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THE EFFECTS OF INTEGRATION IN PHYSICAL EDUCATION ON THE MOTOR PERFORMANCE AND PERCEIVED COMPETENCE CHARACTERISTICS OF EDUCABLE MENTALLY RETARDED AND NONHANDICAPPED CHILDREN

By

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ABSTRACT

THE EFFECTS OF INTEGRATION IN PHYSICAL EDUCATION ON THE MOTOR PERFORMANCE AND PERCEIVED COMPETENCE CHARACTERISTICS OF EDUCABLE MENTALLY RETARDED AND NONHANDICAPPED CHILDREN

By

Steven Donald Smith

The purpose of this research was to determine the effects of integration in physical education classes on the motor performance and perceived competence characteristics of educable mentally impaired (EMI) and nonhandicapped (NH) children aged 8 to 11 years. The 15 EMI and 45 NH children were assigned to one of four physical education classes: (a) a nonintegrated class of 8 EMI children, (b) a nonintegrated class of 18 NH children, (c) an integrated class of 4 EMI and 13 NH children, or (d) an integrated class of 4 EMI and 14 NH children. Each of the four classes met for 90 minutes per session, four days per week for four weeks. The curriculum emphasized fundamental motor skills, including locomotor and object-control skills in the context of soccer and softball units. Motor skill performance was assessed prior to the beginning of instruction and at the end of the four week instructional program. The qualitative aspects of motor performance were assessed using the Test of Gross Motor Development, and quantitative aspects of performance were assessed using the softball throw for distance, standing long jump, and 20-yard dash. Perceived competence was measured prior to instruction, during the first week of instruction, and at the end of the four week period of instruction. The Self-Perception Profile for Children (Verbal Scale) and the Pictoral Scale of Perceived Competence and Social Acceptance for Young Children were used to assess

perceived competence. The Dyadic Adaptation of the Flander's Interactional Analysis System was used for assessing frequency and types of interaction between the teacher and students. The findings indicated that neither instructional setting provided a significant advantage in improving the qualitative and quantitative motor performance of EMI and NH children. Neither setting offered an advantage in improving the perceived competence of the EMI or NH children. Teacher-student interaction patterns varied with the individual teaching styles. EMI children received a greater frequency of interactions when compared to the NH children in the categories of direction/order, praise, and total interactions. Differences in these categories appear to be due to the influence of the large number of interactions directed toward the nonintegrated EMI class.

This dissertation is dedicated to Nancy, my heart of hearts.

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CHAPTER I

THE PROBLEM

Physical education is important to young elementary school children for several reasons. During the early elementary school years, children learn the fundamental motor skills which enable them to participate in more complex games and sports (Nichols, 1986). Through regular, vigorous physical activity, children can become healthier and more physically fit. Research has demonstrated that successful participation in physical activities is often important to the perceived competence of children (Shaw, Levine, & Belfer, 1982). Other researchers have identified perceived competence as a dynamic construct which may be enhanced through physical activity (Martinek & Karper, 1982). In addition, most children who participate in games, sports, and other forms of physical activity enjoy the friendships and camaraderie associated with those activities (French & Jansma, 1982).

Educable mentally impaired (EMI) children also may experience these benefits of physical activity (Karper & Martinek, 1983; Ulrich & Ulrich, 1984), though the motor skill levels of many mentally retarded children tend to be significantly lower than those of their nonhandicapped peers (Howe, 1959; Rarick, Widdop, & Broadhead, 1970; Turnquist & Marzolf, 1954). These deficits in motor performance may hinder mentally retarded children from participating in physical activity with a feeling of success (Craft & Hogan, 1985). Thus, mentally retarded students may fall farther behind in their skills and may be segregated in reference to their peers (Gottlieb & Davis, 1973; Johnson, 1950; Strauch, 1970).

Based on this knowledge, it is plausible that mentally retarded children need physical education as much as, if not more than, their nonhandicapped peers.

The authors of Public Law 94-142 (Federal Register, 1977) recognized physical education as an important curriculum area for handicapped children. In this law, physical education is defined as the development of physical and motor fitness; of fundamental motor skills and patterns; and, of skills in aquatics, dance, and individual and group games and sports. These activities are not merely suggested in this law, rather, they are required as mandatory services for all children who are determined to be eligible by an Individual Education Program Committee (IEPC).

A basic requirement of PL 94-142 is that all children be educated in the least restrictive environment (LRE). This means that children must be educated in an environment which is most conducive to successful learning. Integration of EMI children with nonhandicapped children has, therefore, received attention as a possible option for the physical education of EMI children.

Kaufman, Gottlieb, Agard, and Kukic (1975) provided a conceptual framework for understanding the integration of handicapped students into regular classes. Their definition of integration specifies that conditions should be similar for both handicapped and nonhandicapped students relative to three different aspects of integration: (a) temporal integration - the amount of time the student spends in regular classrooms with nonhandicapped peers; (b) instructional integration - the instructional content, teaching styles, and materials used in the regular class; and (c) social integration - the teacher-student and student-student interactions and other affective areas of a child's development.

The temporal aspect of integration is the area in which educators have most successfully implemented the concept of integration (Dunn, 1968). The regular physical education classroom has become a popular setting for educating EMI children (DePaepe, 1987; Sherrill, 1985). Other physical education settings include the regular class with consultant help from an adapted physical educator in the district, and special adapted physical education classes (Dunn & Craft, 1985).

Although the LRE principles associated with PL 94-142 imply that many EMI children should be integrated with nonhandicapped (NH) children for physical education classes, and although integration appears to be the prevailing practice in physical education, there is little empirical evidence to indicate the efficacy of such placements (Rarick & Beuter, 1985). Knowledge of the most appropriate setting for educating EMI children is needed. It should not be acceptable to place handicapped children in a given setting based only on a philosophical and pragmatic commitment to integration. The commitment to integration should be based on empirical evidence of the effects of integration on learning and social-emotional characteristics of both handicapped and nonhandicapped children.

In addition to temporal integration, the Kaufman, Gottlieb, Agard, and Kukic (1975) definition of integration asserts that instructional integration must be considered if educators are to determine the proper placement of children into classes. Instructional integration involves the content, teaching style and materials used in a class setting. The content of physical education classes for handicapped children is defined in PL 94-142. One area of importance identified in this law is the development of fundamental motor skills. Basic skills should be the focus of study in the development of motor ability in young children. Children in the early elementary grades have developmental needs which dictate a greater emphasis on fundamental motor skills than on other aspects of physical education. It is during these grades that children can develop the fundamental motor skills which serve as a foundation for more complex skills used in sports and games. This is also a time period when these foundational skills can be taught most effectively. However, there is a paucity of research on the acquisition of fundamental motor skills by EMI children. Information concerning the placement which best facilitates the development of fundamental motor skills in EMI children is similarly lacking.

The final aspect of integration included in the Kaufman, Gottlieb, Agard, and Kukic (1975) definition of integration is social integration. Social integration refers to a child's interactive behavior and assimilation or acceptance by his or her classmates. When examining the total scheme of integration, the area of social integration cannot be ignored. Two specific components of social integration, namely self-concept and dyadic teacher-student interactions are areas which have not been thoroughly researched in the physical education setting.

Perceived competence has received considerable attention in studies of mainstreaming in academic settings (Kirk, 1964; Gottlieb & Davis, 1973; Budoff & Gottlieb, 1976). Research has demonstrated that perceived competence is related to a child's comparison of his/her own performance to the performances of other children (Craft & Hogan, 1985).

In this regard, perceived competence may be an especially important variable in physical education classes, because student performances are usually visible for all to observe. The immediate feedback available is different from the types of feedback offered in the more "academic" classroom and illustrates the need for research within the physical education classroom. Perceived competence is intertwined with one's ability to perform on the same level as one's peers in the early elementary years (Craft & Hogan, 1985). Therefore, it is important to know how the immediate feedback available in the physical education classroom affects a child's perceived competence. The evidence from such research, paired with the results of gains in motor skill performance, could help to determine the optimal learning environment for EMI children in physical education.

Some parents and educators are concerned that EMI children in the regular physical education class will require too much special attention and therefore detract from the ability of the teacher to instruct all children (Dunn & Fredericks, 1985). Dyadic teacher-student interactions (one teacher with one student) have been studied to determine whether EMI children require more frequent teacher interventions or interventions of greater duration than their NH peers (Martinek & Karper, 1982). One such study has indicated that EMI children require greater teacher interaction attention than their nonhandicapped peers (Rarick & Beuter, 1985). More study is needed to determine whether the increased demands for teacher interactions with EMI children have a detrimental effect on the development of the nonhandicapped children in these integrated settings. Such empirical evidence also may help educators to determine accurately the least restrictive environment for EMI students.

Issues in Integration

Financial implications for administrators and program planners are involved in determining the least restrictive environment for children. Educating a child in the regular class setting is generally much less expensive than special class placement (Sherrill, 1985). It is possible, therefore, that financial decisions in the placement of EMI children may take precedence over educational decisions. Further empirical evidence is needed to verify the present literature which indicates that placement of EMI children in the regular class is the least restrictive environment for physical education.

Teacher preparation also is an issue concerning the placement of EMI children in physical education. Teachers in physical education need to be more knowledgeable about individualizing education programs and assessing motor skill ability when EMI children typically are being integrated into their classes (Dummer & Windham, 1982). Santomier (1985) indicates that establishing a psychosocial atmosphere which encourages the acceptance of individual differences is of primary importance to the success of integration. He recognizes that these attitudes come about through proper training of teachers. One strategy to establish such an atmosphere recommended by Santomier (1985) involves increasing the knowledge of teachers as it relates to evaluating the abilities of all children. Research is needed which will help to determine how the attitudes and actions of teachers affect the acquisition of skill by children in their classes.

The effects of integration in physical education are for the most part unknown. Placement of EMI children in the most appropriate setting will help to optimize their motor skill and social achievements. Teachers also will benefit from research designed to determine the best environment for educating EMI children. Teachers may be better prepared through proper training if the knowledge base concerning methods for educating EMI children in the mainstream is increased. The impact of class placement on NH children must also be considered. There is need to examine the effects of integration on EMI children so that they may receive the best physical education possible.

Purpose of the Study

The purpose of this research was to determine the effects of integration in physical education classes on the motor performance and perceived competence characteristics of EMI and NH children aged 8 to 11 years. The research hypotheses and descriptions of the variables examined in this research follow.

Variables

1. NH refers to nonhandicapped children, namely, those who have not been identified by the school system personnel as needing special education services.
2. EMI refers to children who are educable mentally impaired. EMI children, according to Michigan special education rules (Michigan

Board of Education, 1986, p. 1), are those who manifest all of the following behavioral characteristics:

(a) Development at a rate approximately two to three standard deviations below the mean as determined through intellectual assessment.

(b) Scores approximately within the lowest 6 percentiles on a standardized test in reading and arithmetic.

(c) Lack of development primarily in the cognitive domain.

(d) Impairment of adaptive behavior.

3. The independent variable for this study was class placement with three levels: integrated (INT) class placement, nonintegrated EMI (NI-EMI) class placement, and nonintegrated nonhandicapped (NI-NH) class placement.

(a) INT classes are those classes which contain both EMI and NH children.

(b) NI-EMI classes include only those subjects identified as EMI.

(c) NI-NH classes include only those subjects identified as NH.

4. The dependent variables for this study included qualitative and quantitative aspects of motor performance, perceived competence characteristics, and dyadic teacher-student interactions.

(a) Qualitative aspects of motor performance refer to the maturity of a movement pattern used to accomplish a task. This was evaluated with respect to a variety of fundamental skills involving both locomotor and object control subtests.

(b) Quantitative measures of motor performance examine product outcomes such as how fast, how far, and how accurate. Specific measures for this research consisted of the softball throw for distance, standing long jump, and twenty-yard dash.

(c) Perceived competence in this study was defined as a multi-dimensional characteristic which is domain specific. For children aged 8 years and older, this characteristic consisted of three domains (physical, social, and cognitive) and a general self-worth category. For the EMI and younger NH children, only two domains (competence and acceptance) were measured.

(d) Dyadic teacher-student interaction refers to the interaction between an individual student, or small group of students, and the teacher. These interactions include nonverbal as well as verbal interactions. Categories of interaction patterns consisted of the following:

1) Empathic behavior given to the student
2) Teacher's acceptance of student's ideas
3) Teacher's directions
4) Teacher's questioning
5) Teacher's criticism of student's ideas
6) Teacher's lecturing
7) Teacher's praise/encouragement
8) Student rote response
9) Student confusion and silence

Research Hypotheses

The hypotheses for this study were:

1. Significant differences will exist in the qualitative aspects of motor performance between integrated and nonintegrated EMI and NH students. The EMI integrated group will show greater gains in motor performance than the nonintegrated EMIs. NH integrated children will not differ from NH nonintegrated students on motor performance measures.
2. Significant differences will exist in the quantitative aspects of motor performance between integrated and nonintegrated EMI and NH students. The EMI integrated group will show greater gains in motor performance than the nonintegrated EMIs. NH integrated children will not differ from NH nonintegrated students on the quantitative measures of motor performance.
3. Significant differences will exist in the perceived competence scores of EMI children in integrated and nonintegrated settings.
    a) During the pretest of the perceived competence scale, EMI integrated children will not differ from EMI nonintegrated children.
    b) During the first week of instruction, the EMI integrated children will show a decrease in perceived competence compared to the pretest results in the physical domain.
    c) The posttest will reveal no differences in perceived competence between EMI integrated and EMI nonintegrated subjects.

Perceived competence scores of the NH subjects will not differ in integrated and nonintegrated classes on all scheduled testings.

4. There will be no differences between EMI integrated and EMI nonintegrated children or between NH integrated and NH nonintegrated children in terms of frequency or quality of dyadic interactions. Significant differences will exist in frequency and quality of teacher-student dyadic interactions between the EMI and NH students.
   a) EMI students will receive more frequent dyadic interactions than will the NH children.
   b) More directional/command types of interaction will be received by the EMI children. More praise type of interactions will be received by the NH students. More criticism will be directed toward EMI children. Differences will exist favoring the NH children in the category of acceptance of ideas and feelings.

Research Plan

Subjects for this study included 4 EMI boys and 11 EMI girls from the Greater Lansing Area (Michigan) entering Grades 2, 3, and 4 in the Fall of 1988. The age range for this group was 8 to 11 years. A total of 45 nonhandicapped (NH) children entering Grades 2 and 3 were selected from the Motor Performance Study (MPS), a physical education program conducted on the Michigan State University campus (see APPENDIX A). All subjects participated as volunteers, and parental consent was secured prior to their participation.

Both EMI and NH children were enrolled in a 4-week summer session of the Motor Performance Study (MPS) at Michigan State University. These children were randomly assigned to one of four physical education classes. There were two integrated (INT) classes and two nonintegrated (NI) classes. One INT class consisted of 4 EMI students and 14 NH students, while the other INT class consisted of 4 EMI students and 13 NH students. One of the NI classes consisted of 7 EMI students, while the other consisted of 18 NH children. Teachers of these classes were not informed whether particular students were classified as EMI or NH.

Each class met for 4 weeks, Monday through Thursday, from June 29 through July 27, 1988. Each of the resulting 16 sessions were 1-1/2 hours in length. This totaled 21 hours of instructional time for each group. For the instructional program, two teachers and four assistants were hired. One teacher and two assistants taught the soccer and softball skill classes. Daily lesson plans were prepared by the author.

The dependent variables of this study were assessed using the following instruments:

1. Qualitative motor performance: The Test of Gross Motor Development (TGMD) (Ulrich, 1985) was used to assess qualitative aspects of motor performance (see APPENDIX B).
2. Quantitative motor performance: Three motor tests items were used for measuring quantitative aspects of motor performance: (a) the softball throw for distance, (b) standing long jump, and (c) 20-yard dash (Rarick & Beuter, 1985) (see APPENDIX B). These measures were assessed during the two days prior to the beginning of the class sessions (pretest), and during the two

days following the end of the class sessions (posttest). These items were chosen in an attempt to replicate the findings of Rarick and Beuter (1985).

3. Perceived competence: The Perceived Competence Scale for Children (Harter, 1979) and the Pictoral Scale of Perceived Competence and Social Acceptance of Young Children (Harter, Pike, Efron, Chao, & Bierer, 1983) were used to measure self-concept/perceived competence on the two days prior to the beginning of instruction (pretest), the 5th day of class (1st week), and on the two days following the end of the class sessions (posttest) (see APPENDIX B).

4. Dyadic teacher-student interactions: Of the 16 days of instruction, every third day was video- and audio-taped, resulting in 5 days of recording. During each 40-minute class of these 5 days, one 10-minute segment selected from a stratified list of time segments was videotaped and audio-recorded to verify the nature of teacher-student interactions. The camera followed the teacher for the entire 10-minute segment. The Dyadic Adaptation of the Cheffers' Adaptation of the Flanders Interaction Analysis System (DAC) (Martinek & Mancini, 1983) was used to identify interaction patterns and to determine categories of interactions between the teacher and students using the videotaped segments of teacher-student interactions during instruction (see APPENDIX B). Frequency and quality of dyadic teacher-student interactions were assessed using both the videotape and audio recordings.

The curriculum for this study was designed by the author, with daily lesson plans directed toward improvement in a variety of fundamental motor skills (see APPENDIX C). Areas and skills specifically addressed in the curriculum included locomotor patterns (i.e., running, skipping, hopping, jumping, sliding, and galloping) and object manipulation (i.e., throwing, catching, bouncing, kicking, punting, and striking) in game and practice formats.

Administration of both motor performance and perceived competence measures was conducted by the author and physical education graduate students who were trained in data collection procedures. Teachers selected for the study were not involved in testing nor informed of testing results until the study was completed.

Statistical treatment of the data can best be understood by presenting the method of evaluation as it relates to each hypothesis. For qualitative and quantitative aspects of motor performance, separate MANOVAs were used to determine whether significant differences existed among the groups involved. Analysis of perceived competence was dependent on the pretest scores obtained with the instruments selected. On each of the three testing occasions (pretest, first week, and posttest), comparisons were evaluated using one-way MANOVAs. Group comparisons of the frequency and quality of dyadic teacher-student interactions were evaluated by separate one-way ANOVAs for the independent variables involved.

Rationale for the research plan. The independent variables for this study were carefully selected. The three levels of class placement were necessary in order to compare the effects of the various settings. Because comparisons were made between integrated and nonintegrated EMI children, it was necessary to have both of these levels. The nonintegrated-nonhandicapped control group was necessary in order to compare nonhandicapped children in integrated and nonintegrated settings. Two integrated classes were needed in order to have a sufficient sample of EMI children representing this placement. Class sizes were designed to be no larger than 20 children in any one class in an effort to approximate a realistic school setting. In order to keep the EMI to NH ratio at no greater than 1:4, two integrated classes were necessary.

The dependent variables for this research included qualitative and quantitative measures of motor performance, perceived competence characteristics, and dyadic teacher-student interactions. The qualitative aspects of motor performance were selected based on the belief that quality of movement is an important variable in the physical education of elementary-aged children. The quantitative evaluation was included in this research to replicate the work of Beuter (1983) with trainable mentally retarded children. The inclusion of perceived competence characteristics and dyadic teacher-student interaction was based on the philosophy that physical education involves more than just physical performance. These two variables were selected to obtain information on the social effects of integration on the subjects examined.

This study was designed to simulate an actual physical education setting. The Motor Performance Study was used as the context for instruction because it allowed for control of teacher selection and the assignment of subjects to classes. The classes offered in this study were designed to simulate student-teacher ratios and EMI student -

NH student ratios which may be found in Michigan schools. In so doing, a simulation of an actual mainstream situation was accomplished.

Assumptions related to the research plan. It was assumed that:

1. Integration involves more than just physical placement of handicapped children with nonhandicapped children. Because of this assumption, it was deemed necessary to investigate three aspects of integration - temporal, instructional, and social. It is further assumed that integration has an impact on perceived competence
2. The children identified as EMI have been properly and accurately identified by the school which they attend.
3. Though more than one learning environment was offered, children can learn in all environments. This program was designed to determine which of these environments would best meet the motor performance needs of the children involved in the study. It was therefore assumed that no harm would come to any of the subjects as a result of class placement.

Limitations of the research plan. The most significant limitations to this research included:

1. All subjects were volunteers.
2. The Motor Performance Study was used rather than an actual school physical education program. Though the setting closely approximates an actual school physical education setting, the use of a nonschool program may influence the generalizability of the results to the school setting. This limitation negatively affects the external validity of the study, and therefore caution must be used when interpreting the results.

3. The EMI applicants to the program in Grades 2, 3, and 4 were slightly older than NH children. It was not possible to control for this due to the low number of applicants to the program. Older applicants were stratified by age prior to assignment to groups.
4. The researcher did not know the previous types of class placements (INT or NI) for the EMI subjects. Thus many of the EMI children may have received physical education in the regular class at the schools they attend. Others may have received physical education in segregated settings or not at all. This interaction between selection and history of the subjects may negatively influence the internal validity of the study. That is, the influence of the setting may not have the same impact on children who have previously been integrated as it would on those who have recently been educated in a segregated setting. Efforts to control for this limitation was accomplished by random assignment of subjects to the various groups. Parents were also requested to provide information about their children's previous physical education experience in school.
5. One parent of an EMI child indicated that the afternoon session was the only option available for attendance. Because of the desire to retain all available EMI subjects, this child was accepted in the program but was not randomly assigned to a group.

Significance of the Proposed Study

Although the available evidence suggests that EMI children can profit from integrated class placements (Carlberg & Kavale, 1980; Carroll, 1967; Gampel, Gottlieb, & Harrison, 1974; Haring & Krug, 1974; Hoeltke, 1967), additional research is needed to verify this conclusion. Some of the findings relating to the motor performance and perceived competence characteristics of mentally handicapped children reported in the introduction section of this chapter were based on research with trainable mentally retarded (TMR) rather than EMI children, and included children in the upper elementary grades (Beuter, 1983; Rarick & Beuter, 1985; Rarick, McQuillan, & Beuter, 1981; Turnquist & Marzolf, 1954). Moreover, these researchers used tests which were limited to the assessment of the quantitative aspects of motor skill performance (e.g., distance, time, and accuracy parameters of movement).

This study was designed to extend the knowledge base by examining gains in the qualitative aspects of fundamental motor skills among EMI and NH children. Quality of the movement patterns is important during the elementary years (Nichols, 1986). It is during this time that children are recognized as being either coordinated or uncoordinated by their peers. Thus, qualitative assessment will provide a broader perspective of the overall gross motor ability of children than will quantitative assessment alone.

PL 94-142 mandates physical education for EMI children in the least restrictive environment possible. Currently, the least restrictive environment for young EMI children in physical education has been identified as the regular class setting (Broadhead & Church, 1982; Carlberg & Kavale, 1980; DePaepe, 1987; Sherrill, 1985). This study lends important information which may substantiate or deny this assumption. Regardless of the direction of support, the empirical evidence generated by this research should help teachers, administrators, and parents to determine the least restrictive environment for young elementary aged EMI children in physical education classes.

Equally important is the need to determine the impact of the presence of EMI children on the educational development of the nonhandicapped peers. This study provides information concerning the impact of such integration on the motor performance and perceived competence characteristics of NH children. The results will have a direct bearing on the belief that the presence of EMI children in the regular classroom detracts from the education of the NH child for the age group being examined.

CHAPTER TWO

REVIEW OF THE LITERATURE

The purpose of this review is to examine the literature related to the influence of class placement on the education of EMI and NH children and to examine the test instruments which may be used for measuring these variables. A major goal of this research is to determine the best of two settings for educating EMI children in physical education. Therefore it is necessary to examine the literature which describes the characteristics of EMI children. The literature dealing with the motor, academic, and social characteristics of EMI children will be examined. This information will provide the foundation for a discussion of educational settings for EMI children. Pertinent literature regarding the temporal, instructional, and social aspects of integration in both the academic and physical education settings also will be reviewed. The final section will review the available instrumentation for assessing the variables of interest in this study.

Characteristics of EMI Children

In order to determine the appropriate placement for EMI children, it is helpful to understand the characteristics of the population. This section will examine the literature related to the motor performance, academic, and social characteristics of EMI children.

Motor performance characteristics. Researchers have devoted many years of work to understanding and assessing the motor performance characteristics of children with mental retardation (Francis & Rarick, 1959; Malpass, 1959; Rarick & Dobbins, 1972; Rarick, Dobbins, & Broadhead, 1976). Basically, these authors have reported that the more severe the retardation, the greater is the lag in motor proficiency. Also, differences in motor performance are significant between children of various IQ levels.

