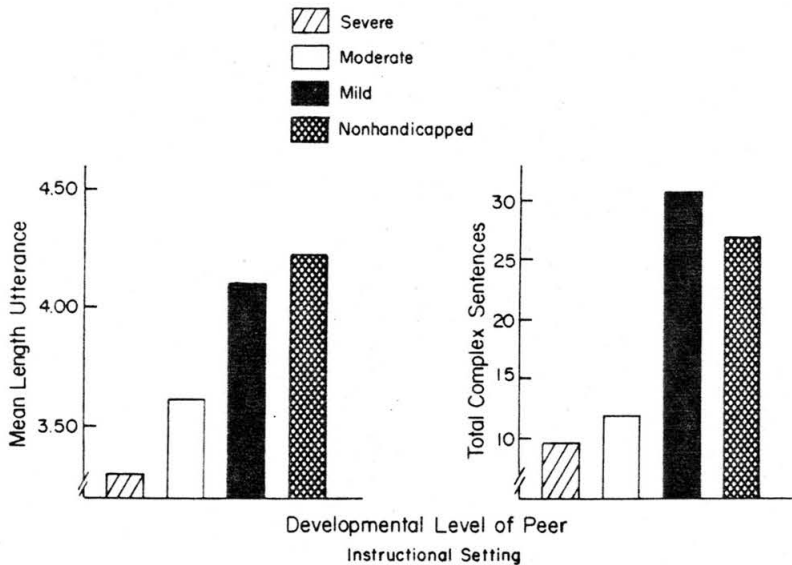


Figure 2. Mean length of utterance and total complex sentences of the nonhandicapped children as a function of the developmental level of peers in the instructional setting. (Based on data (means) from Guralnick and Paul-Brown, 1977.)

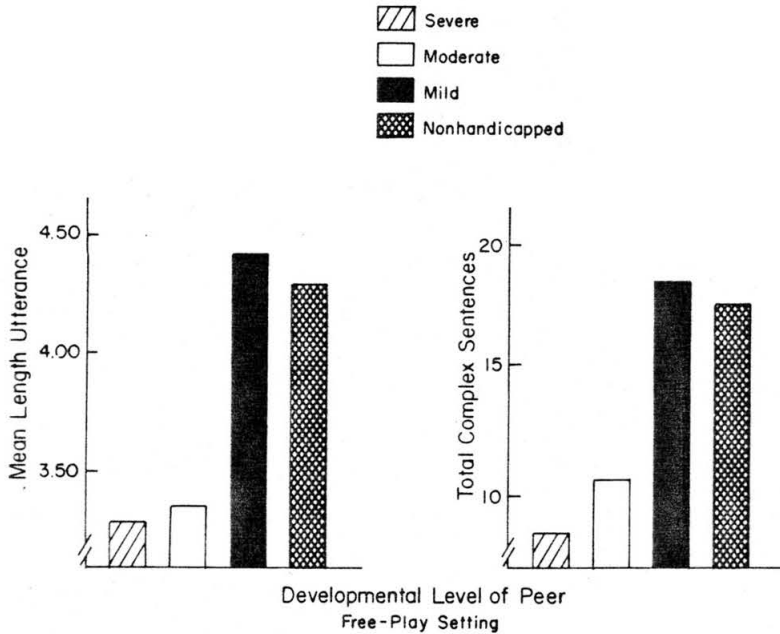


Figure 3. Mean length of utterance and total complex sentences of the nonhandicapped children as a function of the developmental level of peers in the free-play setting. (Based on data (means) from Guralnick and Paul-Brown, 1977.)

were obtained. Both figures also reveal the consistent finding that the nonhandicapped children tended to respond similarly to children with severe and moderate delays on the one hand, and to children with mild and no delays on the other. Although some differences occurred within these major classifications, most of the results indicate that differences occurred between these two groups.

Value of Communication Adjustments by Peers In many respects, the overall results of this study reveal a pattern similar to that obtained in the parent-child studies noted earlier. Differences in child-directed speech appear to reflect adjustments on the part of the nonhandicapped children in a manner consistent with the notion that they were responding to the cognitive and linguistic levels of the listener. Extrapolating from the parent-child interaction data, it may well be that these adjustments provide a positive impact on the language learning of less advanced preschool children. As discussed by Guralnick and Paul-Brown (1977), a closer inspection of our data provided additional support for this hypothesis.