The extent to which the intellectual capacity of a child affects motor performance is not fully known. Rarick and Dobbins (1972) found that EMI children are generally not as deficient in motor skill development as in measured intelligence. The study involved 261 EMI and 145 intellectually normal children aged 6 to 13 years selected from the San Francisco Bay area. Each subject was administered a test battery of motor tasks and body size measures; a total of 47 test items. For the motor tests examined, the EMI boys averaged .96 SD below the the mean of the intellectually normal boys. Thus, the average of their performance on the reported test items was exceeded by 87 percent of the normal boys. The girls averaged 1.83 SD below the mean when compared to intellectually normal girls. Thus, their mean performance was exceeded by 95 percent of the girls of normal intelligence.

An earlier study by Francis and Rarick (1959) revealed that EMI children were two to four years behind schedule on numerous measures of motor proficiency. The subjects for the investigation included 284 mentally retarded children aged 7.5 to 14.5 years. All subjects were from Madison and Milwaukee, Wisconsin with IQ scores ranging from 50 to 90. After testing strength, running speed, power, and agility, it was evident that the mentally retarded children were markedly deficient in motor skills when compared to published norms for intellectually normal children.

An investigation by Howe (1959) supported the findings of Francis and Rarick, (1959). This study involved a comparison of the motor skills of mentally retarded (MR) and normal chidren. The subjects included 43 MR boys and girls with an average IQ of 66, and 43 intellectually normal boys and girls. All children were between the ages of 6 and 12. The subjects were administered an 11-item motor test involving fine and gross motor skills. Differences between groups significantly favored the intellectually normal group on all tasks except grip strength and accuracy in throwing for girls. On these two items, the performance still favored the intellectually normal, but not significantly. It should be noted that in the latter two studies, the populations included children with lower and higher levels of IQ than are currently included in definitions of EMI populations.

Mentally retarded subjects investigated by Turnquist and Marzolf (1954) also exhibited a deficiency in motor skills when compared to intellectually normal children. A small sample of 11 mentally retarded children and 11 intellectually normal children with a mean age of 13.6 years and an IQ range of 55 to 83 was used. All children were tested on the items in the Lincoln-Oseretsky Test of Motor Proficiency. In general, the authors concluded that the mentally retarded children scored significantly lower on most aspects of the 6 categories measured by the test.

Rarick, Widdop, and Broadhead (1970) used a modification of the American Association of Health, Physical Education, and Recreation (AAHPER) Youth Physical Fitness Test to test the motor ability of EMI boys and girls. A national sample of 4,235 EMI boys and girls aged 8 to 18 years was assessed. The results of the performances in activities such as the flexed arm hang, situps, and running speed were compared with the published norms of intellectually normal children. The authors concluded that there is a low to moderate correlation between intelligence and motor performance and that, in general, the EMI subjects demonstrated a 2 to 3 year lag in the items measured.

The AAHPER Youth Fitness test was also used by Sengstock (1966) to compare the motor fitness of 30 mentally retarded, 30 intellectually normal and 30 comparable mental age boys. Sengstock reported that the performances of the intellectually normal boys were significantly superior to that of the EMI boys on all seven of the items measured. This superiority was maintained even after equating subjects on the basis of height and weight. The researcher also discovered that the performances of EMI boys were significantly superior to the performance of comparable mental age. The study also reported a relationship between intelligence and motor performance but the extent of this relationship is unknown. The results of eliminating differences based on body size and structure lends further evidence to the belief that intelligence contributes to the lower motor performance of EMI children when compared with intellectually normal children of the same chronological age.

Few studies have compared the motor ability of EMI and intellectually normal children after adjusting for body size differences. Following the example of Sengstock (1966), Dobbins, Garron, and Rarick (1981) conducted a study examining the motor performance of EMI and intellectually normal boys after covariate control for differences in body size. It was found that, EMI children were shorter and heavier than normal children. The authors recognized the possibility that such differences may also contribute to the poor performance of EMI children. The authors examined 71 intellectually normal and 71 EMI children aged 6 to 9.9 years on a motor performance battery and seven anthropometric variables. The anthropometric measures revealed a significant difference between groups with the EMI subjects characterized as shorter, broader in the hips, and higher in subcutaneous fat than the normal boys. The authors also reported that, prior to covariate control for differing body measures, the motor performance of normal boys on gross motor tasks requiring primarily strength and power was significantly superior to that of the EMI boys of the same chronological age. However, after covariate treatment of differences in measures of body size, the superiority of the normal boys was markedly reduced. On only 7 of the tested 12 motor tasks was the difference significant after covariate adjustment.

Even though it is generally accepted that the motor performance of EMI children is deficient when compared with intellectually normal peers, it is not clear whether the structure of the motor domain is similar or different from that of non EMI children. Empirical evidence which compared the motor domain of EMI and intellectually normal children is lacking. Dobbins and Rarick (1975) conducted a study using the same sample described earlier in the Dobbins, Garron, and Rarick (1981) study. The subjects were each analyzed on a motor performance test battery and physical measures. The data were analyzed by a factor analytic technique which revealed that the basic components of the motor domain for EMI and normal children are the same.

Ulrich (1983) discovered a 3.5-year lag in motor performance when examining the skills of EMI children aged 3 to 12 years. Whereas

Dobbins and Rarick (1975) analyzed skills based upon quantitative criteria, Ulrich (1983) examined qualitative aspects of performance (e.g., running, hopping, skipping, throwing, catching, and kicking). Ulrich's research compared the performance of 117 intellectually normal and 96 EMI boys and girls on 12 items of a motor performance battery. Comparisons were also made between EMI and trainable mentally retarded (TMR) children. The EMI children averaged approximately three years ahead of the average performance of the 66 TMR children. These results lend support to the general statement that the more severe the retardation the more serious the impairment of performance.

A comparison of the motor performance characteristics of EMI and TMR children also was examined by Londeree and Johnson (1974). Subjects for this study included 606 TMR girls and 499 TMR boys aged 6 to 19 years from a state school for the retarded. All EMI data were obtained from national norms. All subjects were tested on motor performance items such as the 300 yard run/walk, flexed arm hang, situps, jumping, and throw for distance. Results indicated that the TMR children scored below the EMI national norms on all items measured. The authors concluded that there was a curvilinear relationship between intelligence and motor performance. That is, relatively minor impairment in motor skills accompanied minor retardation levels while relatively more severe retardation was accompanied by more severe deficiences in performance.

The literature reveals that, in general, the motor abilities of EMI children are deficient when compared with chronological age peers of normal intellectual ability. This deficiency has been demonstrated using a variety of motor performance test batteries including qualitative and quantitative measures. EMI children generally lag two to three years behind their normal peers on motor performance test items. The extent to which intelligence plays a role in the deficit of performance is unknown. This review also revealed that well controlled studies comparing the motor ability of EMI and normal children from a qualitative analysis are lacking.

Control for the effects of differing body size has some effect upon quantitative measures of comparison. This is to be expected when excess amounts of subcutaneous fat are found. That is, many of the tasks performed on the motor performance test batteries involved strength and power activities. An increase in weight due to subcutaneous fat would be expected to hinder activities which involve projecting the body over distance (vertical jump, long jump), suspending the body from a bar (flexed arm hang), situps, and similar activities which involve strength and power. Thus, lower scores would be expected. However, it is unknown whether differences in these anthropometric measures would have an influence upon the quality of the movement pattern of EMI children. Empirical evidence for this is lacking.

The factor structure which makes up the motor domain of EMI and intellectually normal children appears to be similar. However, the research accomplished on this topic as reported by Dobbins and Rarick (1975) is in need of expansion.

Learning/academic characteristics. Many researchers have found that there are some areas of learning and cognitive development that are difficult for the retarded (MacMillan, 1982). It is important for those involved in the education of retarded individuals to be aware of problem areas in learning. In general, learning involves attention, organization of stimuli, remembering, and recall for problem solving (MacMillan, 1982). This section will briefly review the literature which describes the learning/academic characteristics of EMI children according to the constructs listed above.

Zeaman and House (1963) concluded that retarded children are deficient in their ability to attend. Laboratory oriented research discovered that retarded subjects had difficulty focusing on appropriate discriminations. However, once they were able to focus on the appropriate dimensions, their ability to learn compared to that of normal children. Discrimination learning reportedly involves two stages. The first stage is an attention phase where the subject randomly attends to varius aspects of the task. Once the subject has attended to the relevant dimensions of the stimuli, the second, or learning phase begins (Patton, Payne, & Beirne-Smith, 1986). Zeaman and House (1963) reported that children with lower mental ages required more trials in the attention phase than did children with higher mental age. They also reported that retarded learners could not attend to as many dimensions simultaneously as could their nonretarded peers. However, caution must be applied when generalizing the results of laboratory research to educational settings.

The position of Zeaman and House (1963) was challenged by Turnure (1970). Turnure proposed that retarded children have a history of failures in problem solving. This history of failure leads to the tendency for the children to seek out cues from the environment rather than the task. Therefore, children are more likely to look for approval in the experimenter's face while performing a problem-solving task than they are to concentrate on the task itself. Turnure suggested that retarded children do not have deficits in attention ability, rather they have found greater success attending to dimensions not inherent in the task itself (MacMillan, 1982).

It is theorized that once a child has attended to the appropriate stimuli, the information must then be organized and stored for recall (Spitz, 1966). Spitz proposed that the input organization process was more difficult for retarded subjects than for nonretarded subjects. Spitz's findings generated a great deal of research concerning strategies for enhancing the ability to organize incoming stimuli. The results of this research have several implications related to the learning characteristics of EMI children. First, retarded children benefit from material that is familiar and relevant to them. Second, information should be grouped into meaningful parts. Finally, children should be instructed in strategies which connect a stimulus with a response (mediational strategies) (Patton, Payne, & Beirne-Smith, 1986).

Most researchers agree that once EMI children have learned and organized the stimuli into long term memory storage, the retention is as good as in nonretarded peers (Ellis, 1970; Hallahan & Kauffman, 1982). The area of short term memory, however, is where most retarded children have difficulty (Borkowski & Wanschura, 1974; Brown, 1974; Ellis, 1963; Estes, 1970; Robinson & Robinson, 1976). When EMI children are presented with a list of words or sounds or a group of pictures that have been presented a few seconds earlier, they perform poorly on recall (Borkowski & Wanschura, 1974). Ellis (1970) and Bray (1979) reported that the short term deficits are due mostly to inappropriate or nonexistent rehearsal strategies. In particular, mentally retarded subjects do not employ strategies such as verbal or covert rehearsal or clustering when learning a task (Borkowski & Wanschura, 1974). Mercer and Snell (1977) discovered that when verbal rehearsal and image rehearsal are employed, short term memory is enhanced in the retarded.

Deficits in speech and language abilities are frequently observed in mentally retarded children. However, the prevalance and severity of speech and language disorders in mentally retarded children are, in general, related to the severity of the retardation. Thus, with EMI children, delay in the onset of talking is common, but severe disorders are rare (Jordan, 1976; Hallahan & Kauffman, 1982). The speech defects most common among the retarded are articulation, voice, and stuttering problems (Spradlin, 1963).

Seaman and DePauw (1989) summarized the academic characteristics of EMI children as being able to learn academic skills to the sixth grade level by the late teens. They also state that EMI children do not generally learn high school level subjects and therefore need special education services particularly at the secondary level.

In summary, the research with EMI children has failed to demonstrate any clear-cut qualitative differences between the way EMI and nonretarded subjects learn. It appears that the EMI population represents a downward extension of normal intellectual abilities. That is, they use the same learning strategies as nonretarded subjects though they do so less efficiently (MacMillan, 1982).

<u>Social/affective characteristics</u>. There is general agreement that retarded children exhibit difficulties socially and emotionally to a greater extent than their nonhandicapped peers (Heber, 1964; Polloway, Epstein, & Cullinan, 1985). Although there is general acknowledgement

that an increase in emotional/behavioral problems exists in retarded children, data on the prevalence of specific problems in mentally retarded children is limited (Polloway, Epstein & Cullinan, 1985). Balthazar and Stevens (1975) reported that the prevalence of behavioral and emotional disorders as a secondary handicap in the mentally retarded may range between 10 to 30 percent.

Polloway, Epstein, and Cullinan (1985) recognized that there is limited information available on behavioral characteristics of EMI children relavent to educational programming. These authors conducted a study to identify the most prevalent and statistically significant emotional and behavioral problems in EMI students. The EMI children included 612 boys and girls aged 6 to 18 years. Each teacher rated an average of 11 students each on the Behavioral Problems Checklist. A control group consisted of 1116 nonhandicapped children. Comparative findings indicated significant differences in the categories of self-concept, attention, and anxiety. EMI children were more likely to exhibit lower self-concept scores than their nonhandicapped peers. EMI children also exhibited more attention-deficit problems than their nonhandicapped peers. Moreover, they tended to be more easily distracted, inattentive, easily flustered, and in general, to have shorter attention spans. The findings of Polloway, Epstein, and Cullinan (1985) also indicated that EMI children on the average tend to exhibit more anxiety than their nonretarded peers. It was also discovered that for the above characteristics, general trends reflected a decrease in attentional, perseverational, and hyperactive behaviors as age increased.

The findings of Polloway, Epstein, and Cullinan (1985) were supported by Kuveke (1983) who studied the school social behaviors of EMI children. Kuveke reported that many studies have shown that EMI children receive low ratings of acceptance by nonhandicapped peers, but few of these studies have examined the causes for social rejection. Thirty-five classroom teachers rated both EMI and NH children using a behavioral rating scale. The EMI children were all mainstreamed for at least one year and the nonhandicapped children were randomly selected classmates of the EMI students. Results indicated that EMI children were assigned a greater number of socially unacceptable behaviors. Specifically, EMI children were rated as emitting a greater frequency of hostile, isolating behaviors than NH children. EMI children also were rated as exhibiting more anxious behaviors than NH children. It is difficult to determine, however, whether these ratings are due to negative teacher attitudes or to actual behavioral differences.

Polloway, Epstein, Patton, Cullinan, and Luebke (1986) used a modified behavior rating scale to determine the prevalence of hyperactivity in EMI children. The subjects were children and adolescents aged 6 to 18 years who were system-identified as EMI. The EMI children in this study were rejected by peers in social status and rated by their teachers as hyperactive significantly more frequently than their nonhandicapped classmates. The authors concluded that their research supported other studies in which EMI children were characterized as excessively active. Again, weakness in the research design exists due to the rating being accomplished by the classroom teachers.

Studies related to the self-concept characteristics of EMI children have produced conflicting findings. Bialer (1970) stated that a single pattern cannot be applied to all retarded subjects in regard to self-concept. That is, many retardates see themselves in extremely negative terms while others exhibit highly favorable self-perceptions. Bialer also reported that the higher the IQ, the higher the self-perception.

MacMillan (1982) reported that there is a tendency in the field to view lower socioeconomic status (SES) children as synonymous with EMR children. He reports that this may arise from a disproportionate number of EMI children coming from a low SES background. This tendency caused some individuals to confuse behaviors linked to low SES with EMI characteristics. MacMillan stressed that we must not draw conclusions about EMI children based on such evidence no matter how frustrating is the paucity of evidence with actual EMI children.

MacMillan (1982) also pointed out that instrumentation proposes a difficulty in obtaining accurate reports of the social/affective characteristics of EMI children. Many of the instruments used in research have been designed for use with nonhandicapped children. The reliability of these scales when used with EMI children is therefore questionable.

Influence of Instructional Settings on Learning and Perceived Competence Characteristics of EMI Children

With a working knowledge of the characteristics of EMI children, it becomes possible to examine the most suitable educational setting while considering general characteristics. Following the Kaufman, Gottlieb, Agard, and Kukic (1975) definition of integration, this section will examine the literature dealing with the influence of the instructional settings on EMI children. The categories of temporal, instructional, and social integration will be examined first in the academic classroom followed by an analysis of the literature examining physical education classrooms.

Temporal integration. Temporal integration is concerned with the amount of time handicapped children spend with their nonhandicapped peers. This important area will be examined in both the academic and physical education classroom setting.

Since the publication of Dunn's (1968) classic presentation challenging the then current practices of segregation, ideas for educating exceptional children have undergone considerable change. It now appears that the integration of EMI children into regular education classes is the prevailing practice (Polloway & Smith, 1983). Some researchers are convinced that integration of EMI children in education is occurring mainly in nonacademic activities (Gottlieb, 1981). Literature which would support or deny this belief is nonexistent.

In spite of the vast amount of literature dealing with integration and classification for educational purposes, there is little information which may assist decision makers concerning the amount of time in any setting that is most beneficial to the children being served. Thus, there are very few tools to help educators find the setting that will be the least restrictive in terms of temporal considerations (Gottlieb, 1981).

Information relating to the prevalence of mental retardation may give a picture of the likelihood of EMI children being found in the regular education academic classroom. Approximately 6.5 million

Americans are mentally retarded. This means that in a school district of 1000 children, 30 would be expected to be mentally retarded. Of those 30 children, about 26 would fall into the EMI category (Cartwright, Cartwright, & Ward, 1984). The incidence of EMI also varies with socioeconomic and cultural levels. Poverty areas have approximately twice as many mildly retarded children as middle class areas (Sherrill, 1986). Most of these retarded children live at home and attend public schools (Sherrill, 1986). Therefore, it is likely that for at least part of the day or for certain subjects, most regular education teachers will find at least one child in their classrooms who would be categorized as EMI.

Integration of EMI children into physical education classes has recently become the prevailing practice in the United States. In part, this is due to the legal mandate of PL 94-142 which specifically mentions physical education as a curriculum to which least restrictive environment (LRE) principles must apply (Sherrill, 1986).

Philosophical reasons may be behind the influx of EMI children into integrated classes for physical education. With the current philosophy of educating children in the LRE, physical education classes have not gone untouched. In fact, due to the "nonacademic" reputation of physical education, this setting has often been a primary way for administrators to fulfill the temporal aspects of integration. Unfortunately, the temporal aspects of integration in physical education have not been examined and reported in the literature. There is need for further research which examines the impact of various amounts of time in integrated physical education settings.

Instructional integration. Though it is likely that the temporal aspects of integration are being fulfilled in the education of EMI children, it was necessary to investigate the concept of instructional integration. Examination of instructional integration suggested that the instructional content, teaching styles, and materials were not significantly different for handicapped and nonhandicapped children who were integrated into the same class (Kaufman, Gottlieb, Agard, & Kukic, 1975). This subject also will be examined in both the academic and physical education classroom settings.

Several investigators have attempted to determine the effects of class placement on the achievement of EMI children by comparing the performances of children in integrated classes with those of children in special segregated classes (Carroll, 1967; Hoeltke, 1967; Rouse, 1974). The results of these studies have been somewhat inconsistent. This is to be expected as many of the studies differed in the type and amount of integration experienced by the subjects.

The effectiveness of special classes for EMI children was investigated by Hoeltke (1967). The sample consisted of 72 EMI children in nonintegrated settings and 50 EMI children in the regular class setting. Twenty-five of the special class children were paired with 25 regular class students on the basis of gender, IQ, and CA. The mean IQ scores for both groups were comparable at 67.30 for the special class children and 67.47 for the EMI children in the regular class. The mean CA for the special class children was 134.16 months and for the regular class EMI children was 134.00 months. The Wide Range Achievement Test (WRAT) was used to measure reading, spelling, and arithmetic achievement. The data indicated that regular class EMI children scored higher on the posttest in reading, spelling, and arithmetic than the special class peers.

Investigating the effects of partial integration, Carroll (1967) examined the academic achievement of 20 special class children with that of 19 EMI children. The EMI children were integrated into regular classes for half of the school day and were enrolled in special classes the remainder of the day. Subjects had a mean age of approximately eight years and had attended segregated classes in the year prior to the onset of the study. All children were tested one month after the beginning of the school year and again seven months later. Results of gain score differences revealed that the partially integrated group attained higher gains in reading than the segregated children. However, no significant differences were found between groups in arithmetic and spelling.

A comparison of intellectual functioning, academic achievement, and the self-concept of EMI children in three types of classroom settings was examined by Rouse (1974). The three classes were regular classrooms, self-contained classrooms, and non-categorical classes. Subjects included 66 mentally retarded children with a mean age of 10.1 years. The children were compared in areas of verbal intellectual functioning, performance intellectual functioning, reading achievement, spelling, arithmetic, and self-concept. Results of academic testing using the WISC and WRAT revealed that significant differences favoring the integrated children were found on performance intellectual functioning and arithmetic achievement. All other comparisons revealed no significant differences between groups.

Achievement was also compared between EMI students in special classes and EMI children in the regular classes who were offered supportive services in a resource room (Budoff & Gottlieb, 1976). Comparisons were made on 31 randomly assigned EMI children aged 93 to 168 months. Children were administered the Metropolitan Achievement Tests at the end of the previous school year, two months after the onset of the new school year, and at the end of the school year. Analyses of covariance on the last two test administrations revealed that no significant difference in reading or arithmetic achievement was found between groups at either point in the testing.

Calhoun and Elliot (1977) conducted a study examining the effects of integration on the academic achievement of EMI children. The subjects included 25 EMI children retained in the regular class and 25 children who were on waiting lists for special education placement. After three years, it was found that the integrated children performed better on the Stanford Achievement Test than the nonintegrated control group. It is difficult to interpret the outcome of this study as many details were not reported. It is not mentioned whether the groups were randomly assigned or whether the more involved children were admitted to the special class. No mention was made as to whether the two groups were equal in performance prior to the placement. This variable would seem especially important when examining gain scores.

A very early study investigated the effects of integration on social adjustment and academic characteristics of EMI children (Blatt, 1958). The available volunteer subjects were aged 8.6 to 16 years and included 75 nonintegrated EMI and 50 integrated EMI children. The 75 special class subjects had all been enrolled in special classes for at least the preceeding two years. The integrated subjects had never been enrolled in special classes. After testing it was discovered that no differences existed between groups on reading, arithmetic, and language achievement.

No significant differences between groups were found in achievement in a study conducted by Schell (1959). This two-part study investigated 15 pairs of EMI children matched on chronolological age, mental age, and gender. The second phase examined 54 EMI children who had been in special classes for at least two years and 54 EMI children never enrolled in special classes. Children were matched in the second phase as they were in the first phase except pairing was not used. It was specifically stated that no differences were discovered between groups on reading average, arithmetic average, or total achievement gains following a two year period.

Lewis (1974) conducted a study to determine the effects of four different settings on the academic achievement of 75 EMI children ranging in age from 7.6 to 10.9 years. The Metropolitan Achievement Battery Primer was administered to all subjects. It was determined that the children (a) on a waiting list, (b) nonintegrated not on a waiting list, (c) integrated, and (d) in a resource room did not differ in any of the measures of academic achievement. It should be noted that there was only one testing time and that it was not pretest-posttest as in a controlled experimental design.

Smith and Kennedy (1967) evaluated the effects of three different class settings on academic achievement. The 96 EMI subjects with an IQ range of 50 to 80 were divided into three groups: (a) 45 minutes per day in instruction and small nonintegrated classes, (b) 45 minutes per day in small group activity, and (c) attendance in regular classes all day without special support or attention. All subjects were pretested in September, 1961 and posttested in April, 1963 using the California Achievement Test and the WISC. No significant differences were found between groups. The authors concluded that lack of significance may have been the result of limitations of the study. They expressed concern that the instruments were not sensitive enough to distiguish small changes in performance over a two year period.

The resource room and the traditional segregated classroom were the settings for determining the effects of placement on reading vocabulary of EMI children (Gerke, 1976). Random selection of 10 New Jersey school districts produced a sample of 61 EMI children aged 9 to 11 years. All subjects were pretested and posttested following nine months of instruction. Results revealed that there were no significant differences between groups on reading achievement.

The studies examining academic achievement of EMI children in a variety of settings revealed inconsistent results. A few of these studies report that EMI children performed better in integrated settings than nonintegrated settings (Calhoun & Elliot, 1977; Carlberg & Kavale, 1980). Others reported that the setting did not significantly influence the academic achievement of EMI children (Budoff & Gottlieb, 1976; Blatt, 1958; Gerke, 1976; Smith & Kennedy, 1967). Unfortunately, the designs of the previously reported studies have differed to a great extent. The studies failed to isolate particular treatment methods so that it was difficult to determine which treatment components were responsible for improvement in achievement test scores (Corman & Gottlieb, 1978).

PL 94-142 has clearly defined physical education as the development of (a) physical and motor fitness, (b) fundamental motor skills and patterns, and (c) skills in aquatics, dance, and individual and group games and sports (Federal Register, Tuesday August 23, 1977). Research into the effects of integration on the above areas of physical education is very limited. Beuter (1983), Rarick & Beuter (1985), Rarick, McQuillan, and Beuter (1981) conducted a field research project involving trainable mentally retarded (TMR) children in a physical education setting. The subjects consisted of 25 TMR boys and girls aged 11.5 to 15 years and 85 nonhandicapped children in Grades 3 and 6. All subjects were volunteers and were randomly assigned to either integrated or nonintegrated settings. The classes consisted of half the children at each grade level assigned to experimental (integrated) groups, while the other half of the children were assigned to control groups of either all TMR children or all nonhandicapped children. The classes met three times per week for half hour sessions over a period of five months. All children were tested in motor performance prior to the instructional program and again at the end of the program. The tests were the long jump, the softball throw for distance, and the 20-yard dash.

The results revealed no significant differences between the integrated and nonintegrated groups of nonhandicapped children on any of the three tests. However, significant differences were observed which favored the integrated TMR children on two of the three test items for both age groups. The younger integrated TMR children scored significantly higher on the run and the long jump and the older integrated TMR children scored higher on the throw and the long jump than their nonintegrated TMR peers. The authors concluded that TMR children profit motorically when integrated into physical education without adversely affecting the nonhandicapped children.

A study was conducted to determine the influence of three least restrictive environments on the learning and performance of various balance tasks (DePaepe, 1987). Thirty moderately retarded subjects aged 5.9 to 12.8 years were randomly assigned to one of three treatment groups which may be found in a typical educational setting. The three groups were identified as peer-tutor, self-contained, and specific-mainstreamed. All groups participated in 6 weeks of a student-paced balance activity during half hour sessions twice a week. Analysis of the data revealed that the peer-tutor group performed significantly better than either of the other two groups in learning the task. The self-contained class improved significantly more than the specific-mainstreamed class in terms of motor learning. The authors concluded that the results of this study do not support the current mainstream impetus due to greater improvement of the self-contained class over that of the mainstreamed class. Significant differences in mean achievement scores were not found. The mean scores, however, followed the same trend as reported for the learning scores. The authors concluded that insufficient power was present in determining the possible significant differences in achievement.

It was not surprising that the studies just cited reported opposite findings regarding the most appropriate setting for educating mentally retarded children. The tasks which were analyzed differed from each other. The type of class settings also differed. The subjects were identified as moderately impaired and therefore have limited application to this review. These studies have been reviewed in order to indicate the type of research which has investigated the impact of integrated settings on the motor performance characteristics of mentally retarded children. Research specifically related to the impact of integrated classroom settings for the physical education of EMI children is nonexistent. At this point there is a great need for further research into this topic.

Social integration. Social integration refers to the interaction that takes place between the child and teacher and between the child and his or her peers. The literature examining the interactions taking place in both the academic and the physical education setting will be presented.

Studies of the retarded child's social adjustment within the academic classroom have varied with regard to the definition and measures of social adjustment. None of the studies have used the strict clinical sense of social adjustment which would examine the child's feelings through in-depth interviews. Many of the studies have relied on the perceptions of others or on the retarded child's perception of his or her own social functioning (Corman & Gottlieb, 1978).

An area of social integration which has received attention in the research literature concerns the social position of mentally retarded children in relationship to their peers. The social acceptance of EMI children, in general, has been found to be lower than that of nonhandicapped age-group peers (Baldwin, 1958; Budoff & Gottlieb, 1976; Corman & Gottlieb, 1978).

Comparisons which isolated the effect of classroom settings on social position have included evaluation of both integrated and nonintegrated EMI children by nonhandicapped peers. Such a study was conducted by Goodman, Gottlieb, and Harrison (1972). These authors investigated the sociometric status of 10 EMI children integrated into a nongraded elementary school and 8 EMI children which remained in a segregated setting in the same school. The children ranged between Grades 1 and 6. It was hypothesized that the EMI children in the integrated setting would receive more favorable ratings from nonhandicapped peers than would the segregated EMI children. Two reasons were given for the hypothesis. First, the integrated children would no longer be stigmatized by the special class enrollment. Second, the EMI integrated group was more familiar to the nonhandicapped children due to daily contact in the classroom. The EMI children were rated by 36 nonEMI children on the basis of whether they liked, did not like, tolerated, or did not know the children who appeared on their lists. It was found that the nonretarded children were rated higher on social status than their handicapped peers. In addition the integrated EMI children were rejected more frequently by male raters. Ratings from the females did not differentiate between integrated and segregated EMI children. The authors concluded that their findings did not support the view that integrated classroom environments facilitate the social status of EMI children.

Gottlieb and Budoff (1973) conducted a follow-up study to determine whether the amount of contact with EMI children affected the ratings of the nonEMI children. A total of 136 nonEMI raters in Grades 1 to 6 were randomly selected from the various schools involved in the study. Two distinctly different types of schools were examined which allowed for control of the variable of exposure. The schools included 12 partially integrated EMI children and 12 segregated EMI children. The traditional structure contained many classrooms accommodating 25 to 30 children. The open classroom structure did not contain any internal walls, and as a result, all children were visible to all other peers. It was hypothesized that the open classroom structure would involve more exposure of EMI children to nonEMI children. The same sociometric questionnaire as reported in the previous study was used by the raters of this study. It was found that EMI children in the open structure had lower social status than EMI children in the traditional school. Authors attributed this to the greater exposure of EMI children to their nonEMI peers in the open structure school. It was also found that partially integrated EMI children received less favorable ratings than the segregated EMI children. Again, the authors concluded that this significant finding was due to the increased exposure of the integrated EMI children to their nonEMI peers.

Research by Strauch (1970) also supported the findings of the two previous studies. Attitudes toward EMI children were examined by investigating two groups of children. One group involved 62 nonhandicapped children with a mean CA of 13.4 years who had contact with EMI children in their schools. The second group involved 62 nonhandicapped children with a mean CA of 13.8 years who did not have contact with EMI children in the classroom, as all EMI children in the school were educated in a segregated class. A scale which measured attitudes toward mentally retarded individuals was administered to all subjects. Results indicated that contact with EMI pupils did not produce more positive attitudes toward mentally retarded children. It should be pointed out that many variables could have contributed to the results of the study. For example, the retarded children ranged from one to four years older than the nonhandicapped raters. It is also possible that the increased physical size of EMI subjects due to their age which may have had an effect on the ratings (Strauch, 1970).

Gottlieb and Davis (1973) continued to examine the attitudes of the nonhandicapped toward EMI children in a study which involved selection of partners for an activity. The purpose of the study was twofold: (a) to determine whether EMI children were rejected during overt interactions with nonEMI children, and (b) to determine whether EMI children integrated full-time in a nongraded school were perceived by their nonEMI peers to be more similar to segregated EMI or nonEMI children. Twenty six boys and 16 girls aged 9 to 12 years and of average intelligence were asked to select one of two persons as a partner to help them win a prize in a bean-bag toss game. The variety of choices included: (a) a segregated EMI child and a nonEMI child, (b) a segregated EMI child and an integrated EMI child, or (c) an integrated EMI child and a nonEMI child. The results indicated that subjects chose segregated and integrated EMI children less frequently than nonEMI subjects as partners. Integrated and segregated EMI children were both selected equally by nonEMI children. This study differs from the Goodman, Gottlieb, and Harrison (1972) study in that competence in the task may have influenced the selection of partners rather than the dimension of liking the partner.

The above findings tend to be a little suprising in view of other data which indicated that reintegrated EMI pupils exhibited a higher frequency of prosocial behavior when compared to nonintegrated peers after one year of integration according to teacher evaluation (Budoff & Gottlieb, 1976; Gampel, Gottlieb, & Harrison, 1974; Gottlieb, Gampel, &

Budoff, 1975). Other studies examining the teacher ratings of EMI children on social adjustment and behavior in the classroom have indicated that nonintegrated EMI children exhibited greater prosocial behavior. For example, Blatt (1958) examined the physical, personality, and academic status of EMI children attending integrated and nonintegrated classes. Subjects included 75 nonintegrated and 50 integrated EMI children aged 8.6 to 16 years. Ratings by teachers using the New York City Scales of Social Maturity indicated that the nonintegrated EMI children were more socially mature than the integrated EMI children. The instrument used had not been tested in terms of reliability. It should also be noted that with any teacher rating form, the scores may be indicative of teacher attitudes rather than the actual maturity of the children examined.

The behavior of integrated and nonintegrated EMI children was observed by teachers in a study by Flynn (1976). The study was designed to determine if the personal and social adjustment of EMI children in the regular class setting was improved by placement into a part-time special education program. The structure of the special class was a supplemental class period of 45 minutes each day of small-group and individual tutoring. The authors hypothesized that the inclusion of the special class would facilitate social adjustment within the regular class. The groups consisted of 61 integrated EMI children waiting to be placed in a special education program, 61 partially integrated EMI children, and 61 nonhandicapped children. All children were elementary-aged. Results of the teachers' ratings on the School Adjustment Scale did not support the hypothesis. That is, the children involved in the special tutoring sessions did not exhibit greater social adjustment when compared to the other groups. As in the previously reported study, teacher bias may have influenced the findings.

Research by Kern and Pfaeffle (1962) examined the impact of three settings on the social adjustment of 93 elementary aged EMI children. The settings involved an integrated class in the regular school, a nonintegrated class in the regular school, and a nonintegrated class in a special school. The scores of social adjustment were based on the responses of the children themselves in order to eliminate the effects of teacher bias. The instrument used was entitled the Social Adjustment Section of the California Test of Personality, Elementary Form. The hypothesis for the study stated that the nonintegrated children in the special school would have the highest social adjustment scores followed by the nonintegrated subjects in the regular school and the integrated children, respectively. The results indicated support for the hypothesis.

Guerin and Szatlocky (1974) examined programs which integrated mentally retarded children in eight California school districts. The authors interviewed 17 administrators and 31 teachers. Regular classroom observations were made of 27 EMI pupils and 54 randomly selected nonretarded pupils. Using a validated behavior analysis scale, the authors concluded that the EMI children did not differ in behavior from the nonretarded children. Contrary to the above cited research, it was found that the greater the extent of integration, the greater the social adjustment. It is possible that the different findings may be explained by the procedures used in data collection. The subjects in this study varied in the amount of time and the settings in which they were educated from district to district. It is particularly interesting that the observations of the subjects were done by the researchers rather than the teachers. This becomes important in light of the findings that the teachers who had the greater amount of negative feelings about integration were the ones which had the more frequent contact with EMI children. This lends support to the possibility of bias in teacher evaluation reports.

Many studies related to the social behavior of mentally retarded children in integrated and nonintegrated settings have examined the self-concept characteristics of EMI children. The self-concept may be defined as the overt expression of the sum total of how an individual views himself or herself (Tolor, Tolor, & Blumin, 1977). It has been proposed that self-concept functions as a filter which interprets experience and partially determines new experiences. Therefore, the impact of self-concept has been viewed as a circular force which influences how experiences are interpreted and predicts the probability that new experiences will be attempted (Luftig, 1982).

The research on the effects of class settings on the self-concept of EMI children tend to fall into two patterns; namely negative and positive influences due to integrated class placement. The first category of research which will be examined found either no differences in self-concept characteristics due to class placement or reported a significant positive effect (Carvajal, 1972; Gerke, 1976; Hoeltke, 1967; Lewis, 1974; Schurr, Towne, & Joiner, 1972). The second category of research reported a significant advantage for integrated classes in self-concept characteristics of EMI children (Calhoun & Elliot, 1977; Rouse, 1974; Strang, Smith, & Rogers, 1978). The following will report this literature, first examining those studies in which results favored the nonintegrated class placement.

One rationale for the impetus toward an integrated approach to educating EMI children is the belief that labeling or categorizing a student will interfere with a child's education (Luftig, 1982). This was the view accepted by Schurr, Towne, and Joiner (1972). These authors further hypothesized that labeling a child and placing him or her in a special education class would interfere with the development of a positive self-concept. A group of 62 EMI children was tested on a self-concept of academic ability inventory prior to class placement. The authors continued to assess self-concept over a two year period. The results were contrary to the hypothesis. It was found that the special class placement children produced scores which indicated an increase in self-concept during the first year that continued to improve through the second year. Due to the continued improvement in self-concept scores, the authors concluded that the special class placement was facilitative in the development of a positive self-concept of academic ability.

Special emphasis was placed on self-concept of learning ability in a study conducted by Hoeltke (1967). EMI subjects already enrolled in special and regular classes were paired on the basis of IQ, gender, and CA. The self-concept scale used in the class was developed for the study and had no reported validity or reliability. Results from the scale revealed the special class children demonstrated more positive attitudes toward themselves as learners when compared with regular class EMI children.

Gerke (1976) examined the self-concept characteristics of 61 EMI children aged 9 to 11 years who were placed in either the special class or regular class with a supplementary resource room. Using the Piers-Harris Children's Self-Concept Scale (PHCSCS), the author found no significant differences between the two groups on self-concept. Gerke concluded that class placement did not have a significant effect on the self-concept of EMI children.

The predictive value of class placement on measured self-concept was examined by Carvajal (1972) using multiple regression procedures. Class placement was one of ten predictor variables for this study. The results indicated that the educational setting (integrated or nonintegrated) was not an important variable in development of self-concept of EMI adolescents.

Similar results were found in a study by Lewis (1974). The purpose of the study was to examine and compare alternative settings for educational placement and determine the effects on self-concept scores of EMI elementary-aged children. A sample of 75 EMI subjects ranged in age from 7.6 to 10.9 years. The results indicated no differences in self-concept due to class placement. However, the study did not involve pre-test and posttest evaluation as would be expected in a controlled experimental design. Thus, interpretation of the results is limited.

In contrast to the findings reported above, there is also research which shows that integrated settings have a facilitative effect on the self-concept of EMI children. For example, Strang, Smith, and Rogers (1978) examined self-concepts of EMI children before and after integration into regular classes. The subjects included 50 boys and girls aged 6.2 to 10.10 years. Of the eight classrooms examined, four classrooms of EMI children were integrated into the regular class for half of each day. Pretest-posttest scores on the PHCSCS revealed the integrated group self-concept scores were significantly augmented. Likewise, Calhoun and Elliot (1977) reported higher scores on self-concept as measured by the PHCSCS for groups which were integrated into the regular class. Rouse (1974) also found self-concept scores favoring the integrated children after one year of integration into regular classes.

It is difficult to explain the differences in the results of the studies reviewed. However, upon close evaluation some distinct differences in methodology become evident. For example, the use of different test instruments (some for which no validity was reported) may explain the opposing results. Also, the extent of integration differed in the various studies. For example, in the report by Strang, Smith, & Rogers (1978), integration occurred for only one-half of the academic day. Thus, the reference group for the evaluation of self-concept may have continued to be the special class group. This is interesting in light of the research by Smith, Dokecki, & Davis (1977), which indicated that when children were forced to compare themselves with the entire mainstreamed class, self-concept suffered. However, when the children were able to compare themselves with others in a low achiever sub-comparison group, a higher level of self-concept was maintained.

Literature examining social integration of EMI children in the context of the physical education classroom is limited. Furthermore, the literature which specifically compared the social effects of integration into the regular class and placement into segregated settings in physical education is nonexistent. The studies available which even remotely examined this area have investigated self-concept characteristics and patterns of interaction between students and teachers in a physical education setting.

A series of articles have reported research which examined the interaction patterns and self-concept of handicapped children (Karper & Martinek, 1985; Martinek & Johnson, 1979; Martinek & Karper, 1981; Martinek & Karper, 1982). Although the studies were designed to investigate teacher expectations, self-concept and teacher-student interactions also were examined. In the first study of this series, Martinek and Johnson (1979) examined the self-concept and interaction patterns of fourth and fifth grade elementary school-aged children. The investigation was descriptive and events were recorded as they naturally occurred. Though handicapped children were not integrated into this study, the findings are related to the follow-up research accomplished in an integrated classroom. It was found that students whom teachers expected to be high achievers received more encouragement and acceptance of ideas from teachers than students expected to be low achievers. It also was found that the students whom teachers expected to be high achievers scored higher on self-concept.

Further research with expectations examined the differences of 27 handicapped and 27 nonhandicapped children integrated into a physical education setting (Martinek & Karper, 1981). The classes were part of a laboratory experience at the University of North Carolina at Greensboro. Classes were taught by three elementary physical education specialists to children in Grades K through 3. The handicapping condition was described as mildly handicapped and included learning disabled, seizure prone, emotionally handicapped, and hyperactive children. Each class involved 10 to 12 students, including 1 to 3 handicapped children. Teachers rated students according to their expectations for each child's performance on gymnastic skills and social relations during the third week of class. Results of the evaluation revealed that teachers had significantly higher social expectations for the nonhandicapped children than the handicapped children. The authors noted that such expectations may lead to difficulty in the integration of mildly handicapped children into the regular physical education classroom.

The same laboratory context was used for examining the differences in self-concept and motor performance of handicapped and nonhandicapped children (Martinek & Karper, 1982). The subjects included 108 nonhandicapped children and 28 handicapped children (previously described). Motor performance and self-concept information was collected at the beginning and end of the program. Motor performance was measured using the Body Coordination Test while self-concept was measured by the Martinek-Zaichkowsky Self-Concept Scale. Results indicated that on the pretests, the handicapped children scored significantly lower than the nonhandicapped children on both the motor performance and self-concept measures. However, posttest scores found the self-concept scores to not be significantly different for handicapped and nonhandicapped after the 24 week program. The authors concluded that children in integrated programs can build their self-concept (Karper & Martinek, 1983).

Another series of articles have reported a research project which examined the social interaction of TMR children in a physical education setting (Beuter, 1983; Rarick & Beuter, 1985; Rarick, McQuillan, & Beuter, 1981). The subjects who participated in this study included two grade levels of 85 intellectually normal pupils (third and sixth grades) and two age groups of 25 TMR children (11 to 13 years and 13 to 16 years). TMR children were assigned to either segregated or integrated class settings for physical education instruction at the TMR school. Children were assessed on interaction patterns through the use of video-taped observation. It was discovered that the frequency of teacher intervention was four to six times greater for the younger TMR children than for their nonhandicapped peers. It was also found that the integrated TMR children made relatively more frequent demands on their teacher than did those in the segregated classroom setting. However, the differences in the frequency of the interactions between the older TMR and nonhandicapped peers were not great. The authors concluded that teacher intervention is largely a function of mental maturity and reflects an inability on the part of the younger TMR children to attend to the demands of the task.

Advocates of the Special Olympics program have claimed that participation in Special Olympics positively influences self-concept, yet little research exists which empirically supports this claim. Rarick (1971) and Bell, Kozar, and Martin (1977) found that Special Olympics programs positively influenced self-concept characteristics and social interactions of those participating in the program. The only controlled experimental study which examined the influence of Special Olympics on mildly and moderately mentally impaired children was reported by Wright and Cowden (1986). These researchers examined one group of 25 participants in a 10-week Special Olympics swim training program and a second group of 25 nonparticipating control subjects. Though the level of retardation is not clearly reported, it is likely that the population included EMI children. All subjects were administered the PHCSCS prior to and following the swimming program. Results of the scores indicated that self-concept scores improved significantly from pretest to posttest for the experimental group but not for the control group.

The findings by Wright and Cowden (1986) may have been influenced by other variables. The Special Olympics program stresses motivational techniques designed to enhance the self-esteem of participants. It also must be noted that the researchers did not include a comparison of integrated and nonintegrated settings on the variables measured. However, this research has been presented in order to demonstrate that involvement in physical activity may influence the self-concept of the participant.

Issues Related to Integration

There are many issues which may impact the success or failure of integrating children into the regular classroom. These issues include: (a) the impact of integration on the nonhandicapped children; (b) the impact of integration on teachers; (c) the influence of ancillary support services; and (d) teacher attitudes. The final section will review the role of the parent in integration.

Impact of integration on nonhandicapped children. There are two groups of students to be considered when integrating EMI children into the regular class, the EMI students and their nonhandicapped peers. Rarick and Beuter (1985) noted that there are few, if any, published accounts on the impact of integration on nonhandicapped children. These authors sought to determine the effects of integration on the motor performance of handicapped and nonhandicapped children. This research, described earlier, reported that the integrated TMR population experienced success on motor tasks without adversely affecting the performance of nonhandicapped peers.

Other studies which examined the effects of integration on nonhandicapped children are nonexistent. Therefore, further research is necessary to examine not only the motor performance abilities but also the interactions and other social characteristics of nonhandicapped as well as handicapped children.

Impact of integration on teachers. Enrolling handicapped children in a regular class does not require the teacher of that class to become a special educator, since the purpose of integration is to allow the child to experience as normal and regular an educational program as possible. However, the teacher cannot be expected to carry on as usual due to the many new responsibilities added to an already difficult task (Spodek, Saracho, & Lee, 1984). These added responsibilities often have resulted in negative attitudes toward integration on the part of teachers (Santomier, 1985). It is evident that for integration to be successful, teachers must be adequately prepared through training which emphasizes both methods for teaching in an integrated setting as well as attitudes toward integration.

PL 94-142 has had a significant effect on teachers in the classroom. Teachers in the regular class are being asked to include students who are in need of special services and materials. Many regular teachers are unprepared for this task (Pernell, McIntyre, & Bader, 1985; Schwartz, 1984). The shifting views toward integration of exceptional children have led to changes in preparing teachers. Spodek, Saracho, and Lee (1984) have identified a number of items which regular classroom teachers must be prepared to deal with when exceptional children are integrated into their classes:

1. Classroom organization and practices must be adapted in order to accommodate the extended range of individual differences.
2. Teachers must be prepared to work with a broader range of educational personnel (including resource teachers, physical therapists, occupational therapists, and educational specialists).
3. Teachers must develop different relationships with parents (some mandated by due process procedures, others by the needs of the parents).
4. Teachers have to use different assessment techniques and plan programs for children in a more systematic and formal way.
5. Classroom teachers must be prepared to identify children who may need special services.

Stephens and Braun (1981) discovered that teachers who had taken courses in special education were more willing to accept handicapped children into their classrooms than were those who had not taken such classes. Thus, these researchers suggested a direct correlation between the teachers' knowledge of special children and their willingness to integrate them into their classes.

Ancillary support services. Integration of handicapped pupils into the regular class has had a significant impact on the types of personnel with whom the regular class teacher must be prepared to interact. The implementation of PL 94-142 requires a team approach for evaluating and educating exceptional children. Hutchinson (1982) presented a list of professionals who, depending on the child's specific needs, may be called on to work with an exceptional student placed in a regular class:

1. Special education teacher
2. Resource teacher
3. Special education paraprofessional
4. Reading specialist
5. Communication disorders specialist
6. School psychologist
7. Evaluation specialist
8. Vocational education teacher
9. Guidance counselor
10. Physician
11. School nurse
12. Physical therapist
13. Occupational therapist
14. Adaptive physical education specialist
15. Social worker
16. School administrator

The inclusion of many of the above professionals in the education of a child in the regular classroom may present a variety of challenges. One of the most pressing of these difficulties is the problem of territoriality. This refers to the conflict that occurs when members of various disciplines feel it is their role to work with an individual child or handicapping condition. This difficulty may cause unexpected conflict for which some teachers are not prepared.

Teacher Attitudes. While territorial claims to teach handicapped children may be one source of problems for educators, it is ironic that a second major problem is the resistance of regular classroom teachers to take responsibility for teaching mildly impaired children (Hutchinson, 1982). This resistance may come from a variety of sources. One of the most readily identified source of resistance to integration is the absence of positive attitudes toward integration.

Positive attitudes toward integration have been viewed as important to the success of any administrative mandate (Yaffe, 1979). Larrivee (1981) found that there were many variables involved in forming attitudes toward integration. The author mentioned the developmental background of the teacher, knowledge of handicapping conditions, and special education experiences as variables which influence attitudes. However, there has been little agreement as to which variables have the greater influence in developing the positive attitudes which would facilitate integration.

Stephens and Braun (1981) attributed three specific variables as influencing factors in the development of positive attitudes toward integration. The authors developed a questionnaire which was distributed to 1,034 teachers (Kindergarten through Grade 8) in 10 school districts in Illinois. The results related to teacher attitudes were threefold:

1. Those confident of their abilities to teach exceptional children were more willing to integrate than were teachers who were not confident.
2. Teachers who believed that handicapped children can become productive members of society were more willing to integrate than were teachers who did not share this belief.

3. Those who believed that public schools should educate exceptional children were more willing to integrate than were those who did not accept this view.

The authors concluded that although these variables accounted for a small amount of the variance, they were accurate predictors of the willingness of teachers to integrate exceptional children in their classes.