First, it was noted that, despite average MLU differences across groups, utterance lengths were widely distributed even within the different developmental levels. This ensured that even the less advanced peers were exposed to more complex speech but to a degree commensurate with their developmental level. Similarly, other measures reflected the fact that the complexity and diversity of speech, as well as the use of numerous grammatical categories, remained in proportion to the child's developmental level.

Functional Interactions Taken together, it appears that the linguistic environment of children at varying developmental levels as provided by nonhandicapped peers consists of progressive input that is sufficiently complex to stimulate language development but remains within the broad boundaries of the listener's developmental level. It remains to be determined, however, how "finely tuned" these adjustments are to the developmental levels of the children, especially to children with relatively mild handicaps. In addition, a much more detailed analysis of the dialogue among children at different developmental levels is essential to help clarify some of our findings in which the relationships between the outcomes for a number of our linguistic parameters and their impact on speech development were unclear or inconsistent (and perhaps even counterproductive), although, as noted, the overall pattern did suggest a positive effect. Moreover, an assessment of communication patterns going beyond semantic and syntactic categories would be valuable. Specifically, this would take the form of a sequential analysis of the dialogue to functionally assess the more immediate and dynamic adjustments of the children (see Moerk, 1976). As Mahoney and Seely (1976) suggest, this should include an analysis of response variables, such as imitation, interpretation, expansion, correction, responses to questions, and reinforcement, as well as stimulus variables comprised of behavior and information requests, and information statements. Although this task is certainly complex and demanding, such an analysis should provide additional valuable information on the potential usefulness of child-child interactions for the language-learning child.

THE INTEGRATED PRESCHOOL AS AN EDUCATIONAL AND THERAPEUTIC ENVIRONMENT

The contention offered here is that a significant independent, positive contribution to the development of handicapped preschool children can be achieved through appropriate involvement in integrated programs. Conversely, we may state that the absence of nonhandicapped children may well limit the developmental opportunities for those who are handicapped.

It must be admitted, however, that the boundary conditions related to this proposition remain to be established, and a wide variety of factors, including the availability and distribution of resources, the type of intervention model employed (Anastasiow and Mansergh, 1975), and the developmental levels and related social-personal characteristics of the children are likely to interact with and limit the outcomes and the nature of child-child interactions in many integrated programs. Nevertheless, as summarized below, the preponderance of a variety of supportive developmental concepts across a number of dimensions, in addition to the experimental evidence regarding the potential effectiveness of nonhandicapped peers as resources described in the preceding sections, strongly argues for the tenability of this notion.

Alternative Instructional Strategies

One of the most significant aspects of the involvement of nonhandicapped children is that it makes available to program planners and teachers an entire array of instructional strategies that are unique to integrated settings. As we have seen, these strategies consist, in part, of directly utilizing nonhandicapped peers as educational and therapeutic resources (Guralnick, 1976a, b). The form this intervention has taken is to provide direct training and instruction to nonhandicapped peers to model, prompt, or provide social consequences on a systematic basis. This process has been effective with regard to the development of social play behavior, the reduction of social withdrawal, and the reduction of self-directed behaviors. Similarly, efforts in the language area have revealed that modeling of advanced speech can serve to increase usage of specific speech forms by less advanced children.

At a less formalized level, it appears that teachers can feel confident that when nonhandicapped peers are asked to help teach less advanced children, their language interactions are adjusted to the level of the listener and that these adjustments appear to have developmental significance for the language-learning child. Moreover, similar communication adjustments occur when children at different developmental levels naturally come into contact during social play (Guralnick and Paul-Brown, 1977). Frequently, these play contacts turn out to be instructional in nature such as when children at varying developmental levels engage in joint ventures in the block corner or adopt different roles in fantasy-type play. Of course, we do not know at this time whether the nonverbal behavior of the nonhandicapped children in these situations is adaptive as well, but additional work in this area, perhaps analogous to the maternal-child teaching style interaction studies, should be useful (see Filler, 1976; also see Mahoney and Seely, 1976, on "communicative matching").

Integrated programs also give teachers the option of enlisting the aid of more advanced children in numerous other respects as well. For example, these children may assist in arranging probes to systematically test the extent to which various cognitive and language skills of the handicapped child generalize to different contexts. Similarly, teachers in integrated settings can more effectively utilize the procedures involving group contingencies (Hayes, 1976; Walker and Hops, 1973).

Generalization of Social Interactions One might effectively argue that in certain circumstances, especially in the social play domain, the direct use of peers as agents of change is the strategy of choice. It is assumed that by establishing behaviors more naturally in the social context, with opportunities available for the handicapped child to experience and cope with contingencies and relationships that normally occur in this environment, conditions essential for the maintenance of adaptive and advanced behavior will exist. The importance of this state of affairs is evident since, after all, the true measure of a program's success is reflected in the extent to which the intervention produces long-lasting and generalized effects.