The literature review in this chapter demonstrates the complexity of the issues related to integration. It has been presented to show that for successful integration to take place, specific concerns must be addressed. These concerns include teacher preparation, the ability of a teacher to work with ancillary support services, territoriality problems, and the need for the development of positive attitudes toward integration. These concerns have been presented only briefly in this section and further research into all of these topics is warranted.

Synthesis of the Research Literature and Hypotheses

The following section will summarize the previously reviewed research on the characteristics of EMI children and the influence of the instructional setting on EMI children. Gaps in the available research also will be presented. Emphasis will be placed on summarizing this available research with the purpose of relating the information to the hypotheses associated with this project.

Summary of available research. In general, EMI children tend to lag behind their nonhandicapped peers in motor performance measures (Francis & Rarick, 1959; Howe, 1959; Karper & Martinek, 1985). This lag includes qualitative (Ulrich, 1983) as well as quantitative (Rarick, 1973; Rarick & Dobbins, 1972) measures of performance in physical ability. Although EMI children tend to lag two or more standard deviations below the mean on measures of intelligence, they only lag approximately one standard deviation below the mean for nonhandicapped boys and 1.8 standard deviations below the mean for nonhandicapped girls on motor performance measures (Rarick & Dobbins, 1972).

Though there is general acceptance that EMI children demonstrate lags in motor abilities, it is not completely clear which type of setting is most beneficial to the attainment of improved motor skills. There is common belief that mildly and moderately mentally impaired children can develop motor skills in integrated as well as nonintegrated settings. However, the present practice of integrating EMI children into the regular classroom has very little empirical support. The only study which examined the impact of integrated vs. nonintegrated settings in physical education involved TMI rather than EMI children (Rarick & Beuter, 1985). Results of this research demonstrated that TMR children experienced greater gains in motor performance measures in an integrated setting than in a nonintegrated setting. It was therefore proposed for the current research project that EMI children in an integrated setting would experience greater gains in motor performance than EMI children in a nonintegrated setting.

Not only do motor performance deficits exist among EMI children, but also it is generally accepted that EMI children exhibit difficulty socially and emotionally when compared to nonhandicapped peers (Heber, 1964). The most significant difficulties identified in EMI children include self-concept, attention, and anxiety disorders (Polloway, Epstein, & Cullinan, 1985). Such characteristics may prevent successful integration into the regular classroom. Studies related to the social adjustment of EMI children after integration into the academic classroom are fairly abundant. Research concerning the social position of EMI children in the integrated classroom have found that the social position of EMI children was lower than that of their nonhandicapped peers (Baldwin, 1958; Budoff & Gottlieb, 1976; Corman & Gottlieb, 1978). Furthermore, increasing contact with nonhandicapped peers did not significantly change the sociometric standing of the EMI children (Gottlieb & Budoff, 1973; Strauch, 1970).

A second area of investigation of the effects of integration on the social standing of EMI children involved self-concept measures. In general, EMI children exhibit lower self-concept than their nonhandicapped peers. Studies which examined the impact of integration on self-concept scores of EMI children have produced conflicting data. A few studies reported a positive effect for special class placement (Carvajal, 1972; Gerke, 1976; Hoeltke, 1967; Lewis, 1974; Schurr, Towne, & Joiner, 1972), while others reported significant positive influences due to integration (Calhoun & Elliot, 1977; Rouse, 1974; Strang, Smith, & Rogers, 1978). The use of different test instruments, and different types and extents of integrated settings may account for the conflicting results.

It was hypothesized for the current study that the perceived competence scores of the nonhandicapped would not differ across settings and testing periods. It was also predicted that EMI children in integrated settings would not differ from EMI children in segregated settings on the pretest. However, a decrease in perceived competence scores in the physical domain was expected for the integrated children after one week of instruction. This hypothesis was based on the literature which reported that perceived competence scores varied based on the reference group used for comparisons. Smith, Dokecki, and Davis (1977) discovered that when mentally impaired children compared themselves with the entire integrated class, their perceived competence suffered. However, when the mentally impaired children were able to compare with a low achiever sub-group, a higher level of perceived competence was maintained. It was predicted that only the physical domain scores would significantly change on the first week scores due to the content of the physical activity orientation of the classes. Other research has revealed that after a relatively short time of integration in physical education, perceived competence scores of handicapped children increased to a level not significantly different from nonhandicapped children (Martinek & Karper, 1982). For this reason it was predicted that on posttest scores, no difference in perceived competence would be present between integrated and nonintegrated EMI children.

The final area of social integration reported in this review concerned the impact of integration on the interaction patterns of teachers and students. In general, the literature reported that EMI children exhibit greater difficulties in social behavior characteristics than do their nonhandicapped peers (Heber, 1964; Polloway, Epstien, & Cullinan, 1985). However, when the impact of integrated settings on the social behavior of EMI children was considered, conflicting results were reported. Some studies indicated that integration increased prosocial behavior (Budoff & Gottlieb, 1976; Gampel, Gottlieb, & Harrison, 1974; Gottlieb, Gampel, & Budoff, 1975), while others reported increased prosocial behavior for children educated in segregated settings (Blatt, 1958; Flynn, 1974; Kern & Pfaeffle, 1962).

Differences in the outcomes of the behavioral measurements could be attributed to the variety of instruments selected and the settings used for evaluation. When evaluation is done by teachers in integrated settings, the scores of behavioral adjustment for EMI children suffered. However, when evaluation was recorded by researchers, the scores for the integrated mentally impaired children did not differ from that of their nonhandicapped peers (Guerin & Szatlocky, 1974).

The literature concerning the social interaction patterns of EMI children in the physical education setting is limited. The research reported in this review examined objectively recorded patterns of behavior in the physical education classroom. In general, students for whom teachers held low expectancies and mildly handicapped children experienced different types of interaction with their teachers, which may have been related to their behavior (Karper & Martinek, 1985; Martinek & Johnson, 1979; Martinek & Karper, 1981; Martinek & Karper, 1982). Mildly handicapped children received more feedback from their teachers than did nonhandicapped students. Also, low expectancy and mildly handicapped children received more direction/command types of feedback, more criticism, less praise, and less acceptance of ideas from their teachers than did their nonhandicapped peers. It was hypothesized this same pattern of interactions would be found in the present study.

Additional needs in available research. Research into the academic and motor ability of EMI versus normal children is abundant. A great deal of information also is available on the most appropriate setting for the development of academic intelligence in EMI children. However, serious gaps are evident when examining the setting which best facilitates the motor skill development of EMI children. At present there are no published accounts which compare integrated and nonintegrated classroom settings on the motor performance characteristics of EMI children. The work of Rarick and Beuter (1985) examined only TMR children. In addition, only quantitative measures of performance were examined. Thus, in addition to the lack of knowledge concerning quantitative measures of performance, there is a complete lack of research examining the impact of the integrated and nonintegrated settings on the qualitative measures of motor performance.

Significant gaps in the literature also exist concerning the influence of integrated settings on the motor performance of nonhandicapped children. The work of Rarick and Beuter (1985) with TMR children is the only research available that examined the impact of handicapped children in the classroom on the performance of nonhandicapped children. There is a great need for such information.

There is also a paucity of research examining the effects of integration on the perceived competence characteristics of EMI children. The research reviewed earlier used global measures of self-concept. The impact of integration on specific domains of perceived competence in young EMI children is lacking. This is especially true for integration into physical education classes. There is need for investigation into the effects of integration on each of the domains of perceived competence in a variety of settings.

Another aspect of social integration involved examining interactions in the classroom. Serious gaps are evidenced in the literature when the integrated physical education classroom is considered. Martinek and Karper (1982) began some foundational work in this area which warrants further inquiry. Their research examined a broad scope of handicapped children. It would be valuable to gain knowledge of interaction patterns when EMI children are integrated into physical education classes. At present, such information is nonexistent.

It is important that answers to the concerns addressed above are investigated in order to increase our knowledge of the most appropriate setting for educating EMI children. The hypotheses that were addressed in the current study were proposed in order to meet this need.

Hypotheses to be addressed in this study

1. There will be significant differences in the qualitative aspects of motor performance between integrated and nonintegrated EMI and NH students. The EMI integrated group will show greater gains in qualitative motor performance than the nonintegrated EMIs. NH integrated students will not differ in qualitative motor performance from NH nonintegrated students.
2. There will be significant differences in quantitative aspects of motor performance between integrated and nonintegrated EMI and NH students. The EMI-integrated groups will show greater gains in quantitative motor performance than the nonintegrated EMIs. NH integrated students will not differ in quantitative motor performance from NH nonintegrated students.
3. Significant differences will exist in perceived competence scores between EMI children in integrated and nonintegrated settings.

a. During the pretest of the perceived competence scale, EMI integrated will not differ from EMI nonintegrated children.

b. During the first week of instruction the EMI integrated children will show a decrease in perceived competence on the physical domain subscale.

c. The posttest will reveal no differences in perceived competence between EMI integrated and EMI nonintegrated subjects.

Perceived competence scores of the NH subjects will not differ in integrated and nonintegrated classes on all scheduled testings.

4. There will be no differences between EMI integrated and EMI nonintegrated or between NH integrated and NH nonintegrated in the frequency or quality of dyadic teacher-student interactions. Significant differences will exist in frequency and quality of teacher-student dyadic interactions between the EMI and NH students.

   a. EMI students will receive more frequent interactions from teachers than will the NH children.

   b. More directional/command types of interaction will be received by the EMI children. More praise type of interaction will be received by the NH students. More criticism will be directed toward EMI children. Differences will exist favoring the NH children in the category of acceptance of ideas and feelings.

Instrumentation

This section of the review will examine various instruments and evaluate their usefulness in assessing qualitative and quantitative aspects of motor performance, perceived competence characteristics, and dyadic teacher-student interactions. Rationale for the selection of the instruments used in this study will be provided.

Qualitative motor performance. Qualitative motor performance assessment instruments are concerned with the examination of the maturity of the movement patterns used to accomplish a task. Very few instruments for measuring qualitative aspects of motor performance currently exist. Three criterion-referenced instruments that have been used with EMI children are the I CAN Physical Education Program (Wessel, 1979), The Ohio State University Scale of Intra-Gross Motor Abilities (SIGMA) (Loovis & Ersing, 1975), and the Test of Gross Motor Development (TGMD) (Ulrich, 1985).

The I CAN program is designed to be both an assessment instrument and a program planning tool (Wessel, 1979). It was initially developed for use with children who are handicapped. The performance objectives of the program are reported as criterion-referenced measures that can be used to assess the placement and instructional needs of a student (Holland, 1986). Skills which may be tested include basic aquatics, fundamental motor skills (locomotor, rhythms, and object control), and body management skills. No chronological ages are associated with performance. Testing involves observing the student and checking the skill level at which a child is performing. Reliability and validity for the instrument are not reported in the I CAN Implementation Guide (Wessel, 1979). Sherrill (1986) reports that the I CAN tests form the basis for the more sophisticated TGMD (Ulrich, 1985) and refers the reader to the extensive validation and reliability reported for Ulrich's (1985) test.

The SIGMA (Loovis & Ersing, 1975) is designed to assess the qualitative aspects of 11 basic motor skills (e.g., walking, climbing, running, throwing, catching, jumping, kicking, striking, skipping, and hopping) of children aged 2.5 to 14 years (Loovis & Ersing, 1975; Sherrill, 1986). The test is criterion-referenced with four levels of development specified for each of the 11 skills. Reliability coefficients were not provided, and the validity has only been reported as face validity with the literature (Holland, 1986). It appears that in the descriptions of mature patterns, some essential components of skills are missing. For instance, the highest level of the catch did not require that the ball be caught with the hands only, or that the arms absorb the force. The jump and the catch are also cited as missing essential components specified in the most mature level of performance (Holland, 1986).

The TGMD (Ulrich, 1985) was designed as a criterion-referenced measure of fundamental motor skills for children 3 to 10 years of age (see APPENDIX B). The TGMD yields three scores: (a) a locomotor skills subtest score based on running, hopping, skipping, jumping, sliding, leaping, and galloping performance; (b) an object-control skills subtest score that reflects performance in throwing, catching, kicking, striking, and bouncing; and (c) a gross motor composite score. The examiner is required to judge the presence or absence of the motor behaviors listed for each of the twelve gross motor skills.

The psychometric properties of the TGMD have been examined and found acceptable (Ulrich, 1985). The test results provide both criterion- and norm-referenced interpretations. A stratified quota sample of 909 subjects was used to represent the population of the United States for the characteristics of gender, race, community size, and geographic region. Stability reliability (the extent to which a child's test score remains constant across testing situations) of the TGMD was evaluated by Ulrich and Wise (1984). The general strategy for estimating stability is by the test-retest method with a relatively short interval of time in between testing. Ten boys and girls 3 to 10 years of age from a University Motor Skill Clinic were videotaped. Two of the subjects were identified as moderately handicapped. Variance components were estimated using 20 inexperienced undergraduate raters. The estimated variance components for the locomotor and object-control subtests were .53 and .49, respectively. The magnitude of the variance measures, expressed in percent of total variance, were 1% and 2%. These results indicate that the testing of children on two occasions contributes very little to measurement error (Ulrich & Wise, 1984). The generalizability coefficients of this analysis for the locomotor subtest and the object control subtest, were .96 and .97, respectively (Ulrich, 1985).

Inter-scorer reliability also has been established (Ulrich, 1985). The estimated variance components for scorers in the locomotor and object-control subtests were .53 and .81, respectively. The coefficients were calculated on the independent ratings of 20, 10, and 2 raters (Ulrich, 1985). The reliability of mastery decisions was examined by Ulrich and Ulrich (1984). This study involved a group of 80

NH children in the age range of 3 to 10 years. A second group consisted of 40 moderately mentally impaired children in the same age range. It was concluded that mastery decisions made with the total composite score were very reliable for both groups tested. At the 85 percent cut-off level, the proportion of agreement reported for handicapped and NH children was .89 and .87, respectively.

Content validity for the TGMD was established by having three content experts judge whether the skills selected represented the skills that are frequently taught to children in preschool and early elementary grades. The results of the independent ratings were unanimous in considering the skills as representative of the skills frequently taught at this age (Ulrich, 1985).

Construct validity was established for the TGMD by testing the hypothesis that gross motor development would improve across age levels. With the standardization sample, the validity of the test was reported for the locomotor subtest at .81, object control subtest at .84, and gross motor composite at .86. The hypothesis that mentally retarded children would score significantly lower than a group of NH children was tested in an effort to establish the construct validity. The aforementioned population of 80 NH children and 40 moderately mentally impaired children was used. All children were tested individually following the standardized procedures described in the manual. MANOVA yielded a significant ($p < .01$) group effect, indicating that the NH group exhibited consistently better gross motor patterns than did the moderately mentally impaired children (Ulrich & Ulrich, 1984).

In a critical evaluation of the instrument, Holland (1986) cited some weaknesses of the TGMD. He stated that no information is given about what to do if a student demonstrates learning or behavioral problems during assessment. He also points out that the evaluator is not told what to do if the student does not understand the task after the prescribed demonstrations are given. Holland also cites that the test items are also lacking in description of mature performances. Skill components are left out in both the jump (leg flexion), and the kick (support leg placement, and striking foot contact).

Although the above cited weaknesses exist in the TGMD, it is the most appropriate test available to meet the requirements of this research. The test is a well constructed and standardized measure of the quality of gross motor development for children in the age range examined. Ease of administration and its proven sensitivity to detect changes in performance within the time constraints of this study also led to the selection of the TGMD.

Quantitative motor assessment. Motor tests which measure quantitative aspects of skills examine variables related to the accuracy, speed, and/or distance of a performance. (Francis & Rarick, 1959; Rarick & Dobbins, 1972). Such measures have often been used to determine the gross motor ability of children (Broadhead, 1972; Francis & Rarick, 1959; Rarick & Beuter, 1985; Rarick & McQuillan, 1977; Rarick, McQuillan, & Beuter, 1981).

Three motor test items were used for examining gross motor ability differences in trainable mentally retarded (TMR) and nonhandicapped children in a study by Rarick, McQuillan, and Beuter (1981). These items consisted of the softball throw for distance, standing long jump, and twenty yard dash (Rarick & Beuter, 1985; Rarick, McQuillan, & Beuter, 1981) (see APPENDIX B). These three items have been found to be valid measures of gross motor ability in both handicapped and nonhandicapped boys and girls aged 5 to 16 years through factor analysis procedures (Rarick & Dobbins, 1972; Rarick & McQuillan, 1977). The research by Rarick and Dobbins (1972) and Rarick and McQuillan, (1977) demonstrated that only a few test items are required to reflect the basic components of the motor domain of young normal and TMR children (Rarick, McQuillan, & Beuter, 1981). Within-day test-retest reliability in the Rarick, McQuillan, and Beuter (1981) study for the run was .86, the jump .91, and throw .95 for children aged 11 to 16 years.

Broadhead (1972) examined the motor performance of 201 minimally brain injured children, and 249 EMI children on these three items in the context of the AAHPER youth fitness test. He reported that differences in favor of children with higher intelligence existed on these measures.

These three skills have been selected for this research project in order to replicate the work of Rarick, McQuillan, and Beuter (1981). It was also of interest to the author to compare the results of quantitative and qualitative aspects of performance.

Perceived competence. Perceived competence can be operationally defined as a multi-dimensional characteristic which is domain specific. That is, it is assumed that chidren are able to distinguish between different domains of self-perception such as cognitive, physical, and affective. Perceived competence may also be identified as the frame of reference through which individuals interact with the world (Sherrill, 1986). Harter (1979) described perceived competence as a measure of self-concept and used the terms interchangeably. This section of the review of literature will examine the instrumentation available for assessing self-concept and perceived competence as operationally defined above.

Self-concept has been identified as an elusive variable to measure (Wylie, 1974). One possible reason for the difficulty in assessing self-concept characteristics is that validated instruments are not readily available (Martinek & Mancini, 1983). Researchers also have discovered that individuals may distort their responses in order to reveal only what they wish (Wylie, 1974; Piers, 1969).

The stability of self-concept in children has been questioned (Piers, 1969). Until approximately age 7, the attitudes toward the self are not generalized. That is, until that time, the child tends to view him/herself in the context of the immediate situation (Martinek & Mancini, 1983). Thus, weaknesses may exist in measuring self-concept in children whose anxiety levels fluctuate from day to day. For instance, if a child comes from a stressful situation directly into a testing situation, the results may reflect the anxiety of the immediate moment.

The majority of self-concept measures available for use in research involve verbal responses, which tend to lengthen the time of testing. Limitations related to verbal reports also exist in situations of children with low verbal and reading aptitude (Martinek & Mancini, 1983). Another major limitation cited by Martinek and Zaichkowsky (1977) includes the tendency for children to manipulate verbal reports to a greater extent than nonverbal reports.

The Martinek-Zaichkowsky Self-Concept Scale (MZSCS) (Martinek & Zaichkowsky, 1977) was designed to be a nonverbal, culture-free measure of global self-concept in children under age 13. This test consists of 25 pairs of cartoons depicting children. One cartoon in each pair is marked by shading a circle to identify which selection best represents the child's perception of him/herself. The child's task is to choose and mark "the picture which is most like you". The 25 items are designed to measure satisfaction and happiness (Factor 1); home and family relationships (Factor 2); ability in games, recreation, and sports (Factor 3); behavior and personal/social characteristics in school (Factor 4); and personality traits and emotional tendencies (Factor 5). The MZSCS was derived from the Piers-Harris Childrens Self-Concept Scale (PHCSCS). Those items with high factor loadings on the PHCSCS were selected as initial items for the formation of the MZSCS. Though five factors were found through factor analysis, one score (the total number of positive ratings) is used in evaluating the results .

The scale has been demonstrated to have good internal consistency for elementary-aged children (Martinek & Zaichkowsky, 1977). To estimate the internal consistency and homogeneity of the 25 items, the Hoyt Estimate of Reliability and the standard error of measurement were derived from the responses of 148 children from Grades 1 through 4. The Hoyt coefficients ranged from .75 to .92 for children in Grades 1 through 4, with an overall coefficient reported at .88. The standard error of measurement ranged from 1.38 to 1.84, with an overall standard error of 1.65.

Content validity for the scale was established by selecting items which were synonomous with the items selected by Jersild (1969) and the 80-item Piers-Harris scale (Piers & Harris, 1964). In order to cover a wider range of categories relating to global self-concept, a panel of experts selected additional items for the scale from Jersild's (1969) scale (Martinek & Zaichkowsky, 1977).

Concurrent validity was determined by comparing the MZSCS with the PHCSCS, teachers ratings, and Coopersmith's Self-Esteem Inventory (Coopersmith, 1967). A correlation of .49 was obtained with the PHCSCS from a sample of 120 children 6 to 10 years of age (Martinek & Zaichkowsky, 1977). Teachers were asked to rate the same children based on the teacher's assessment of how each child perceives him/herself. A correlation of .06 was found between teacher ratings and the MZSCS. A correlation of .56 was obtained when comparing the MZSCS with the Coopersmith scale on a sample of 86 boys and girls 7 to 10 years of age (Martinek & Zaichowsky, 1977).

The MZSCS claims the ability to distinguish between children of high and low self-concept. The manual states that the major use of the scale is screening to identify "children in need of special consideration". The structure of the test causes the results to be negatively skewed and very high or perfect scores are quite common. This skewness may cause some difficulty in interpretation. The authors do state in the manual that the scale will not discriminate among children with adequate or very positive self-concepts, since many children will have perfect or nearly perfect scores (Martinek & Zaichkowsky, 1977).

The use of global measures of self-concept is questioned by some researchers (Harter, 1979; Ulrich, 1984). These individuals believe that, in reality, children value some domains of competencies more than others. However, global scores measure a variety of separate domains (cognitive, physical, and social) and weight each domain equally in order to produce one composite score. It is for this reason that such global measures have been rejected by Harter (1979).

The belief that children tend to value certain competency domains over others has received support in the research literature. Smoll (1974) recognized that ability in physical skills is an especially important source of status for elementary school-aged children. Harter (1981) discovered gender differences in the physical domain of measured perceived competence. Males were found to report significantly higher perceptions of their abilities than did females. This study provided evidence that certain domains of perceived competence may be of more importance to different individuals and/or gender groups. This is particularly interesting in that global self-concept reports generally fail to reveal gender differences. It is possible that these global measures mask both gender differences and differences which may be occurring within separate domains (Ulrich, 1984).

Other instruments exist designed to measure self-concept specifically related to general physical appearance and the ability to perform physical skills. One such instrument is the Cratty Self-Concept Scale (CSCS) (Cratty, Ikedo, Martin, Jennett, & Morris, 1970). The test consists of 20 brief questions to which students respond with a simple yes or no. The range for the use of the test is Kindergarten through Grade 6. Scores on the CSCS range from 1 to 20 with 1 point given for each response which demonstrates good self-concept. Mean scores range from 14.1 to 15.7 with no significant differences between grades and genders.

Content validity of the CSCS was established by selecting all items except one from the PHSCS. Test-retest reliability was reported at .82 for 288 children (Cratty, Ikedo, Martin, Jennett, & Morris, 1970). After experimentation using the CSCS, Cratty (1974) questioned whether using direct verbal assessment was appropriate for use with retarded children. The CSCS was not selected for the present research project due to the verbal format and the measurement of only physical self-concept.

A test instrument designed to measure children's perception of their ability in three competency domains and general self-worth was entitled The Perceived Competence Scale for Children (Verbal Scale) (Harter, 1982). The three competency domains included cognitive competence, social competence, and physical competence. The general self-worth subscale was independent of any specific competency domain (Ulrich, 1984). The format of the test enabled the subject to compare two statements and select the statement which was most like him or her. Further discrimination as to whether the statement is really true or just sort of true for the subject must also be selected. Each of the four subscales consist of seven comparisons which must be scored on a four-point scale. The scores for each comparison within a subscale must then be totaled and averaged in order to produce a separate score for each subscale.

The validity of the scale is based on a sample of over 2400 third through ninth grade children from four states. Factor analytic procedures revealed four distinct factors. Average factor loadings for the cognitive, social, physical, and general subscales were reported at .57, .45, .53, and .38, respectively. The test-retest reliability for the instrument following a three-month interval ranged from .87 for the physical competence subscale to .70 for the general self-worth subscale.

The Pictoral Scale of Perceived Competence and Social Acceptance for Young Children (Harter, Pike, Efron, Chao, & Bierer, 1983) was designed for children aged four through seven years. One section of the test measures the competence domain of children and is divided into two subscales of cognitive and physical competence. The other general area of evaluation measures peer and maternal acceptance. This test has no general self-worth subscale. The subject is instructed to compare two pictures depicting children involved in various activities. The child then points to the picture which is most like him or her. As in the test for older children, further discrimination as to whether this is really true or just sort of true for him or her is indicated. The test is scored as in the Verbal Scale.

Validity of the instrument was established using a sample of over 250 children aged four through seven years. Factor analysis revealed only two factors (competence and acceptance) which indicated that for the competency domain, children did not distinguish between cognitive and motor abilities. Factor loading for the six and seven year-old subjects revealed coefficients of .53, .39, .60, and .55 for the cognitive, physical, peer acceptance, and maternal acceptance subscales, respectively. Total scale reliability for the preschool/kindergarten items is .88. Reliability for the first/second grade children was reported as .87. Internal consistency of each subscale combined with their respective factors ranged from .75 to .89 (Harter, Pike, Efron, Chao, & Bierer, 1983).

Though the MZSCS has been used with the type of population to be examined in the current investigation, the instrument was not selected for this research. The use of such global measures of self-concept has been called into question (Harter, 1979). Data have indicated that on such scales, the self-concept score is significantly correlated with "lie-item" scores. In other words, children tend to present themselves in a positive light in order to give their idealized self-concept rather than their actual self-concept (Harter, 1979).

Based on the evidence that specific domains of perceived competency exist in children, it was decided that an instrument which distinguished between these domains would be utilized in this research. To date, the Perceived Competence Scale for Children (Verbal Scale) and Pictoral Scale of Perceived Competence and Social Acceptance for Young Children constitute the instruments which would be applicable to the age range involved in this research. However, the authors of the tests have indicated that the Verbal Scale is to be used with children aged 8 to 11 years. The Pictoral Scale was designed for use with younger poulations aged five to seven years. Both tests were used in this study dependent upon the age of the subject.

Specific problems related to the lower intellectual functioning of the EMI children exist. For example, Silon and Harter (1985) examined the perceived competence of 126 EMI children aged 9 to 12 years using the Verbal Scale. It was discovered that only two competency domains existed for the children tested. This finding closely resembled the competency domains established for younger children and tested by the Pictoral Scale. It was also discovered that no general self-worth construct could be factored out.

The absence of evidence for a general self-worth factor when using the Verbal Scale with EMI children suggests that at this particular IQ level or mental age, a child may not make the type of abstract evaluation of self as is measured by the items on this test (Harter, 1982). This finding also is comparable with the factors discovered in measuring perceived competence in younger children. The Pictoral Scale indicated a similar pattern revealing the two factors of competence and social acceptance. Harter (1982) proposed that this finding raises the possibility that perceived competence constructs differ between developmental levels.

Based on the above research, it was decided that the Pictoral Scale would be the most appropriate scale for the all of the EMI children. Because this scale was designed for children aged five to seven years, the scale was also selected for measuring the perceived competence of the seven year-old nonhandicapped subjects. The Verbal Scale was selected for the older nonhandicapped children. The domains to be measured by this instrument have been shown to be appropriate to this group. Although comparisons will not be possible between seven year-old and eight to nine year-old nonhandicapped children, the hypotheses to be addressed in this research can be adaquately assessed.

Dyadic teacher-student interactions. The final variable to be examined in this research project involved the observation of the dynamic interactions between participants in the classroom. Systems for describing behaviors in the classroom were developed in the form of checklists and rating scales in an effort to provide objective rather than subjective measures of teaching behavior. The volume of information, however, had to be conceptualized before it could be objectively observed and recorded (Cheffers, Amidon, & Rogers, 1974). A number of researchers developed techniques for conceptualizing and categorizing behaviors in the classroom (Anderson, 1939; Bales, 1950; Flanders, 1960; Hough, 1964; Withall, 1949).

Flanders (1960) produced the most widely known and used interaction analysis system known as the Flanders Interactional Analysis System (FIAS) (Cheffers, Amidon, & Rogers, 1974). The FIAS enabled researchers and teachers to analyze classroom interactions in a reasonably objective manner. The instrument was designed with 10 basic categories that were mutually exclusive, yet together accounted for all verbal action which might occur in the classroom. Interactions were categorized into one of three major sections: teacher talk (indirect and direct); student talk; and silence. Indirect teacher influence represented influences which increased student participation and freedom of response:

1. Accepts feelings
2. Praises or encourages
3. Accepts or uses ideas of students
4. Asks questions

Direct teacher influence was designed to describe behaviors that increased the control of the teacher and limited the freedom of the students:

5. Lectures
6. Gives directions
7. Criticizes or justifies authority

Student talk was designed to categorize behaviors of students for evaluating the freedom of student action:

8. Student talk - response
9. Student talk - initiates

The final category consisted of pauses, short periods of silence and periods when the observer could not distinguish which participant was talking:

10. Silence or confusion

The use of the FIAS in physical activity classes was limited by the differences in class structure when compared to the more academic classroom setting for which the instrument was designed. Three major difficulties in assessing interaction patterns in the physical activity class have been identified by Cheffers, Amidon, and Rogers (1974):

1. The FIAS is concerned with only verbal behavior.
2. FIAS is concerned with the teacher as the only individual involved in the teaching process.
3. Traditional class settings are the only structure for evaluation with the FIAS unless specific adjustments are made. Many adaptations have been made to the FIAS. The Cheffers'

Adaptation to the FIAS (CAFIAS) was designed to measure interactions in predominantly movement-oriented settings (Cheffers, 1983). The system uses numbered categories to objectively code verbal and non-verbal behaviors between teacher and students. The changes made on the FIAS were the addition of the non-verbal categories and diversification of "the agency responsible for performing the teaching function (Cheffers, 1983)."

Cheffers (1972) compared the performance of the CAFIAS to the FIAS in order to establish validity. A blind-live interpretation technique was used with four physical education classes. The accuracy of assessments made by observers who had seen a videotape of a class was compared to a similar number of observers who had not seen the class but had seen and interpreted a CAFIAS tallied matrix of the class. Pearson Product-Moment Correlations between the blind and live observers established a ratio of .80. This resulted in a t ratio of 3.5 which was significant at the .50 confidence level (Cheffers, 1983).

The Dyadic Adaptation of the Cheffers' Adaptation of the Flanders Interaction Analysis System (DAC) (Martinek & Mancini, 1983) was derived from the CAFIAS in order to specifically examine the interaction that takes place between a teacher and a single student or small group of students (see APPENDIX B). This system was designed for use in a physical education setting and is capable of describing both verbal and nonverbal behaviors. The adaptation from the CAFIAS is minor. The DAC does not involve coding all teacher-student interactions in the classroom. The emphasis is on the term dyadic. Only those interactions taking place between the teacher and one student or small group of students (no more than four) are recorded. The categories measured by the DAC are:

1. Empathic behavior given to the student
2. Teacher's acceptance of student's ideas
3. Teacher's directions
4. Teacher's questioning
5. Teacher's criticism of student's ideas
6. Teacher lecturing
7. Teacher praise/encouragement
8. Student rote response
9. Student confusion and silence resulting from teacher's questions or directions.

The emphasis of the DAC and CAFIAS is not on interobserver tally-for-tally reliability but on the matrix cell loadings which result from the coding (Cheffers, Amidon, & Rogers, 1974). Reliability reports are not available on the DAC but the CAFIAS has a reported reliability through submitting cell rankings to Kendall's Coefficient of Concordance. Two comparisons were made. One compared the total matrices and established a W ranging from .60 to .81. The second compared the ten main cells and found a W ranging from .44 to .87. Both comparisons were found to be reliable at or beyond the .05 level of significance (Cheffers, 1983).

The DAC was chosen to identify interaction patterns for this project for a variety of reasons. The DAC was based on the CAFIAS which has well established reliability and validity. Unlike the CAFIAS which identifies all behaviors in the classroom, it specifically examines interactions occurring between the teacher and individuals or small groups of children. This feature is most important to the purpose of the study and is especially useful in the physical education classroom.

CHAPTER III

RESEARCH METHODS

The purpose of this study was to compare the motor performance and perceived competence scores of educable mentally impaired (EMI) and nonhandicapped (NH) students in integrated versus nonintegrated physical education classes. Teacher-student interactions represented another variable of interest. The design used in this study was a quasi-experimental nonequivalent control group design using repeated measures. The experimental group consisted of two classes in which NH and EMI children were integrated (INT). The control group consisted of one class of nonintegrated nonhandicapped (NI-NH) children, and one class of nonintegrated EMI (NI-EMI) children. All but one of the subjects were entering the second or third grade during the Fall of 1988. One EMI student was scheduled to enter Grade 4 during the Fall of 1988. All classes participated in a four-week physical activity program conducted at Michigan State University during June and July, 1988.

The design was quasi-experimental because random selection of subjects was not possible. The groups were nonequivalent due to the differing characteristics of subjects between groups. The two INT classes served as the experimental groups while the two nonintegrated (NI) classes served as controls. The design provided an adequate test of all research hypotheses.

The independent variable for this study was class placement with three categories: INT, NI-NH, NI-EMI. The dependent variables measured included qualitative aspects of motor performance, quantitative aspects of motor performance, perceived competence, and dyadic teacher-student interactions.

<u>Sample</u>

Subjects for this study included 15 EMI and 45 NH children from the Greater Lansing Area (Michigan) who entered Grades 2, 3, and 4 in the Fall of 1988. The characteristics of both the EMI and NH children will be presented below.

For this study children were considered as EMI if classified by the school district according to the Michigan definition of EMI (see p. 8). The EMI children were selected from a potential sample of approximately 116 EMI children in this age/grade range in Clinton, Ingham, and Eaton counties surrounding Lansing. The three counties are located in the Lansing area, and thus travel distance was limited to no more than 30 miles for any subject. Initial contact with EMI children was accomplished through the cooperation of the three intermediate school districts described above. Letters to parents of the children who were potential subjects were distributed in classes or mailed to their homes, depending on the policies of the various school systems. Those who responded to the initial contact were sent further information about the study. This information included a form for enrolling their child in the study and an informed consent form. Parents of EMI children were informed that enrollment would be accepted on a first-come first-serve basis. The EMI group consisted of 4 boys and 11 girls ranging in age from 8 to 12 years. The average age of the EMI children was 9.40 years (SD 1.30 years).

Children were considered NH unless they were identified to be in need of special education services through testing in the school system which they attended. A total of 45 NH children (28 boys and 17 girls) were selected from the Motor Performance Study (MPS), a physical education program conducted on the Michigan State University campus. Parents of NH children were informed of the opportunity to be a part of this section of MPS via a mailing sent out in April. Due to the structure of MPS, all 2nd and 3rd grade nonhandicapped children who enrolled in the program were included in the study. The range of ages was 6 to 9 years and the average age of the children was 7.50 years (SD 0.63 years). Class enrollment records from previous summer sessions of MPS indicated that the number of nonhandicapped children required for this study would be available for the 1988 Summer session.

All subjects participated as volunteers. Approval of subject selection and testing procedures was obtained from the Michigan State University Committee for the Protection of Human Subjects prior to the beginning of the study (see Appendix A).

Instrumentation

The dependent variables of this study included qualitative aspects of motor performance, quantitative aspects of motor performance, self-concept, and dyadic teacher-student interactions. These variables were assessed using the following instruments.

Qualitative motor performance. The Test of Gross Motor Development (TGMD) (Ulrich, 1985) was used to assess qualitative aspects of motor performance (see Appendix B). The TGMD yielded two scores relavent to this research: (a) a locomotor skills subtest score based on running, hopping, skipping, jumping, sliding, leaping, and galloping performance; and (b) an object-control skills subtest score based on throwing, catching, kicking, striking, and bouncing performance. The examiner was required to judge the presence or absence of motor behaviors listed for each of the 12 gross motor skills. A maximum score on the locomotor subscale is 26 points and on the object-control subscale is 19 points with a higher score representing a more mature performance. (For the psychometric properties of the TGMD, see page 70 in the review of the literature.)

Quantitative motor performance. Three motor test items were used for measuring quantitative aspects of motor performance: (a) the softball throw for distance with larger scores representing better performance, (b) the standing long jump with larger scores representing better performance, and (c) the twenty-yard dash with lower times representing better performance (Rarick & Beuter, 1985; Rarick, McQuillan, & Beuter, 1983) (see Appendix B).

Perceived competence. The Self-Perception Profile for Children-Verbal Scale (Harter, 1979) and the Pictoral Scale of Perceived Competence and Social Acceptance for Young Children (Harter, Pike, Efron, Chao, & Bierer, 1983) were used to measure perceived competence. The Verbal Scale was administered to the nonhandicapped children aged 8 and 9 years. A total of 24 points is possible on each of the six domains of the Verbal Scale with a higher score representing higher perceived competence. The Pictoral Scale was administered to the seven-year-old nonhandicapped children and all EMI children. The use of two tests was necessary due to the age appropriateness of each test. The instruments were administered during the two days prior to the onset of the instructional portion of the study (pretest), on the 5th day of class (1st week), and during the two days following the instructional portion of the study (posttest). A total of 24 points is possible on each of the four domains of the Pictoral Scale with a higher score representing higher perceived competence. (The psychometric properties of the tests have been reported on pages 78-79.)

Dyadic teacher-student interactions. The Dyadic Adaptation of the Cheffers' Adaptation of the Flanders Interaction Analysis System (DAC) (Martinek & Mancini, 1983) was used to identify interaction patterns and to determine categories of interactions between the teacher and students (see Appendix B). This system was designed for use in a physical education setting and is capable of describing both verbal and nonverbal behaviors. The DAC does not involve coding all teacher-student interactions in the classroom. The emphasis is on the term dyadic. Only those interactions taking place between the teacher and one student or small group of students (no more than four) are recorded. The frequency of interactions for each category is dependent upon the teaching style and therefore a range of scores is not possible to predict. The categories measured by the DAC are:

1. Empathic behavior given to the student
2. Teacher's acceptance of student's ideas
3. Teacher's directions
4. Teacher's questioning
5. Teacher's criticism of student's ideas
6. Teacher lecturing
7. Teacher praise/encouragement

8. Student rote response

9. Student confusion and silence resulting from teacher's questions or directions.

(The psychometric characteristics of the instrument have been reported in the review of literature on page 85.)

Procedures

This research included a pretest period, instructional period, and posttest period (see Table 1). The pretest data were gathered during the two days prior to the 16-day instructional period while the posttest data were gathered during the two days immediately following the instructional period. The procedures used during each of these periods are described in this section. Specific topics to be addressed include test administration and instructional procedures.

Table 1
Timeline

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 June      June   July
 27 28    29 30 5 6 7 11 12 13 14 18 19 20 21 25 26 27 28 29
I------I-----------------------------------------I-----I
Pretest          Instructional Period              Posttest
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Test administration. The administration of tests for both motor performance and perceived competence measures was done by the author and other graduate students trained in motor development, adapted physical education, or sport psychology. Children were scheduled into 90-minute slots for testing during the two days prior to the onset of the instructional portion of the study for the pretest. Self-concept/perceived competence was assessed first, followed by the motor skill assessment.

For the pretest period (June 27-28), children arrived at the testing site and were greeted by the student investigator and then randomly assigned into a group of three children. In order to standardize the activity of each student immediately prior to the administration of the perceived competence instrument, a name learning game was played. After the children were assigned to a station, the appropriate perceived competence test was administered individually to each child by the station manager, videocamera operator, or data collection assistant. These tests were presented orally and took approximately 20 minutes to complete. Upon completion of the tests by each of the three children in a group, motor performance testing began.

The individual items of the TGMD and the quantitative aspects of performance were divided into three activity stations (see Table 2 for a list of activities at each station). Children were tested on a rotational system. Each group of three children was randomly assigned to one of the three activity stations. Thus, a total of nine children could be tested during each 90-minute time slot. At each of the three stations there was a station manager, videocamera operator, and a data collection assistant. The station manager remained at his/her station during all testing occasions and administered the items at that station to all the children. The videocamera operator also remained at his/her assigned station during all testing occasions and filmed the performance of the children. The data collection assistant moved from station-to-station with his/her group of children. Children remained at each station for approximately 15 minutes until each child was tested and then moved to the next station until all the skills had been tested. Children wore numbered identification tags and all qualitative

Table 2
Station Activities

Station 1	Station 2	Station 3
Run[a]	Long-Jump[a]	Strike
Gallop	Skip	Catch
Hop	Slide	Kick
Leap	Bounce	Throw[a]

Note. [a]Indicates a measure for both the TGMD and quantitative aspects of performance.

performances were videotaped for later evaluation. Measures of distance on the softball throw and long jump, and measures of speed on the 20-yard dash were recorded immediately after the performance. Students spent approximately 15 minutes at each of the 3 stations for an approximate total motor performance testing time of 45 minutes.

In order to obtain the "first week" data, the fifth day of class (July 12) began with the administration of the perceived competence instruments. Children were pulled from the class setting in order to take the test. The tests were administered individually and therefore an additional two administrators were necessary for all children in a class to take the test during one 40-minute class period. Test administrators explained and administered the tests to their individual children according to the directions specified in the manuals. Following the completion of the test, children were brought back into the class and the second group took the tests. For the EMI/NI group which contained only seven children, seven test administrators were randomly selected from all available administrators to individually administer the instruments to the class.

The frequency and quality of interaction patterns were assessed using the DAC during the instructional period of the study (June 29 - July 27). Of the 16 days of classes, selected time slots on every third day of class were videotaped, resulting in five days of recording. During each 40-minute session of these five days, one 10-minute segment of class was recorded. The time-sampled segments of recording were randomly selected from a stratified list of times so that different portions of each class would be recorded across the four weeks of instruction (see Appendix E). Because the focus of this instrument is on the teacher and his/her methods of interaction with students, the video-recorder followed the head teacher during the entire ten-minute segment of recording. Students wore assigned identification numbers during the instructional portion of the study on the days they were videotaped. These nametags enabled the evaluators of the videotaped segments to identify the individual student to whom or from whom a behavior was directed. Audio tapes were used in conjunction with the video taping to assist in identifying the types of teacher-student interactions. Each teacher wore a wireless clip-on microphone during audio-recorded sessions. The schedule for audio recordings was identical to that for video recording.

In summary, the pretest began with the administration of the self-concept instruments, followed by motor performance testing. Children were scheduled into 90-minute slots for testing during the pretest period. The instructional period included administration of the self-concept instruments on the fifth day of class and selected segments of video-taping of teacher-student interactions. The procedures for the posttest period were identical to the pretest procedures.

The feasibility of the testing protocol was tested in a pilot study. Three children were selected for testing. All children were scheduled for a 90-minute session and were tested in motor skills and perceived competence in a group as described previously. The pilot study revealed that the protocol as described above was appropriate for the purposes of the study.

Instruction. Both EMI and NH children were randomly assigned to a four-week summer session of MPS at Michigan State University. One EMI child could only participate in the program during the afternoon, and was therefore assigned to that section prior to randomization of the other subjects. MPS provides a laboratory setting for teaching motor skills to children aged 5 to 16 years. The MPS program was selected as a setting for this study for four reasons. First, the structure of MPS allowed for random assignment of subjects to groups. Secondly, the MPS setting allowed for maximum control of extraneous variables. Thirdly, the Director of MPS expressed a willingness to cooperate with the details of this study. Finally, the use of MPS facilities and equipment allowed for maximum cost effectiveness.

There were two INT classes and two NI classes. The two INT classes consisted of a ratio of 4 EMI students to every 13-14 NH students for a total class size of 17 or 18. One of the NI classes consisted of 7 EMI students while the other contained 18 NH children. This class structure is represented in Table 3. The EMI/NH ratio of 4:14 was necessary in order to assure an adequate sample size of EMI subjects for statistical analyses.

Each class met for four weeks, Monday through Thursday, June 29 to July 27, 1988. Each of the resulting 16 class instruction days required a two-hour commitment from the subjects. Classes were taught on a rotational basis. That is, in order to fit within the structure of the

Table 3
Class Sizes

	Children		
Group	EMI	NH	Total
#1 INT	4	13	17
#2 INT	4	14	18
#3 NI-EMI	7	0	7
#4 NI-NH	0	18	18
TOTAL	15	45	60

Note. INT = Integrated;
NI-NH = Nonintegrated-nonhandicapped;
NI-EMI = Nonintegrated-EMI

current MPS summer program, on each day classes were broken into three 40-minute sessions. For each of the four groups of subjects, two class sessions emphasized locomotor and object-control skills (e.g., soccer and softball), while the remaining class session was devoted to instruction in swimming skills. The swimming section was not a part of this study. Swimming was offered in order to fit into the structure of the MPS program and was taught by MPS personnel. Class schedules are reported in Table 4.

The soccer and softball classes were held outdoors. Separate gymnasiums were available for both the soccer and softball classes in the event of inclement weather. The MPS facilities and equipment/supplies were sufficient to enable all children to be able to participate and practice the activites during each lesson without having to wait for equipment to become available.

Table 4
Class Schedules

	Class Times		
Group	9:30-10:10	10:15-10:55	11:00-11:40
INT GROUP 1	SOCCER	SOFTBALL	SWIMMING
INT GROUP 2	SWIMMING	SOCCER	SOFTBALL
NI-NH GROUP 3	SOFTBALL	SWIMMING	SOCCER
Group	11:45-12:20	12:25-1:05	1:10-1:50
NI-EMI GROUP 4	SWIMMING	SOCCER	SOFTBALL

Note. INT = Integrated; NI-NH = Nonintegrated-nonhandicapped; NI-EMI = Nonintegrated-EMI

Justification for the total instructional time was based upon the total class times reported by other researchers (Rarick & Beuter, 1985). Ulrich and Ulrich (1984) found that after 15 hours of instruction and practice time, the TGMD was capable of discriminating significant gains in performance. Twenty one hours of instruction also closely approximates the amount of time a student would be in physical education in a school if classes met 30 minutes per day, three days per week over a period of 14 weeks (approximately half of a school year).

A curriculum for soccer and softball was designed with daily lesson plans directed toward improvement of all areas of fundamental motor skills (see Appendix C). Such a curriculum would be representative of the intent of most physical education classes designed for this age group. There was sufficient equipment and space available so that each child could participate in the various activities at all times. Areas and skills which were specifically addressed in the curriculum included locomotor patterns (i.e., running, skipping, hopping, jumping, sliding, and galloping) and object manipulation (i.e., throwing, catching, kicking, striking, and bouncing) in game and individual and group practice formats. The sport of soccer emphasizes the skills of running, jumping, throwing, catching, and kicking. Softball specifically emphasizes throwing, catching, running and striking. The curriculum for both classes included warm-ups and agility training emphasizing skipping, hopping, sliding and galloping. This main body of the instructional time totaled approximately 35 minutes per class session. The remaining 5 minutes were accounted for in preparing for and moving to the next class section.

Each activity class was taught by one head teacher and two assistants. Thus, a total of six instructors were needed to teach soccer and softball. Whereas the children moved from class to class, instructors were assigned to teach the same activity throughout the instructional program. By using this approach, control over teacher influence on a specific group was attained. Therefore changes in performance due to teacher differences were minimized as all children were taught by each instructor on an equal basis in regard to time and subject matter (see Table 5). Portions of the instructional period were videotaped. This was accomplished by the author and one data collection assistant.

Table 5
Assignment of Teachers

Group	Class Offerings		
INT	SOCCER Teacher A Assts 1&2	SOFTBALL Teacher B Assts 3&4	SWIMMING MPS staff
INT	SWIMMING MPS staff	SOCCER Teacher A Assts 1&2	SOFTBALL Teacher B Assts 3&4
NI-NH	SOFTBALL Teacher B Assts 3&4	SWIMMING MPS staff	SOCCER Teacher A Assts 1&2
NI-EMI	SWIMMING MPS staff	SOCCER Teacher A Assts 1&2	SOFTBALL Teacher B Assts 3&4

Note. INT = Integrated; NI-NH = Nonintegrated-nonhandicapped; NI-EMI = Nonintegrated-EMI

Personnel

Testing and instructional period staff. In summary, the study involved the following personnel:

1. Three videocamera operators (testing and instructional period)
2. Three station managers (testing period only)
3. Three data collection assistants (testing periods only)
4. Two teachers (instructional period only, one each for soccer and softball)
5. Four assistant instructors (instructional period only, two each for soccer and softball)
6. Swim instructors hired by MPS (not part of study)
7. Two DAC tape evaluators (student investigator and one other station manager)
8. Two qualitative motor performance tape evaluators (student investigator and one other station manager)
9. Two additional administrators of the perceived competence instruments (instructional period only)

Criteria for hiring/selection. Procedures for the hiring of teachers conformed to affirmative action guidelines. That is, in hiring teachers, there was no discrimination on the basis of race, ethnicity, gender, creed, age, or handicapping condition. Position announcements were posted through Student Services at Michigan State University and displayed on bulletin boards in the physical education buildings on campus. In an effort to keep as close as possible to hiring procedures in Michigan schools, the following minimal criteria were met for the head teacher of each class.