Unquestionably, in the area of promoting social interactions, contingent adult attention and related adult-directed techniques can and have been effective. For example, contingent teacher attention can bring children into situations in which they are more likely to encounter positive social interactions (Buell et al., 1968) as well as provide consequences that reduce collateral behavior that has tended to interfere with prosocial interactions (Twardosz and Sajwaj, 1972). Moreover, children with severely limited behavioral repertoires or serious behavior disorders will probably require the direct assistance of adults. Nevertheless, despite the recognition that there are circumstances where adults play critical roles, evidence is accumulating which suggests that their effectiveness as agents of change in the context of play is limited by a number of factors. For example, there are many situations in which the child's behavior following an adult-controlled intervention program remains dependent upon the presence of the adult (Redd, 1970). In fact, O'Connor (1972) points out that contingent teacher attention designed to encourage interactions of socially withdrawn children can have the opposite effect by actually distracting the child from ongoing peer interactions. Moreover, Shores, Hester, and Strain (1976) noted that the presence of adults during play tended to reduce the extent of child-child interactions. They also observed that circumstances in which teachers prompted and structured play activities and then removed themselves from the situation produced the highest proportion of child-child interactions. Accordingly, since programmed generalization to more natural consequences must occur in instances such as these in any event, it is probably

most expedient to utilize peers directly at the outset. The ideal strategy, it would seem for many circumstances, would include the joint efforts of adults and peers (see Baer and Wolf, 1970).

Developmental Opportunities in Integrated Settings

Beyond the direct planned use of more advanced peers functioning in a variety of roles to assist less advanced children, there are a host of factors which suggest that, by their very nature, integrated settings can indeed serve as educational and therapeutic environments. The following description of the potential developmental opportunities that exist in integrated settings should be tempered by the comment that we should not permit ourselves to envision integrated settings as paragons of highly nurturant, wholly integrated, and totally supportive social groups. As mentioned at various points in this chapter, even under ideal circumstances, this is not a realistic expectation. Nevertheless, focusing on these potential benefits, it can be noted that the diversity of actions, the variations in behaviors, and the overall richness of the environment tend to be more characteristic of integrated programs than those consisting of homogeneous groups of handicapped children. Consequently, this state of affairs provides a wealth of opportunities for less advanced peers to interact with and potentially benefit from everyday events.

For example, in the area of play, Bricker and Bricker (1971) have indicated that nondelayed children may well provide better models in this regard than teachers, and Devoney, Guralnick, and Rubin (1974) have demonstrated how observed variations of advanced play can be readily incorporated into the repertoires of handicapped children. In fact, it may well be that delayed imitation effects such as these, many of which tend to develop during parallel play, may prove to be the most significant aspect of the benefits children with relatively extensive behavioral deficits receive as a result of their experiences in integrated settings.

Along similar lines, a recent study by Rubenstein and Howes (1976) with toddlers suggested that the presence of peers enhances various aspects of play, including its frequency, maturity, and the creative use of objects. Since integrated settings tend to be more active and interactive, there appears to be a greater likelihood that handicapped children will be productively involved. Moreover, Eckerman, Whatley, and Kutz (1975) have suggested that novelty factors may play a role in establishing social play with peers, and that these peer-peer interactions may become dominant over adult-child interactions by two years of age. The saliency of peers as contrasted to adults does certainly seem to be a relevant factor. The novelty of children's displays, their often unusual uses of materials, and the nature

of their relationships seem likely candidates for eliciting and maintaining the attention of peers.

Another factor relevant here is the sheer frequency of child-child interactions that occurs within a classroom on a daily basis, many of which are of potential benefit to less advanced children. Even under ideal circumstances, teachers are limited in the extent to which they can interact individually with each child. Fortunately, integrated settings provide numerous opportunities for the less advanced child to interact with and to experience adaptive consequences from their peers. These consequences, of course, may need to be monitored by teachers in some cases to ensure their appropriateness; but in most instances it appears that the children's behavior will reflect the types of consequences that are sanctioned, modeled, and supported by teachers.