1. Senior year (or higher) of undergraduate studies with a major in physical education.

2. Student teaching experience completed or other teaching experience deemed equivalent.

3. At least one adapted physical education course in undergraduate or graduate education.

The assistant instructors and swimming staff were not required to meet the above criteria. These personnel were selected from persons who applied to work in the MPS program. Applicants were selected based on past teaching experience and knowledge of the sport activity. It was not required that these personnel have the same qualifications as the head teacher as they were serving in an assistant role to a qualified instructor.

The videocamera operators, station managers, and testing asistants were recruited from available graduate students in physical education and other individuals who qualified for selection. Criteria for selection was based upon the ability to attend all testing occasions and training sessions.

Training. All individuals involved in testing and teaching in this research program received training. The procedures for training the testing staff varied depending on the responsibility of the individuals. Table 6 describes an overview of the responsibility of each tester and teacher as it related to the training process.

The station managers were trained in the administration of the TGMD and quantitative motor performance items for the particular station which they managed. For example, the manager of Station 1 was trained in administering the run, gallop, hop, and leap. Station managers also were trained in the administration of the Verbal Scale and Pictoral Scale of perceived competence. Training in motor performance and perceived competence testing procedures was accomplished in two phases. The first phase (testing orientation) involved an explanation of the

Table 6
Training Program

		Training Sessions	
		Orientation	Practice/Specific Instruction
TESTERS	Station Manager	4/30 Motor Performance 5/7 Perceived Competence	4/30 Motor Performance 5/7 Perceived Competence
	Data Collection Assistant	4/30 Motor Performance 5/7-Perceived Competence	4/30 Motor Performance 5/7 Perceived Competence
	Videocamera Operators	4/30 Motor Performance 4/30 Class Filming 5/7 Perceived Competence	4/30 Motor Performance 4/30 Class Filming 5/7 Perceived Competence
	DAC Raters	5/21 DAC Instrument	5/21-DAC Instrument
	Four Additional Perceived Competence Administrators	5/7 Perceived Competence	5/7 Perceived Competence
	TGMD Examiners	5/28 TGMD Instrument	5/28 TGMD Instrument
TEACHERS	Head	5/13 Strategies of Teaching	5/13 Soccer and Softball Lesson Plans
	Assistant	5/13 Strategies of Teaching	5/13 Soccer and Softball Lesson Plans

administration of the instruments, while the second phase (specific practice) involved practice in administering the instruments to each other. For perceived competence administration training, the practice portion involved role play administration of the instruments. Those participating in this phase of training practiced in groups of three. One individual administered the test, one took the test, and the other participated as a critical observer. The critical observer listened to things such as voice inflection or nonverbal gestures which might bias a subject to select a favorable response. All individuals participated in each role. Training in the testing orientation and specific practice was accomplished on April 30 for motor performance and May 7 for perceived competence. Training on each of these days lasted two hours. The student investigator conducted both training sessions.

The videocamera operators were trained in the operation of the videocamera equipment. These individuals were also trained in the administration of the Verbal Scale and Pictoral Scale of perceived competence. These personnel attended the test orientation and specific practice phases of the motor performance (April 30) and perceived competence (May 7) training sessions. Videocamera operators videotaped the station managers as they practiced administering the motor performance tests on each other during the specific practice phase. These personnel also were involved in the role play practice of the perceived competence instruments.

The data collection assistants were responsible for recording performances on quantitative motor performance activities. They also administered the perceived competence scales. Thus, the training for these personnel also was accomplished in two sessions. The data collection assistants were present at the testing orientation and specific practice phases of both the motor performance (April 30) and perceived competence (May 7) training sessions. The motor performance specific practice session involved opportunity to practice recording the 20-yard dash, long jump, and throw for distance. Interrater reliability was established by comparing the recorded scores of the data collection assistants during the training session with the student investigator, who has extensive experience in recording these performances through data collection at Michigan State University. An interrater reliability of .91 was obtained.

Because of the need to administer the perceived competence tests individually, two additional test administrators were needed for the "first week" testing occasion. The individuals were selected based on the criteria of the ability to attend the training session. These individuals were trained in the administration of the perceived competence instruments during the orientation and specific practice phases on May 7.

Two graduate students were trained in the use of the DAC. Training of the evaluators was accomplished by observing recordings of the interactions of a class of second and third grade children involved in MPS during the Spring of 1988. Evaluators practiced tallying the interactions on the videotape according to the format of the DAC. Training of the evaluators to a mastery level was accomplished with approximately 20 hours of practice (Martinek & Mancini, 1983). Training also involved an orientation and specific practice session on May 21. Coding of the recorded segments of the soccer and softball classes took place after satisfactory performance by the evaluators was demonstrated.

Tapes of performance on the TGMD test items were evaluated by the student investigator and one other trained observer. Both raters were experienced in evaluating qualitative motor performance through research experiences at Michigan State University. Training also involved orientation and specific practice phases. The specific practice phase consisted of analyzing the performance tapes of three children from the pilot study. Interrater reliability was established between the evaluators by comparing the reported performance. An interrater reliability score of .97 was achieved. The pretest tapes were evaluated during the instructional period, and the posttest tapes were evaluated during the two weeks following the conclusion of the instructional program.

Teachers were told of the purpose of the study only as it related to examining motor performance after four weeks of instruction. Information regarding characteristics of the population were not revealed until completion of the study. That is, teachers were not informed that certain children had been identified as EMI or that the effects of integration were being examined. The teachers were trained during a two-hour orientation session May 13. This training was in a lecture/discussion format and emphasized the philosophy of the MPS. Specific instruction related to soccer and softball lesson plans was also discussed. Information was disseminated on the following teaching strategies:

1. Appropriate content/organization: Teachers were instructed to follow the lesson plans designed for the class.

2. Demonstration/lecture time: Teachers were instructed to keep explanations and demonstrations brief. They were instructed not to

overload the children with too much information at one time. Lesson plans were designed so that a small focal point could be described/demonstrated briefly and then practiced by the children.

3. Maximum participation: The concept that children learn best when given maximum opportunity to participate was emphasized. It was also stressed that ample equipment as indicated on the lesson plans should always be made available to ensure maximum participation.

4. Modeling: It was emphasized that whenever possible, demonstration should be used in place of, or in addition to, pure lecture or description. Teachers were instructed to model appropriate performance for children to observe.

5. Feedback: It was stressed that comments should be given to a performer immediately following performance whenever possible. They were instructed that the feedback should be specifically related to the task.

6. Positive reinforcement: Teachers were instructed to be enthusiastic in their approach to teaching and that feedback should be stated in a positive manner with as much encouragement as possible.

7. Individualization: Teachers were informed that a variety of skill levels would be likely in any physical education setting. Emphasis was placed upon the need for flexibility in applying the lesson plan structure. Some children are able to move forward more rapidly in skill acquisition than others. The teacher is responsible for attending to the needs of all skill levels.

8. Behavior management: Instruction on how to handle disruptions and lack of participation was emphasized.

Data Analyses

Hypothesis 1. The first hypothesis proposed for this study stated that EMI/INT children would experience greater gains in qualitative motor performance than EMI/NI children. It was also proposed that NH/INT children would not differ from NH/NI children in qualitative motor performance. Comparisons were made between EMI/INT and EMI/NI on the TGMD locomotor subtest and object-control subtest for the pretest and the posttest. The NH/INT and NH/NI scores were also compared on the locomotor subtest and object-control subtest for the pretest and posttest. A one-way MANOVA was used to compare the EMI/INT and EMI/NI on the locomotor and object-control subtests. The same procedure was used to compare the NH/INT and NH/NI locomotor and object-control subtest scores. All comparisons were done using the Statistical Package for the Social Sciences (SPSS-X, 1985) with a significance value of $P < .05$ (see Table 7).

Hypothesis 2. The second hypothesis proposed for this study stated that EMI/INT children would experience greater gains in quantitative motor performance than EMI/NI children. It was also proposed that NH/INT children would not differ from NH/NI children in quantitative motor performance. Comparisons were made between EMI/INT and EMI/NI on the standing long jump, 20-yard dash, and softball throw for distance. The NH/INT and NH/NI scores were also compared on the same measures. Statistical analyses involved a one-way MANOVA for comparing the EMI/INT and EMI/NI on the means for the three test items. The same procedure was used to compare the NH/INT and NH/NI on the three items. All comparisons were done using the Statistical Package for the Social

Sciences (SPSS-X, 1985) with a significance value of $P < .05$ (see Table 7).

Hypothesis 3. The third hypothesis proposed a dip in perceived physical competence for the EMI/INT group after the first week. For all other comparisons it was proposed that no differences would exist between integrated and nonintegrated groups on any testing occasions. For these measures, a repeated measures design consisting of a pre-test, 1st week, and post-test schedule was used to determine changes in self concept. The Verbal Scale and Pictoral Scale were used for assessing this variable.

Hypothesis 4. The final hypothesis stated that significant differences would exist between EMI and NH groups in frequency and quality of dyadic teacher-student interactions (see Table 7). Equally important was a comparison of the frequency and quality of interactions as they related to class placement. Teacher-student interactions were examined by tallying interactions according to the DAC. The following group comparisons were made in order to determine whether differences exist in the following proposed directions: EMI > NH, EMI/INT = EMI/NI, NH/INT = NH/NI. A one-way ANOVA on the four groups was used to describe differences among groups on the dependent variables measured by the DAC.

Table 7
Statistical Treatment of Data

HYPOTHESIS	DEPENDENT VARIABLE	TESTING SCHEDULE	STATISTICAL ANALYSIS
1) Significant differences will exist in qualitative aspects of motor performance in the direction and groups indicated below Pretest a) EMI/INT = EMI/NI b) NH/INT = NH/NI Posttest c) EMI/INT > EMI/NI d) NH/INT = NH/NI	Test of Gross Motor Development (TGMD) -Locomotor Subtest -Object Control Subtest	Pretest Posttest	Pre and Posttest Locomotor/object-control One-way MANOVA Planned comparisons between groups on pretest and posttest
2) Significant differences will exist in quantitative aspects of motor performance in the direction and groups indicated below Pretest a) EMI/INT = EMI/NI b) NH/INT = NH/NI Posttest c) EMI/INT > EMI/NI d) NH/INT = NH/NI	General gross motor assessment -Softball throw for distance -Standing long jump -20 yard dash	Pretest Posttest	One-way MANOVA Planned comparisons between groups on pretest and posttest
3) Significant differences will exist in perceived competence in the direction and groups as indicated below Pretest a) EMI/INT =EMI/NI b) NH/INT = NH/NI 1st week c) EMI/INT < EMI/NI Athletic competence Physical competence d) EMI/INT = EMI/NI Scholastic competence Peer social competence Behavioral conduct Cognitive competence Peer acceptance Maternal acceptance General self-worth e) NH/INT = NH/NI Posttest f) EMI/INT = EMI/NI g) NH/INT = NH/NI	Self-Perception Profile for Children (Verbal Scale) -Scholastic competence -Athletic competence -Peer social acceptance -Behavioral conduct -Physical appearance -General self-worth Pictoral Scale of Perceived Competence and Social Acceptance for Young Children -Competence domain Physical competence Cognitive competence -Social domain Maternal acceptance Peer acceptance	Pretest 1st Week Posttest	One-way MANOVA One-way ANOVA to determine pretest to first-week to posttest changes within groups

Table 7 (Cont'd.)

HYPOTHESIS	DEPENDENT VARIABLE	TESTING SCHEDULE	STATISTICAL ANALYSIS
4) Significant differences will exist in frequency of teacher-student dyadic interactions in the direction and groups as indicated below	Dyadic Adaptation of Cheffer's Adaptation of Flander's Interaction Analysis System (DAC)	Random Selection of 5 of 16 days to be recorded for one 10 minute segment per day.	MANOVA EMI/INT vs EMI/NI
Frequency total: EMI > NH	Total Score		MANOVA NH/INT
Quality: Direction Commands EMI > NH Praise/Encouragement NH > EMI Criticism EMI > NH Acceptance of ideas and feelings NH > EMI			vs NH/NI One-way ANOVA ON ALL FOUR GROUPS

Note. EMI refers to educable mentally retarded; NH refers to nonhandicapped; INT refers to integrated; NI refers to nonintegrated

CHAPTER 4

RESULTS

This chapter will examine the results of a four-week physical activity program on the qualitative and quantitative motor performance, perceived competence, and teacher-student interaction patterns of EMI and NH children. The impact of the program on the EMI children will be presented first, followed by an examination of the impact on the NH children. The goal of these first two sections is to address whether the INT and NI groups: (a) differed on the pretest, (b) showed significant changes in scores from pretest to posttest, and (c) demonstrated differences which may be attributed to their educational setting. The final section will examine the teacher-student interaction patterns for both the EMI and NH groups.

Impact of Integration in Physical Education on EMI Children

The impact of integration on qualitative and quantitative motor performance was tested by examining whether significant differences in performance existed between EMI/INT and EMI/NI children. The testing occasions included pretest and posttest evaluations using the TGMD for the qualitative testing, and the long jump, 20-yard dash, and softball throw for the quantitative testing. The impact of integration on self-concept/perceived competence was tested by the Pictoral Scale of Perceived Competence. Testing for this variable included pretest, first week, and posttest occasions.

Qualitative motor performance: Locomotor and object-control subtests. A one-way MANOVA was used to compare the EMI/INT and EMI/NI groups (independent variable) on the scores of the locomotor and object-control subtests of the TGMD (dependent variables). The dependent variables are related, and therefore a MANOVA was determined to be the appropriate analysis (Ulrich, 1985). The MANOVA was used on the pretest to determine whether groups were comparable for subsequent analyses without the need for covarying initial group differences. Student's t-Tests were then used to determine whether significant changes took place from pretest to posttest for each group. A MANOVA was again used on the posttest to determine whether the groups differed from each other after the four weeks of instruction. The mean scores of each group on the pretest and posttest are presented in Table 8.

Table 8
Means and Standard Deviations for Locomotor and Object-Control Subtests: EMI

		EMI/INT n=8	EMI/NI n=7
Locomotor Subscale[a]			
Pretest	M	14.75	13.86
	SD	7.13	6.31
Posttest	M	16.38	15.14
	SD	6.93	6.79
Object-Control Subscale[b]			
Pretest	M	7.75	6.86
	SD	4.59	4.67
Posttest	M	12.38	10.86
	SD	3.50	3.24

Note. Higher scores represent better performances
[a]Maximum score = 26. [b]Maximum score = 19.

It was hypothesized that the EMI/INT and EMI/NI groups would not differ in scores on the locomotor and object-control subtests of the TGMD on the pretest. No significant differences in qualitative motor performance were found between these groups on the pretest, F(2,12) = 0.07, p > .05. Thus the hypothesis was supported, and these groups were considered comparable for subsequent analyses.

An a priori t-Test evaluation was used to determine whether significant changes occurred in qualitative motor performance for the EMI/INT and EMI/NI groups from pretest to posttest occasions. This analysis was designed to give an indication of whether improvement in motor performance took place over the four-week period of instruction for either group. The EMI/INT (t(14) = -0.46, p > .05) and EMI/NI (t(12) = -0.37, p > .05) groups did not improve significantly on the locomotor subtest. For the object-control subtest the EMI/INT group improved significantly pretest to posttest, t(14) = -2.27 p < .05. The EMI/NI group did not significantly improve on the object-control subscale, but a trend toward improvement was observed, t(12) = -1.86 p < .10. These results indicate that no significant improvement in qualitative motor performance took place for the locomotor activities such as running, hopping, jumping, and sliding. The EMI/INT children did improve in qualitative measures of motor performance on the object-control subscale which involved activities such as throwing, striking, and kicking. The EMI/NI group however, did not show significant gains in the object-control skills, although a trend toward improvement was evident. Therefore partial support was evident for the hypothesis that the EMI children in both educational settings would significantly improve from pretest to posttest occasions.

For the posttest, the hypothesis stated that the EMI/INT and EMI/NI groups would differ in qualitative motor performance scores as measured by the subtests of the TGMD. Posttest comparisons between the two groups using MANOVA procedures revealed no significant group differences $F(2,12) = 0.42$ $\underline{P} > .05$. Thus, the hypothesis that the EMI/INT group would experience a greater gain in qualitative motor performance when compared to the EMI/NI was not supported.

Quantitative motor performance: Jump, dash, and throw. A one-way MANOVA was used to compare the EMI/INT and EMI/NI groups (independent variable) on the scores of the jump, dash, and throw (dependent variable). The mean scores of each group on the pretest and posttest are presented in Table 9.

It was hypothesized that the EMI/INT and EMI/NI groups would not differ in scores on the dash, jump, and throw on the pretest. No significant differences in quantitative motor performance were found between these groups on the pretest $F(3,10) = 2.22$, $\underline{P} > .05$. Thus the hypothesis was supported, and these groups were considered comparable for future analyses.

An a priori t-Test evaluation was used to determine whether significant changes occurred in quantitative motor performance for the EMI/INT and EMI/NI from pretest to posttest occasions. This analysis was designed to give an indication of whether improvement in motor performance took place over the four-week period of instruction for either group. The EMI/INT group did not improve significantly in the dash, $t(14) = 0.06$, $\underline{P} > .05$; jump, $t(14) = -0.56$, $\underline{P} > .05$; or throw, $t(14) = 0.24$, $\underline{P} > .05$. The EMI/NI group also did not improve significantly in the dash, $t(10) = -0.09$, $\underline{P} > .05$; jump, $t(10) = -0.41$,

Table 9

Means and Standard Deviations for

20-Yard Dash, Long Jump, and Softball Throw: EMI

		EMI/INT n=8	EMI/NI n=7
20-Yard Dash[a] (seconds)			
Pretest	M	5.26	5.42
	SD	1.83	1.29
Posttest	M	5.21	5.48
	SD	1.43	1.30
Jump for Distance[b] (inches)			
Pretest	M	38.63	31.18
	SD	13.52	11.16
Posttest	M	36.75	33.67
	SD	1.44	1.30
Throw for Distance[b] (feet)			
Pretest	M	25.50	27.50
	SD	15.48	21.92
Posttest	M	29.88	28.33
	SD	16.33	16.80

Note. [a]Lower scores represent better performances. [b]Higher scores represent better performances.

P > .05; or throw, t(10) = -0.07, P > .05. Thus, for the quantitative measures, no significant improvement in motor performance resulted after four weeks of instruction. The hypothesis that improvement would take place was not supported.

For the posttest, it was hypothesized that the EMI/INT and EMI/NI groups would differ in quantitative motor performance scores as measured by the dash, jump and throw. Posttest comparisons between the two groups using MANOVA procedures revealed no significant group differences F(3,10) = 0.04, P > .05. Thus, the hypothesis that the EMI/INT group would experience a greater gain in quantitative motor performance when compared to the EMI/NI was not supported.

Perceived competence. It was hypothesized that the EMI/INT and EMI/NI groups would not differ in perceived competence on the pretest administration of the Pictoral Scale of Percieved Competence. A one-way MANOVA was used to test whether the two EMI groups (independent variable) differed on the pretest for the cognitive, peer, physical, and maternal portions of the perceived competence test (dependent variable). The means and standard deviations for each group on the pretest, first-week, and posttest administration are listed in Table 10. No significant differences existed between groups on the pretest F(4,10) = 0.13, P > .05. The hypothesis was supported and these groups were considered equal for future analyses.

Further testing was accomplished using ANOVA procedures with a repeated measures design to determine whether either of the two EMI group mean scores changed significantly from pretest to first-week to posttest on the four individual domains of the Pictoral Scale. This analysis was designed to answer the question of whether the EMI/INT or

Table 10
Means and Standard Deviations for
Pictoral Scale of Perceived Competence: EMI

	n=8 EMI/INT		n=7 EMI/NI	
Variables	M	SD	M	SD
Cognitive Domain				
Pretest	19.38	3.74	19.00	3.32
First Week	18.25	4.95	20.14	1.22
Posttest	18.63	4.41	21.00	2.52
Peer Domain				
Pretest	17.38	5.76	18.29	2.98
First Week	19.00	5.43	19.14	1.95
Posttest	17.88	7.43	20.71	1.70
Physical Domain				
Pretest	19.75	4.83	19.29	2.69
First Week	19.88	2.99	19.43	2.23
Posttest	19.63	3.62	20.43	2.44
Maternal Domain				
Pretest	18.00	1.73	17.60	3.87
First Week	16.38	5.01	17.86	2.61
Posttest	17.25	5.75	19.29	1.89

Note. Higher scores represent better performances.
[a]Maximum score = 26. [b]Maximum score = 19.

EMI/NI changed in perceived competence on any of the testing occasions for each of the domains of the Pictoral Scale.

The EMI/INT group was hypothesized to decrease in perceived competence on the physical ability domain on the first week while all other domains would remain the same. The ANOVA procedures yielded no significant group differences between pretest, first week and posttest for the EMI/INT group on the cognitive domain, $F(2,21) = 0.14$, $\underline{p} > .05$; peer acceptance, $F(2,21) = 0.14$, $\underline{p} > .05$; physical ability, $F(2,21) = 0.01$, $\underline{p} > .05$; or maternal acceptance, $F(2,21) = 0.01$, $\underline{p} > .05$. Thus, the hypothesis was partially supported. The domain of physical ability did not indicate a loss in perceived competence during the first week as hypothesized. No other domains revealed changes in perceived competence and therefore this portion of the hypothesis was supported.

For the EMI/NI group, it was hypothesized that the perceived competence would remain unchanged through all testing occasions for all four domains of the Pictoral Scale. The ANOVA procedures indicated that no significant differences occurred from pretest to first week to posttest occasions on the cognitive domain, $F(2,18) = 1.12$, $\underline{p} > .05$; peer acceptance domain, $F(2,18) = 2.04$, $\underline{p} > .05$; physical ability domain, $F(2,18) = 0.45$, $\underline{p} > .05$; or maternal acceptance domain, $F(2,18) = 0.97$, $\underline{p} > .05$. Thus, the hypothesis was supported. The EMI/NI group did not change in perceived competence on any of the three testing occasions.

The EMI/INT and EMI/NI groups were hypothesized to differ significantly in perceived competence on the first-week administration of the test. It was predicted that the EMI/INT group would experience a dip in perceived competence when compared to the EMI/NI group on this occasion. The MANOVA procedures indicated that the groups did not differ in perceived competence on the first week, $F(4,10) = 0.32$, $p > .05$. The hypothesis was not supported.

For the posttest occasion, the hypothesis stated that the EMI/INT and EMI/NI groups would not differ in perceived competence as measured by the Pictoral Scale. MANOVA procedures found no significant differences between groups, $F(4,10) = 0.31$, $p > .05$. The hypothesis that no differences would exist between EMI/INT and EMI/NI on the posttest occasion was supported.

Impact of Integration in Physical Education on NH Children

The impact of integration on qualitative motor performance was tested by examining whether significant differences in performance existed between NH/INT and NH/NI. The testing occasions included pretest and posttest evaluations using the TGMD for qualitative testing and the long jump, 20-yard dash, and softball throw for quantitative testing. The impact of integration on perceived competence was tested by the Pictoral Scale of Perceived Competence and the Verbal Scale. Testing for this variable included pretest, first week, and posttest occasions.

Qualitative motor performance: Locomotor and object-control subtests. A one-way MANOVA was used to compare the NH/INT and NH/NI groups (independent variable) on the scores of the locomotor and object-control subtests of the TGMD (dependent variable). The dependent variables are related, and therefore a MANOVA was determined to be the appropriate analysis (Ulrich, 1985). The MANOVA was used on the pretest to determine whether groups were comparable for subsequent analysis without the need for covarying initial group differences. Student's t-

Tests were then used to determine whether significant changes took place from pretest to posttest for each group. A MANOVA was again used on the posttest to determine whether the groups differed from each other after the four weeks of instruction. The mean scores of each group on the pretest and posttest are presented in Table 11.

Table 11
Means and Standard Deviations for Locomotor and Object-Control Subtests: NH

		NH/INT n=27	NH/NI n=18
Locomotor Subtest[a]			
Pretest	M	20.46	20.17
	SD	2.60	3.07
Posttest	M	21.92	22.22
	SD	1.74	2.10
Object-Control Subtest[b]			
Pretest	M	11.85	12.72
	SD	2.71	3.92
Posttest	M	15.08	15.44
	SD	2.84	2.06

Note. Higher scores represent better performances.
[a]Maximum score = 26. [b]Maximum score = 19.

It was hypothesized that the NH/INT and NH/NI groups would not differ in scores on the locomotor and object-control subtests of the TGMD on the pretest. No significant differences in qualitative motor performance were found between these groups on the pretest $F(2,41) = 0.48$, $p > .05$. Thus the hypothesis was supported and these groups were considered comparable for subsequent analyses.

A priori t-Test evaluation was used to determine whether significant changes occurred in qualitative motor performance for the NH/INT and NH/NI from pretest to posttest occasions. This analysis was designed to give an indication of whether improvement in motor performance took place over the four-week period of instruction for either group. The NH/INT ($t(50) = -2.38$, $P < .05$) and NH/NI ($t(50) = -2.34$, $P < .05$) groups significantly improved on the locomotor subtest. For the object-control subtest, the NH/INT group improved significantly from pretest to posttest, $t(50) = -4.20$ $P < .05$. The NH/NI also significantly improved on the object-control subscale, $t(50) = -2.61$ $P < .05$. These results indicate that significant improvement in qualitative motor performance took place for locomotor activities such as running, hopping, jumping, and sliding for both NH groups. The NH/INT and NH/NI children also improved in qualitative measures of motor performance on the object-control subscale which involved activities such as throwing, striking, and kicking. Therefore, the hypothesis that the NH children in both educational settings would significantly improve from pretest to posttest occasions was supported.

For the posttest, the hypothesis that the NH/INT and NH/NI groups would not differ in qualitative motor performance scores as measured by the subtests of the TGMD was tested. Posttest comparisons between the two groups using MANOVA procedures revealed no significant group differences, $F(2,41) = 0.21$ $P > .05$. Thus, the hypothesis that the NH/INT and NH/NI groups would produce similar scores in qualitative motor performance on the posttest occasion was supported. The groups did not differ from each other in qualitative motor performance ability after the four-week instructional program.

Quantitative motor performance: Jump, dash, and throw. A one-way MANOVA was used to compare the NH/INT and NH/NI groups (independent variable) on the scores of the jump, dash, and throw (dependent variable). The mean scores of each group on the pretest and posttest are presented in Table 12.

The hypothesis that the NH/INT and NH/NI groups would not differ in scores on the dash, jump, and throw on the pretest was tested. No significant differences in quantitative motor performance were found between these groups on the pretest, $F(3,40) = 1.13$, $p > .05$. Thus the hypothesis was supported and these groups were considered comparable for future analyses.

A priori t-Test evaluation was used to determine whether significant changes occurred in quantitative motor performance for the NH/INT and NH/NI from pretest to posttest occasions. This analysis was designed to give an indication of whether improvement in motor performance took place over the four-week period of instruction for either group. The NH/INT group improved significantly in the jump, $t(50) = -2.09$, $p < .05$, but no significant changes occurred for the dash, $t(50) = -0.30$, $p > .05$, or throw, $t(50) = -0.52$, $p > .05$. The NH/NI group did not improve significantly in the dash, $t(34) = -0.79$, $p > .05$; jump, $t(34) = -1.48$, $p > .05$; or throw, $t(34) = -0.31$, $p > .05$. Thus, only the NH/INT group showed any significant improvement in the quantitative measures of motor performance, and that improvement was evidenced only in the jump for distance. No other improvement in quantitative motor performance after four weeks of instruction were found for either NH group.

Table 12
Means and Standard Deviations for
20-Yard Dash, Long Jump, and Softball Throw: NH

		NH/INT n=27	NH/NI n=18
20-Yard Dash[a] (seconds)			
Pretest	M	4.29	4.17
	SD	0.37	0.36
Posttest	M	4.35	4.27
	SD	0.47	0.40
Jump for Distance[b] (inches)			
Pretest	M	42.92	43.89
	SD	4.29	7.82
Posttest	M	45.48	47.33
	SD	4.54	6.08
Throw for Distance[b] (feet)			
Pretest	M	33.46	42.50
	SD	14.94	18.06
Posttest	M	34.62	44.33
	SD	13.16	17.61

Note. [a]Lower scores represent better performances.
[b]Higher scores represent better performances.

For the posttest, it was hypothesized that the NH/INT and NH/NI groups would not differ in quantitative motor performance scores as measured by the dash, jump and throw. Posttest comparisons between the two groups using MANOVA procedures revealed no significant group differences, $F(3,40) = 1.52$, $\underline{P} > .05$. Thus, the hypothesis that the NH/INT and NH/NI groups would not differ in quantitative motor performance after four weeks of instruction was supported.

Perceived competence: Pictoral scale. The Pictoral Scale of Perceived Competence was administered to the NH children who were under eight years of age. It should be noticed upon examining the reported degrees of freedom that this involved dividing the NH population into smaller groups to examine the perceived competence.

It was hypothesized that the NH/INT and NH/NI groups would not differ in perceived competence on the pretest administration of the Pictoral Scale of Perceived Competence. A one-way MANOVA was used to test whether the two NH groups (independent variable) differed on the pretest for the cognitive, peer, physical, and maternal portions of the perceived competence test (dependent variable). The means and standard deviations for each group on the pretest, first-week, and posttest administration are listed in Table 13. No significant differences existed between groups on the pretest, $F(4,16) = 1.81$, $\underline{P} > .05$. The hypothesis was supported, and these groups were considered equal for future analyses.

Further testing was accomplished using ANOVA procedures to determine whether either of the two NH group mean scores changed significantly from pretest to first-week to posttest on the four individual domains of the Pictoral Scale. This analysis was designed to

Table 13
Means and Standard Deviations for
Pictoral Scale of Perceived Competence: NH

Variables	NH/INT n=13 M	NH/INT n=13 SD	NH/NI n=8 M	NH/NI n=8 SD
Cognitive Domain				
Pretest	21.00	2.74	20.86	2.61
First week	21.23	2.13	20.38	3.42
Posttest	20.86	3.17	20.38	2.07
Peer Domain				
Pretest	18.15	2.67	17.00	2.45
First Week	17.00	2.80	16.88	3.94
Posttest	17.31	2.72	17.88	2.95
Physical Domain				
Pretest	21.15	2.34	19.29	3.04
First Week	21.00	1.92	20.50	2.07
Posttest	21.15	1.77	20.00	2.14
Maternal Domain				
Pretest	17.08	1.66	15.14	2.34
First Week	17.23	1.69	16.50	3.02
Posttest	17.54	2.37	17.50	2.73

Note. Maximum score attainable = 24. Higher scores represent higher perceived competence.

answer the question of whether the NH/INT or NH/NI changed in perceived competence on any of the testing occasions for each of the domains of the Pictoral Scale.

The hypothesis that the NH/INT and NH/NI groups would not change in perceived competence on any of the three testing occasions for any of the domains of the Pictoral Scale was tested. The ANOVA procedures yielded no significant group differences for the NH/INT group on the cognitive domain, $F(2,36) = 0.10$, $p > .05$; peer acceptance, $F(2,36) = 0.06$, $p > .05$; physical ability, $F(2,36) = 0.03$, $p > .05$; or maternal acceptance, $F(2,36) = 0.19$, $p > .05$. Thus, the hypothesis was supported. No changes in perceived competence was observed for any of the testing occasions on any of the domains of the Pictoral Scale.

For the NH/NI group, it also was hypothesized that the perceived competence would remain unchanged through all testing occasions for all four domains of the Pictoral Scale. The ANOVA procedures indicated that no significant differences occurred from pretest to first week to posttest occasions on the cognitive domain, $F(2,20) = 0.07$, $p > .05$; peer acceptance domain, $F(2,20) = 0.23$, $p > .05$; physical ability domain, $F(2,20) = 0.47$, $p > .05$; or maternal acceptance domain, $F(2,20) = 1.40$, $p > .05$. Thus, the hypothesis was supported. The NH/NI group did not change in perceived competence on any of the three testing occasions.

It was hypothesized that the NH/INT and NH/NI groups would not significantly differ in perceived competence on the first-week administration of the test. The MANOVA procedures indicated that the groups did not differ in perceived competence on the first week, F(4,16)

= 0.20, $\underline{P} > .05$. The hypothesis was supported indicating that there were no changes in perceived competence favoring one educational setting.

For the posttest occasion, the hypothesis stated that the NH/INT and NH/NI groups would not differ in perceived competence as measured by the Pictoral Scale. MANOVA procedures found no significant differences between groups, $F(4,16) = 0.93$, $\underline{P} > .05$. The hypothesis that no differences would exist between NH/INT and NH/NI on the posttest occasion was supported indicating that there were no changes favoring one educational setting.

Perceived competence: Verbal scale. The Verbal Scale of Perceived Competence was administered to the NH children who were eight years of age or older. This involved dividing the NH population into smaller groups for the analysis of perceived competence scores.

The hypothesis that the NH/INT and NH/NI groups would not differ in perceived competence on the pretest administration of the Verbal Scale of Percieved Competence was tested. A one-way MANOVA was used to test whether the two NH groups (independent variable) differed on the pretest for the scholastic, social, athletic, appearance, behavior, and global self-worth portions of the perceived competence test (dependent variable). The means and standard deviations for each group on the pretest, first-week, and posttest administration are listed in Table 14. No significant differences existed between groups on the pretest $F(6,16) = 0.97$, $\underline{P} > .05$. The hypothesis was supported and these groups were considered equal for future analyses.

Further testing was accomplished using ANOVA procedures to determine whether either of the two NH group mean scores changed

Table 14
Means and Standard Deviations for
Verbal Scale of Perceived Competence

	NH/INT n=13		NH/NI n=10	
Variables	M	SD	M	SD
Scholastic Domain				
Pretest	18.69	2.36	20.09	3.05
First Week	20.85	2.04	21.50	3.06
Posttest	21.23	1.88	21.70	3.95
Social Domain				
Pretest	19.39	2.22	20.46	3.14
First Week	20.08	2.36	19.20	4.26
Posttest	20.62	2.63	20.40	4.45
Athletic Domain				
Pretest	19.31	2.66	18.46	4.41
First Week	19.46	2.33	20.50	3.34
Posttest	20.23	2.42	21.70	3.30
Appearance Domain				
Pretest	19.85	2.41	19.46	4.44
First Week	19.15	2.23	19.80	4.54
Posttest	19.46	2.22	20.10	4.31
Behavior Domain				
Pretest	20.23	2.28	21.09	3.24
First Week	19.69	2.93	20.60	3.29
Posttest	20.46	2.57	21.00	3.80
Global Domain				
Pretest	19.39	2.40	19.82	2.71
First Week	19.62	2.50	20.30	3.37
Posttest	19.85	2.41	21.70	2.83

Note. Maximum scores attainable = 24. Higher scores represent higher perceived competence.

significantly from pretest to first week to posttest on the six individual domains of the Verbal Scale. This analysis was designed to answer the question of whether the NH/INT or NH/NI changed in perceived competence on any of the testing occasions for each of the domains of the Verbal Scale.

It was hypothesized that the NH/INT and NH/NI groups would not change in perceived competence on any of the three testing occasions for any of the domains of the Verbal Scale. The ANOVA procedures found a significant difference on the scholastic competence domain for the NH/INT $F(2,36) = 5.52$, $\underline{p} < .05$. Post-hoc Scheffe' analysis revealed that the significant increases in perceived scholastic competence occurred from the pretest to first week $\underline{p} < .05$, and from pretest to posttest $\underline{p} < .05$. This indicates a steady increase in perceived scholastic competence for the NH/INT group from pretest to first week to posttest occasions. No significant changes from pretest to first week to posttest in perceived competence of the NH/INT group were found for the social acceptance domain, $F(2,36) = 0.85$, $\underline{p} > .05$; athletic competence domain, $F(2,36) = 0.52$, $\underline{p} > .05$; physical appearance domain, $F(2,36) = 0.30$, $\underline{p} > .05$; behavior domain, $F(2,36) = 0.30$, $\underline{p} > .05$; or global self-worth $F(2,36) = 0.19$, $\underline{p} > .05$. Thus, the hypothesis was partially supported. Changes in perceived competence were observed only for the NH/INT on the scholastic domain of the Verbal Scale.

For the NH/NI group, it also was hypothesized that the perceived competence would remain unchanged through all testing occasions for all six domains of the Verbal Scale. No significant changes from pretest to first week to posttest in perceived competence of the NH/NI group were found for the social acceptance domain, $F(2,28) = 0.33$, $\underline{p} > .05$;

athletic competence domain, $F(2,28) = 2.02$, $\underline{p} > .05$; physical appearance domain, $F(2,28) = 0.06$, $\underline{p} > .05$; behavior domain, $F(2,28) = 0.05$, $\underline{p} > .05$; or global self-worth, $F(2,28) = 1.11$, $\underline{p} > .05$. Thus, the hypothesis was supported. The NH/NI group did not change in perceived competence on any of the three testing occasions.

It was hypothesized that the NH/INT and NH/NI groups would not differ significantly in perceived competence on the first-week (midtest) administration of the test. The MANOVA procedures revealed that the groups did not differ in perceived competence on the midtest $F(6,16) = 0.68$, $\underline{p} > .05$. The hypothesis that there were no changes in perceived competence favoring one educational setting was supported.

For the posttest occasion, the hypothesis stated that the NH/INT and NH/NI groups would not differ in perceived competence as measured by the Verbal Scale. MANOVA procedures found no significant differences between groups $F(6,16) = 1.53$, $\underline{p} > .05$. The hypothesis that no differences would exist between NH/INT and NH/NI on the posttest occasion was supported thus no changes in perceived competence occurred that favored one educational setting over the other.

Teacher-Student Interaction Patterns with EMI and NH Children

Teacher-student interaction patterns were evaluated by examining the total number of interactions for each group. The four subcategories of direction and order statements, praise, criticism, and teachers' acceptance of student ideas also were examined. These categories were examined for the composite of both the soccer and softball classes, and for the soccer and softball classes separately.

Composite interaction patterns: Comparison of INT and NI groups. MANOVA evaluation was used to determine whether differences existed between EMI/INT and EMI/NI groups (independent variable) with the variables of direction/orders, praise, criticism, and teachers' acceptance of student ideas (dependent variables). Multivariate tests of significance revealed significant differences between groups $F(4,10) = 5.55$, $\underline{P} < .05$ for the composite of the soccer and softball classes. Significant differences were found on the Univariate F-tests for teachers' acceptance of student ideas $F(1,13) = 12.63$, $\underline{P} < .05$, direction/order $F(1,13) = 6.48$, $\underline{P} < .05$, praise, $F(1,13) = 5.40$, $\underline{P} < .05$, and criticism $F(1,13) = 4.85$, $\underline{P} < .05$. For each of these categories, the EMI/NI group received the greater number of interactions when compared to the EMI/INT (see Table 15).

ANOVA (EMI/INT or EMI/NI by total frequency) evaluation was used to determine whether significant differences occured between EMI/INT and EMI/NI groups (independent variables) in total frequency of interactions (dependent variable). This total score includes all 20 of the categories measured by the DAC instrument rather than just the four categories mentioned above. The results revealed that the EMI/INT and EMI/NI groups differed significantly, $F(1,13) = 11.07$, $\underline{P} < .05$. Examination of the means (see Table 15) indicate that the EMI/NI group received approximately 4 times greater frequency of total interactions when compared to the EMI/INT group.

MANOVA (EMI/INT and EMI/NI groups by interaction categories) was also used to determine whether significant differences existed between the NH/INT and NH/NI groups (independent variable) with the variables of direction/orders, praise, criticism, and teachers' acceptance of student ideas (dependent variables). Results indicated that the groups differed significantly, $F(4,41) = 5.09$, $p < .05$. Univariate F-tests revealed that these differences existed for the teachers' acceptance of student ideas category, $F(1,44) = 9.21$, $p < .05$. Evaluation of the means (see Table 15) indicate the NH/NI group received the greater frequency of interactions when compared to the NH/INT for the acceptance category. A trend was discovered with the NH/INT group receiving more frequent praise-oriented interactions when compared to the NH/NI, $F(1,44) = 3.69$, $p < .10$. Nonsignificant univariate F values were reported for the direction/order category, $F(1,44) = 0.02$, $p > .05$; and criticism, $F(1,44) = 2.67$, $p > .05$.

The NH/INT and NH/NI groups also were compared to determine whether significant differences existed between groups on the total frequency of

Table 15
Means and Standard Deviations for
DAC Composite Scores by Experimental Condition

	EMI/INT n=8		EMI/NI n=7		NH/INT n=27		NH/NI n=18	
Variables	M	SD	M	SD	M	SD	M	SD
Orders	1.67	2.46	7.13	5.49	2.06	2.26	1.96	1.66
Praise	0.92	1.58	2.89	1.71	1.24	1.44	0.56	0.52
Criticism	0.00	0.00	0.21	0.28	0.01	0.06	0.09	0.25
Acceptance	0.00	0.00	1.30	1.04	0.24	0.49	0.78	0.72
Total	4.58	7.04	19.64	10.39	5.42	5.61	5.91	4.09

Note. Higher scores represent a greater frequency of interactions.

interactions. ANOVA procedures revealed that no significant group differences existed, F(1,44) = 0.10, $p > .05$.

Composite interaction patterns: Comparison of EMI and NH groups. The quality and types of interactions for the soccer and softball teachers combined were evaluated using a one-way ANOVA (EMI or NH group X interaction categories). A table of means and standard deviations are provided in Table 16. Significant differences between the interaction patterns of EMI and NH groups were observed for two of the four variables.

Direction/order interactions were found to be significantly different between EMI and NH groups, F (1,59) = 6.18, $p < .05$. Evaluation of the means indicated that the EMI group received more than twice the amount of direction/order type of interactions when compared to the NH group. The findings supported the hypothesis stating that the

Table 16
Means and Standard Deviations for DAC Composite Scores by Group

	EMI n=15		NH n=45	
Variables	M	SD	M	SD
Orders	4.21	4.89	2.02	2.03
Praise	1.84	1.88	0.97	1.21
Criticism	0.10	0.21	0.04	0.17
Acceptance	0.61	0.96	0.45	0.64
Total	11.61	8.05	5.61	5.01

Note. Higher scores represent a greater frequency of interactions.

EMI group would receive significantly more direction/order type of interactions when compared to the NH group.

Praise was the second variable for which significant group differences were discovered, F (1,59) = 4.35, $\underline{P} < .05$. Examination of the means indicate that the EMI group received almost twice the frequency of praise oriented interaction. This finding was in the opposite direction of the proposed hypothesis.

No significant group differences were discovered between the EMI and NH groups on the variables of criticism, F (1,59) = 1.14, $\underline{P} > .05$; and acceptance of student ideas, F (1,59) = 0.54, $\underline{P} > .05$. Therefore, the hypotheses that the EMI would receive more frequent criticism and less frequent acceptance when compared to the NH was rejected.

The hypothesis stating that EMI children would receive a greater total frequency of interactions when compared to the NH children was supported, F (1,59) = 8.07, $\underline{P} < .05$. Thus, when all 20 categories of interaction were considered, the EMI group received a significantly greater frequency of interactions when compared to the NH group.

<u>Soccer class interaction patterns: Comparison of INT and NI groups.</u> MANOVA evaluation was used to determine whether differences existed between EMI/INT and EMI/NI groups with the variables of direction/orders, praise, criticism, and teachers' acceptance of student ideas. Multivariate tests of significance revealed significant differences between groups, F(4,10) = 4.67, $\underline{P} < .05$ for the soccer class. The univariate F-tests indicated that the significance occurred for the category of direction/order interactions, F(1,13) = 13.19, $\underline{P} < .05$. Examination of the means (see Table 17) indicate the EMI/NI group received approximately eight times the average interactions when

compared with the EMI/INT group. Significant differences were found for the category of teachers' acceptance of student ideas, F(1,13) = 5.30, $\underline{p} < .05$. The means indicate that the frequency of interactions favor the EMI/NI. No significant differences were found for the categories of praise, F(1,13) = 1.10, $\underline{p} > .05$; or criticism, F(1,13) = 1.71, $\underline{p} > .05$.

ANOVA evaluation of total frequency of interactions revealed that the EMI/INT and EMI/NI groups differed significantly F(1,13) = 10.57, $\underline{p} < .05$. Examination of the means indicate that the EMI/NI group received approximately 5 times greater frequency of total interactions when compared to the EMI/INT group.

MANOVA also was used to determine whether significant differences existed between the NH/INT and NH/NI groups with the variables of direction/orders, praise, criticism, and teachers' acceptance of student ideas. Results indicated that the groups differed significantly,

Table 17
Means and Standard Deviations for DAC Soccer Classes by Experimental Condition

	EMI/INT n=8		EMI/NI n=7		NH/INT n=27		NH/NI n=18	
Variables	M	SD	M	SD	M	SD	M	SD
Orders	1.13	1.64	9.39	6.23	2.14	3.21	2.33	2.21
Praise	1.00	1.93	1.93	1.42	1.71	2.45	0.50	0.59
Criticism	0.00	0.00	0.21	0.47	0.00	0.00	0.11	0.37
Acceptance	0.00	0.00	0.71	0.88	0.14	0.45	1.00	1.07
Total	2.88	1.74	16.89	11.01	5.18	4.76	6.67	5.78

Note. Higher scores represent a greater frequency of interactions.

$F(4,41) = 6.25$ $\underline{p} < .05$. Univariate F-tests revealed that these differences existed for the teachers' acceptance of student ideas category, $F(1,44) = 14.21$, $\underline{p} < .05$. Evaluation of the means indicated that the NH/NI group received the greater frequency of interactions when compared to the NH/INT for the acceptance category. Significant differences also were discovered between groups in the category of praise $F(1,44) = 4.24$, $\underline{p} < .05$. The means indicated that the NH/INT received the greater frequency of interaction. Nonsignificant univariate F values were reported for the direction/order category, $F(1,44) = 0.05$, $\underline{p} > .05$; and criticism, $F(1,44) = 2.61$, $\underline{p} > .05$.

The NH/INT and NH/NI groups also were compared to determine whether significant differences existed between groups on the total frequency of interactions. ANOVA procedures revealed that no significant group differences existed $F(1,44) = 0.60$, $\underline{p} > .05$.

Soccer class interaction patterns: Comparison of EMI and NH groups. For the soccer class, ANOVA procedures revealed significant group differences between the EMI and NH groups for the frequency of direction/order types of interactions, $F(1,59) = 5.89$, $\underline{p} < .05$. An examination of the mean scores (see Table 18) indicated that the EMI group received more than twice the frequency of direction/order type interactions when compared to the NH group. The means supported the hypothesis that EMI children would receive greater frequency of direction/order interactions. For the soccer section, the hypothesis that EMI children would receive less praise was not supported, $F(1,59) = 0.11$, $\underline{p} > .05$. The hypothesis that the EMI groups would receive greater criticism also was not supported, $F(1,59) = 0.55$, $\underline{p} > .05$. No significant differences were discovered between groups on the variable

Table 18
Means and Standard Deviations for DAC Soccer Classes by Group

Variables	EMI n=15 M	EMI n=15 SD	NH n=45 M	NH n=45 SD
Orders	4.98	6.02	2.22	2.83
Praise	1.43	1.72	1.24	2.02
Criticism	0.10	0.33	0.04	0.23
Acceptance	0.33	0.69	0.48	0.86
Total	4.67	6.39	2.88	5.00

Note. Higher scores represent a greater frequency of interactions.

of teachers' acceptance of student ideas, $F(1,59) = 0.35$, $p > .05$, for the soccer class.

The hypothesis stating that EMI children would receive a greater total frequency of interactions when compared to the NH children was not supported for the soccer class, $F(1,59) = 2.59$, $p > .05$. Thus, when all 20 categories of interaction were considered, the EMI and NH groups received essentially the same frequency of interactions from the soccer teacher.

Softball class interaction patterns: Comparison of INT and NI groups. MANOVA evaluation was used to determine whether differences exist between EMI/INT and EMI/NI groups with the variables of direction/orders, praise, criticism, and teachers' acceptance of student ideas. Multivariate tests of significance revealed significant differences between groups, $F(4,10) = 6.26$, $p < .05$, for the softball class. Significant differences were found on the Univariate F-tests for direction/orders type of interactions, $F(1,13) = 10.98$, $p < .05$. Examination of the means (see Table 19) indicate a trend with the EMI/NI group receiving approximately six times the average interactions when compared with the EMI/INT group. Univariate F-tests also revealed significant differences for the category of praise, $F(1,13) = 12.94$, $p < .05$. Evaluation of the means indicate that the EMI/NI received the greater frequency of praise when compared to the EMI/INT. Significant Univariate F-test evaluation also revealed differences between EMI/INT and EMI/NI groups on the category of teachers' acceptance of student ideas, $F(1,13) = 26.38$, $p < .05$. The mean scores indicate that the EMI/NI group received greater frequency of acceptance when compared to the EMI/INT group. A trend was observed for the category of criticism, $F(1,13) = 4.56$, $p < .10$.