Research has also suggested that prosocial behaviors in preschool children tend to be reciprocated (Charlesworth and Hartup, 1967; Hartup, 1970). As a result, nonhandicapped children can benefit their handicapped peers not only by selectively reinforcing appropriate behaviors during the acquisition of those prosocial behaviors, but by maintaining those behaviors through the reciprocal pattern of interactions that occurs naturally within the social context. Baer and Wolf (1970) have referred to the "trapping" phenomenon whereby children's appropriate social behaviors are supported and maintained by the natural consequences existing in the preschool environment. The end product here is a more generalized set of appropriate social behaviors.

As discussed earlier, learning is further expedited through vicarious processes (Bandura, 1969). For example, through observation, peers can transmit information as to which behaviors are likely to be reinforced (Kazdin, 1973; Keller and Carlson, 1974) as well as new skills and information (Bandura, 1969; O'Connor, 1969). Given the extensive opportunities available for observational learning in integrated preschool settings, it is important to point out that available evidence suggests that the more competent the model the more likely it is that that model's behavior will be imitated (Akamatsu and Thelen, 1974; Strichart, 1974). As has been noted, the benefits that can occur through observation of more competent models during play and verbal interactions, as well as the attempts to replicate those behaviors, include the development of important skills and abilities. Finally, it is suggested that the extensive diversity and variations found in integrated settings tend to produce environments that are more challenging to all concerned. This has the effect of increasing the likelihood that events discrepant from the handicapped child's typical interactions will be experienced. Many theoretical positions suggest that ex-

periencing and resolving such discrepancies are vital for cognitive development (e.g., Hunt, 1961).

Effects on Nonhandicapped Children

A salient characteristic of the design of integrated programs is its emphasis on meeting individual needs of children, including those who are nonhandicapped. To the extent that this is accomplished, we can expect that nonhandicapped children will be stimulated and supported in their own development. Our own data as well as those of others (Bricker and Bricker, 1971; Ispa, 1976) suggest that, as measured by standardized tests and later school success, nonhandicapped children benefit from integrated programs to at least the same degree (and usually better) as would be expected if they had attended nonintegrated preschools. In a recent review of the role of peers as change agents for classmates' social behavior, Strain, Cooke, and Apolloni (1976) noted the absence of any reports of negative effects as a result of peers' participation as active agents in intervention programs. Similarly, preliminary data from a current study at the Experimental Preschool on the quality of play revealed no differences whatsoever in the constructiveness or appropriateness of the play of nonhandicapped children when playing in a homogeneously grouped setting as compared to a setting composed of children with widely varying developmental levels. However, there did appear to be some reduction in the frequency of associative play in the heterogeneous setting, which seems to be diminishing over time as interaction patterns become more firmly established.

These positive findings are consistent with results reported by cross-age tutoring programs in which benefits to those providing the tutoring, as well as the tutored, appear to be substantial (Gartner, Kohler, and Reissman, 1971). Similarly, Zajonc (1976) has advanced the notion that the tutoring of younger siblings by older children can perhaps explain some of the differences in intelligence found for certain family configurations. He notes, "One who has to explain something will see from the other's reactions whether the explanation was well understood, and be prompted to improve the explanation, with the consequence that his or her own understanding of the matter is improved" (Zajonc, 1976, p. 231). This may have relevance to instructional interactions among children at different developmental levels.

Although the findings to date are reassuring, extensive explorations of the social and attitudinal effects of integrated experiences on nonhandicapped children have not yet been attempted. Before we move too rapidly in our programming efforts, these vital issues should be thoroughly addressed.

CONCLUSIONS

Taken together, the evidence relating to integrated preschool programs suggests that this environment does indeed contain unique characteristics that may be utilized to promote the development of handicapped children. In addition, this chapter further underscores the critical need for designing and organizing these programs so as to accommodate as many streams as are necessary to respond to each child's needs. Although the feasibility for designing programs within this framework appears to be well established, we must be keenly aware that, to be effective, integrated programs must attend to the many concepts, methods, and techniques that relate directly to the integration process. Specifically, they must include an environmental design that seeks to arrange encounters between children at varying developmental levels that are likely to be productive, that considers the reward value of peers and the compatibility of the children involved, that carefully reinforces and highlights positive behaviors, that increases the likelihood of less advanced peers observing and effectively interacting with more advanced peers, and that carefully monitors the observational and cognitive skills of the handicapped children to ensure that interactions are challenging but not overwhelming. Clearly, the implementation of these strategies is no easy task.

Finally, it is suggested that the issues that remain to be resolved should be conceptualized as attempts to find optimal environments that meet each child's needs. Fortunately, available evidence indicates that not only are integrated settings feasible and consistent with that goal but, by their very nature, provide a unique and effective educational and therapeutic environment.

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