Table 19
Means and Standard Deviations for
DAC Softball Classes by Experimental Condition

	EMI/INT n=8		EMI/NI n=7		NH/INT n=27		NH/NI n=18	
Variables	M	SD	M	SD	M	SD	M	SD
Orders	2.00	3.67	11.89	7.51	2.14	3.19	1.11	2.65
Praise	0.75	1.49	4.00	2.01	0.93	1.81	0.67	0.84
Criticism	0.00	0.00	0.18	0.24	0.02	0.09	0.00	0.00
Acceptance	0.00	0.00	1.25	0.69	0.30	0.82	0.33	0.77
Total	5.44	4.23	27.61	15.17	5.89	5.01	4.22	6.76

Note. Higher scores represent a greater frequency of interactions.

ANOVA evaluation of total frequency of interactions revealed that the EMI/INT and EMI/NI groups differed significantly, $F(1,13) = 11.75$, $p < .05$. Examination of the means indicate that the EMI/NI group received approximately 5 times greater frequency of total interactions when compared to the EMI/INT group.

MANOVA was also used to determine whether significant differences existed between the NH/INT and NH/NI groups with the variables of direction/orders, praise, criticism, and teachers' acceptance of student ideas. Results indicated that the groups did not significantly differ, $F(4,41) = 0.79$, $p > .05$.

The NH/INT and NH/NI groups also were compared to determine whether significant differences existed between groups on the total frequency of interactions. ANOVA procedures revealed that no significant group differences existed, $F(1,44) = 0.48$, $p > .05$.

<u>Softball class interaction patterns: Comparison of EMI and NH groups</u>. Evaluation of the softball class revealed significant differences between EMI and NH groups for two of the four categories of interactions. Significant differences were found in the direction hypothesized in the category of direction/order interactions, $F(1,59) = 13.18$, $p < .05$. Significant differences also were found between groups in the category of praise, $F(1,59) = 7.67$, $p < .05$. The findings for the category of praise are in the opposite direction to that proposed in the hypothesis. For both of these categories, the mean scores indicate that the EMI group received three times the average frequency of interactions received by the NH group.

The category of criticism revealed significant differences between groups, $F(1,59) = 4.99$, $p < .05$. Thus, the hypothesis that significant differences would exist with greater criticism directed toward the EMI group was supported. Examination of the means (see Table 20) indicate that the occurrence of these interactions as measured by the DAC was infrequent. The category of teachers' acceptance of student ideas revealed no significant differences between groups, $F(1,59) = 1.30$, $p > .05$. Examination of the means revealed that the two groups received approximately the same frequency of interactions in this category. The means also revealed that relatively few interactions of this category were found for either the EMI or NH groups.

Table 20
Means and Standard Deviations for DAC Softball Classes by Group

	EMI n=15		NH n=45	
Variables	M	SD	M	SD
Orders	6.62	7.56	1.74	3.01
Praise	2.27	2.38	0.83	1.50
Criticism	0.08	0.18	0.01	0.07
Acceptance	0.58	0.79	0.32	0.79
Total	15.78	8.75	5.24	5.36

Note. Higher scores represent a greater frequency of interactions.

The total number of interactions revealed significant differences between EMI and NH children for the softball class. ANOVA revealed that the EMI group received significantly greater frequency of interactions when compared to the NH group on all 20 categories of interaction, $F(1,59) = 11.08$, $\underline{P} < .05$).

CHAPTER FIVE

DISCUSSION

A discussion of the results related to the impact of integration in physical education on the motor performance and perceived competence of EMI and NH children will be presented in this chapter. The results of the teacher-student interaction data will be combined with the discussion of motor performance and perceived competence where appropriate. A separate section will discuss important aspects of teacher-student interactions not included in the previous sections.

Impact of Integration in Physical Education on EMI and NH Children

Qualitative motor performance. Although improvement in qualitative motor performance was evident for both the EMI and the NH children in this study, there were no differences in qualitative motor performance that could be attributed to integrated or nonintegrated instructional settings. The EMI/INT group improved significantly in qualitative motor performance on the object-control subtest (throwing, catching, kicking, bouncing, striking) of the TGMD. The gains demonstrated by the EMI/NI group were not statistically significant. Neither the EMI/INT nor the EMI/NI group demonstrated significant improvement on the locomotor subtest (running, skipping, hopping, jumping, sliding, leaping). The differences in improvement between EMI/INT and EMI/NI groups were slight, and MANOVA procedures revealed no significant advantage in improvement due to integrated or nonintegrated class settings. The NH in both settings improved their qualitative motor performance on both the object-control and locomotor subscales. The improvement for the NH children did not favor either educational setting. NH children learned equally well in both the integrated and the nonintegrated setting.

The data clearly indicated that differences in improvement did not exist due to educational settings. Children improved or failed to improve in the qualitative aspects of motor skills equally, regardless of the setting in which they were placed. It is important to recognize that although the EMI/INT group improved significantly in object-control skills while the EMI/NI group did not, this does not mean that the integrated setting was more facilitative in improving skills. The MANOVA analysis which compared the two EMI groups based on educational setting revealed no significant posttest differences. Thus, these results indicate that neither educational setting offered an advantage in improving the qualitative motor skills of the children in this study. It appears that the improvement was due to factors other than class placement.

Teacher interaction styles may have had a differential impact on the performance of the children in the two placement settings. Teachers interacted significantly more frequently with EMI students in the nonintegrated setting when compared to children placed in the EMI/INT and the NH groups. It appears that the EMI/NI group needed significantly more teacher direction than the EMI/INT group. That is, in order for the EMI/NI group to make the same gains as the EMI/INT group in motor performance, more teacher direction was necessary. From the opposite perspective, apparently the EMI/INT children demonstrated significant achievement in motor skills while requiring less interaction with the teacher than did the EMI/NI children. Perhaps this helps to explain why different patterns of interactions were found between the groups while the same level of motor performance was achieved.

There is an alternate explanation for the differences in teacher-student interaction patterns. ANOVA evaluation of the total frequency of interactions revealed that the EMI/NI group received approximately four times the frequency of interactions compared to the EMI/INT group. One limitation which may have affected the validity of the analysis was that class size most likely had an effect on the frequency of observations. The EMI/INT class consisted of 18 children whereas the EMI/NI class consisted of only 8 children. From a logistical standpoint, it is very likely that in the smaller class, individuals have greater opportunity for specific feedback from the teacher. There are fewer children over which the teacher must spread attention and interaction. Therefore, the validity of a differential impact on motor performance due to class setting and teacher-student interaction patterns may have been influenced by this difference in class size.

It is possible that the lack of differences in motor performance was related to the perceived competence of the children. The EMI and NH children did not experience any changes in perceived athletic competence during the instructional program. Therefore, the children may have felt equally competent regardless of being placed in integrated or nonintegrated settings. It seems reasonable that children would not be as motivated to learn and achieve if their perceived athletic competence was suffering.

There is a paucity of research to support or disprove the statement that perceived competence is an important mediator in improving motor performance. Lecky (1945) demonstrated that low achievement may be related to a child's perception of self-inability. Lecky also concluded that children who had a success-oriented view of self could find greater success with little past experience in a task than those with low perceived competence. However, the research by Lecky (1945) did not involve motor performance tasks. The current project also did not attempt to discover high and low levels of perceived competence but rather attempted to discern possible changes in perceived competence. Ulrich (1987) found no correlation between perceived athletic competence and participation in youth sports for children in Grades K-4. Though actual motor performance was positively related to sport participation, no evidence was reported indicating that positive changes in perceived competence had an impact on increasing motor performance. In contrast, Harter (1978) found that participants in youth sport programs perceived themselves as more competent than nonparticipants. Thus, perceived competence may affect the participation of older children but not the younger children in sport activities. However, no conclusive research has been reported which indicates that positive perceived competence causes better performance in motor skills. This issue needs to be addressed in future research. Such research could significantly add to our knowledge of both the impact of motor performance on perceived competence and the impact of perceived competence on motor performance.

It is possible that though the NH children significantly improved on the locomotor subscale, the duration of the instructional program was not sufficient to bring about improvement for the EMI group. It is likely that the EMI children were not able to improve in motor skill performance as quickly as their nonhandicapped peers. This also may explain why the improvement observed for the EMI/NI group on the object-control subscale was not significant. Research has demonstrated that EMI children learn motor skills at a slower rate than their NH peers (Cratty, 1974). EMI children also generally lag two to three years behind their peers on various motor performance test items (Dobbins, Garron, & Rarick, 1981; Rarick, Widdop, & Broadhead, 1970; Ulrich, 1983). This lag in learning also may have affected the lack of improvement of the EMI children on the locomotor scale of the TGMD.

Another explanation for the lack of improvement by the EMI children is that though time was spent in practicing the various locomotor skills tested, there was not a strong emphasis on the instruction of these skills. Running was practiced repeatedly but jumping, hopping, leaping, galloping, and sliding were only briefly practiced. It would be expected that the NH children also would not show improvement in their locomotor skills due to the lack of instructional emphasis. However, they did improve, therefore, it is likely that the other explanations for the lack of improvement in locomotor skills for the EMI children are more plausible. The improvement and trend toward improvement of the object-control skills is not surprising. The skills tested on this subscale such as throwing, catching, kicking, and striking were taught and practiced repeatedly on a daily basis. The observations of this researcher and the reports from the teachers indicated that the lesson plans were faithfully administered to all groups except the EMI/NI. Instructors did indicate that the level of instruction differed for the EMI/NI class. They reported that instruction needed simplifying for this group. The teachers also reported a feeling of dissatisfaction with the amount of material covered each session and with the amount of on-task time with the EMI/NI group when compared to the other groups.

This variable was not examined in this project and is merely a subjective report of the feedback received from the teachers. It is recommended that for future research control of on-task time be included to determine differences that may exist in the implementation of the lesson plan objectives.

The possibility that the EMI/INT and EMI/NI groups were more ready to improve in object-control skills compared to the locomotor subscale was not supported. Results of the TGMD pretest scores did not reveal any differences between EMI groups in readiness to learn locomotor and object-control skills. Both the EMI/INT and EMI/NI groups scored at or below the first percentile for both locomotor and object-control subtests on the pretest. ANOVA results also revealed that no significant differences existed between the two groups on the pretest. This indicates that the groups were equally ready in terms of pretest performance to demonstrate improvement on both the locomotor and the object-control subtests. It should be noted, however, that with such low scores, there is doubt as to whether readiness could be assessed. It is possible that the TGMD was not sensitive enough at this low level of performance to determine readiness.

In summary, the educational setting was not an important variable in influencing improvement in qualitative motor performance. Children learned equally well in both the integrated and the nonintegrated setting. This means that either setting would be appropriate for improving the qualitative motor performance of the EMI and NH children included in this study. Equally important, the presence of EMI children in the integrated class setting with NH children did not negatively affect the motor skill performance of the NH children. Parents and educators may be encouraged by the results in that the EMI children did not detract from the physical education achievements of the NH children in this study.

Quantitative motor performance. Improvement in quantitative measures of motor performance was not evident for the EMI or the NH children, thus the class setting itself did not seem to influence performance levels. Neither setting brought about significant changes in quantitative motor performance as measured by the 20-yard dash, standing long jump, and the softball throw for distance for either EMI or NH children.

No clear patterns exist which would indicate that differential learning took place in integrated or nonintegrated settings due to teacher interaction styles. Though differences in interaction patterns were found, none of these differences seem to explain why improvement did not take place or why neither setting offered an advantage over the other.

The lack of improvement in the quantitative aspects of motor performance for both the EMI and NH children was unexpected. With approximately the same instructional time period, Rarick and Beuter (1985) reported significant gains in performance for trainable mentally impaired and NH children aged 11.5 to 15 years on the same test items. They also reported significant gains in scores favoring the integrated group of children. Differences existed, however, in the emphasis on instruction. The Rarick and Beuter (1985) study emphasized the quantitative aspects of performance in instruction while this research project emphasized improving the quality of movement patterns. Often times, when a pattern is changed and even improved, the result is a temporary decrease in performance as measured by quantitative standards. Thus, a child may actually be throwing with a more mature pattern, but temporarily throws for a shorter distance until the child becomes comfortable with the new form. The children in the Rarick and Beuter (1985) study also were significantly older than the children in this research project. It is likely that these differences in emphasis, mental ability, and age may explain the disparity between the reported findings of the two studies.

In summary, the lack of improvement in quantitative measures of motor performance makes it difficult to determine the better educational setting. For this study, neither setting offered a significant advantage in changing the quantitative motor skill performance of the EMI and NH children. It cannot be stated that both settings are appropriate, but rather that neither setting brought about significant improvement.

Perceived competence. Instructional setting had very little impact on the perceived competence of the EMI and NH children in this study. The EMI, NH/NI and younger NH/INT groups did not display any changes in perceived competence over time. The older NH/INT group showed an increase in perceived scholastic competence, but remained unchanged on all the other subtests of perceived competence.

It was proposed for this research that EMI/INT children would demonstrate a decrease in the perceived competence scores on the first week testing occasion. It was expected that the group of EMI/INT children would decrease in perceived physical ability or athletic competence when integrated into a class with children whose general skill level was higher. It also was proposed that by the end of the program the perceived competence of the EMI children would return to a level achieved on the pretest. The results did not indicate support for either of these proposals.

A limitation of the study that may have affected the results was the inability to define accurately the previous school setting for the physical education of the EMI children involved in the study. Many parents were unaware of whether their children were educated in a mainstreamed or segregated setting for physical education during the school year prior to the study. Some parents did not know whether their child received any physical education in the schools. It is possible that the children had previously been educated in the mainstream and therefore the reference group prior to the program also contained higher skilled performers than the EMI children. Without a change in reference groups, a decrease in perceived competence would not be expected.

It is difficult to compare the results of studies examining perceived competence due to the various instruments used to measure perceived competence. For instance, the hypothesized decrease in perceived competence was based on the findings of Smith, Dokecki, and Davis (1977). These researchers discovered that when mentally retarded children compared themselves with an entire mainstreamed class, self-concept suffered. The methodology of these researchers differed greatly from the present research project. Differences between the two studies include an academic setting versus a physical education setting, and the use of global measures of self-concept rather than domain specific measures. These differences make comparisons between the studies difficult at best.

It is logical to assume that the way teachers interact with students may have an impact on the students' perceived competence. If teachers interact positively with students, they should have a positive impact on the perceived competence of the children. If the interactions are negative and critical, they may negatively affect perceived competence. The interaction analysis in this research indicated that teachers interacted more frequently with the EMI children than with the NH children in the categories of praise, direction/orders, and total frequency. There was no evidence that the interactions with EMI children were more negative or critical than with the NH, thus, the greater frequency of interactions may have facilitated an unchanging perceived competence and eliminated the possible decrease that may have occurred due to being integrated.

Gallahue (1989) identified a variety of ways in which movement programs may be influential in developing a positive perceived competence. Among these are providing successful experiences, individualizing instruction, and encouragement. Bloom (1985) reported that with Olympic swimmers an influential factor of future success was encouragement from families and coaches. Though one must be careful in generalizing influences on perceived competence across ages and testing instruments, evidence exists which indicates that when encouragement is used, perceived competence is enhanced. It, therefore, remains possible that the encouragement given to the EMI/INT group may account for the lack of a decrease in perceived competence as hypothesized.

With no changes occurring in perceived competence in either the integrated or the nonintegrated setting for the EMI children, it can be concluded that neither educational setting provided an advantage in influencing perceived competence as measured by the Pictoral Scale. These findings are in agreement with research reported by Carvajal (1972), Gerke (1976), Karper and Martinek (1983), and Lewis (1974). Other researchers have reported significant improvement in perceived competence which may be attributed to integrated class settings (Calhoun & Elliot, 1977; Rouse, 1974; Strang, Smith, & Rogers, 1978). Comparison between these studies and the current study are limited because the scales used for the measurement of general self-concept in those studies differed significantly from the domain specific test used in the current investigation. Scales which measure general self-concept present one score to represent the sum total of how one feels about the important areas of his or her life. Domain specific tests, as used in this project, measure a variety of areas such as physical competence, cognitive competence, and peer acceptance. The scores reported may include a general competence score but specific scores related to each domain are also reported. Other differences between the above cited studies and this project include a shorter period of experimentation in the current study. Perhaps major changes in perceived competence do not take place in four weeks.

The results of this research related to perceived competence of the younger NH children supported the hypothesis that there would be no significant differences between NH/INT and NH/NI in perceived competence as measured by the Pictoral Scale. The results also provided support for the hypothesis that the perceived competence of the NH group would remain essentially unchanged over the four weeks. It could, therefore, be concluded that within the context of this program, the presence of the EMI children integrated into the physical education class did not negatively affect the perceived competence of the younger NH children. This is a significant finding of this research when combined with results of the EMI group. Not only did the EMI group remain unchanged in perceived competence in the integrated setting, but also the NH children were not negatively affected by the presence of the EMI children.

The increase in the perceived scholastic ability of the older NH/INT group was unexpected. This may be explained by the unusually low score on the pretest. When compared to the NH/NI group, the mean scores were not significantly different on any of the three testing occasions. One explanation may be that the NH/INT group recognized the lower cognitive function of the EMI children integrated into the classes and this recognition affected the NH children's perceived competence in the scholastic domain. However, it is also plausible that the same result should have occurred in the domain of athletic competence. However, this did not occur, therefore, it is likely that other factors, perhaps even chance, were involved in the changes in perceived scholastic competence.

Basically, the NH children showed little change in perceived competence. The overall results indicate that neither the integrated or nonintegrated setting offered an advantage for improving the perceived competence of the NH children. These results indicate that the presence of EMI children in the physical education class with NH children did not negatively influence the perceived competence of the NH children. It would be interesting to determine whether those individuals who had increased scores in motor performance also had higher perceived athletic competence. Although this variable was not analyzed in the current project, future research should attempt to control for this variable in order to add to our knowledge base about the relationship of perceived competence to motor performance.

Teacher-Student Interaction Patterns with EMI and NH Children

The interaction patterns between teachers and students were analyzed for each teacher separately and also as a composite of both teachers. As expected, differences were found between the interaction styles of the two teachers involved in the study. Therefore, the discussion will focus on each class separately and then in composite.

Significant differences were discovered between the EMI and NH groups in the categories of direction/orders, praise, and total frequency of interactions in the softball class. The EMI group received the greater frequency of interactions in these categories. For the soccer class, significant differences in interaction patterns between EMI and NH children occurred only for the category of direction/order. Again, the EMI group received the greater frequency of interactions in this category when compared to the NH group. The composite interaction patterns for the EMI and NH groups were significantly different for three of the five categories examined; namely, direction/order, praise, and total interactions. The EMI group received significantly more frequent interactions than the NH group in each case. All other comparisons were not significant.

The mean interaction scores of the EMI/INT were almost identical to those found for the NH groups in both the INT and NI settings. The differences between the EMI and NH groups appear to be due to the interaction patterns in the EMI/NI class. These findings are in contrast to those reported by Karper and Martinek (1982) and Martinek and Karper (1984). These researchers reported that children who were expected to exhibit a high level of social and physical prowess received more individual contact, encouragement,and acceptance of ideas from teachers compared to those not expected to function well. Using the same DAC instrumentation, these researchers also discovered that those not expected to function well due to handicapping conditions received more teacher criticism, and engaged in more off-task behavior. The teachers for this study were well-trained elementary physical education specialists and were teaching in a motor performance laboratory situation similar to the current study.

The differences between the current project and the above cited research are many. The population examined and labeled as handicapped by Karper and Martinek was not as homogenous as the group of young EMI students used in this research project. The subjects included learning disabled, seizure prone, emotionally impaired, and hyperactive children. The comparisons are therefore limited. It is interesting to note, however, that although the frequency of interactions were greater for the EMI children, they did not receive a greater frequency of negative interactions as reported by Karper and Martinek (1982).

Research by Rarick and Beuter (1985) reported that the frequency of teacher intervention was four to six times greater for young trainable mentally impaired children than for young NH children. The integrated trainable mentally impaired children were also reported to make relatively more frequent demands on their teacher than did those in a segregated setting. The older trainable mentally impaired children in both educational settings received essentially the same frequency of interventions as their NH peers. The authors concluded that teacher intervention is largely a function of mental maturity, and their findings reflect the inability of the younger trainable mentally impaired children to attend to the demands of the tasks. The teacher intervention findings in the Rarick and Beuter (1985) study contrast with the results of interaction analysis in this study. The EMI children in this study did not receive greater frequency of interaction in the integrated setting than the NH children. If the intervention pattern was largely a function of mental age as concluded by Rarick and Beuter (1985), it is possible that the higher mental functioning of the EMI children in the present study, compared to the trainable mentally impaired children in the Rarick and Beuter (1985) study, could account for the disparity in findings.

The teachers' patterns of interaction differed from each other. It is likely that for the teachers in this program, the interaction patterns were affected more by the individual teaching style of the instructor than by whether a child was identified as EMI or NH. For example, the softball teacher interacted with students by giving a great amount of directions/orders in all classes than did the soccer class instructor.

The most significant issue concerning interaction patterns relates to the concern that the presence of EMI children in the integrated classes may negatively influence the teacher's interaction with NH children. The data indicate that the interaction patterns were significantly different for EMI and NH children. The data which indicate that the EMI children received a greater frequency of interaction are significant only for the EMI/NI group. It can be concluded that, though the means indicate greater frequency of interaction for EMI children, this pattern did not hold true for the EMI children in the integrated class setting. Therefore, it is likely that the EMI children in this study did not negatively influence the interaction patterns of the teacher with the NH students. The interaction patterns of the NH/INT and NH/NI did not significantly differ from each other in the composite or separate class analyses.

Summary

The type of instructional settings used in this study had no significant influence on the qualitative motor performance as measured by the TGMD for the children in this study. Both EMI and NH children improved in performance in both educational settings. However, the EMI children in either setting were unable to make significant gains in locomotor skills. The types of interactions the teachers had with the children may have positively influenced the qualitative performance of the EMI/NI children.

No improvement was found for either EMI or NH children on the 20-yard dash, standing long jump, or softball throw for distance. It was, therefore, impossible to identify one educational setting as more valuable for improving these quantitative measures of performance.

Neither educational setting offered an advantage for improving the perceived competence of the EMI or NH children as measured by the Pictoral and Verbal scales. The only changes occurred for the NH/INT group which demonstrated a significant improvement in perceived scholastic competence from pretest to midtest to posttest. The lack of change in perceived competence in the directions proposed was attributed to difficulties in establishing the previous educational setting of the EMI children.

Teacher-student interaction patterns varied with the individual teaching styles. The composite analysis indicated that the EMI children received a greater frequency of interactions when compared to the NH children in the categories of direction/orders, praise, and total interactions. These differences appear to be due to the influence of the large number of interactions in the EMI/NI class. It is possible that the EMI/NI children needed a greater amount of teacher direction in order to make the same gains in motor performance as the NH children. The mean scores of frequency of interactions for the EMI/INT group were similar to those of the NH groups. Thus, the EMI children in the integrated setting did not detract from the interaction of the teacher with the NH children. The reason for the greater frequency of interactions directed toward the nonintegrated EMI class may be due to the disparity in class sizes.

When considering the impact of educational settings on all of the dependent variables, it can be stated that both educational settings were appropriate for educating the EMI and NH children in this study. For the variables of interest, neither setting offered a significant advantage over the other. Teachers, parents, and students may be encouraged by the reports of improved motor performance for both EMI and NH children. The results related to perceived competence also indicated that neither the EMI nor the NH children suffered in perceived competence when placed in integrated or nonintegrated settings. Equally encouraging is the evidence that the presence of EMI children in the classroom with NH children did not detract from the interaction of the teacher with the NH children. Within the limits of this study, it is concluded that both settings were appropriate for the physical education of the children involved in this study.

CHAPTER 6

CONCLUSIONS AND RECOMMENDATIONS

Impact of Integration in Physical Education on EMI and NH Children

Motor performance. Neither educational setting offered a significant advantage over the other in improving qualitative motor performance of the EMI and NH children in this study. Both settings were identified as appropriate for improving the qualitative motor performance of the children. Improvement in test scores was significant for the object-control skills such as throwing, catching, kicking, and striking for EMI and NH groups. Improvement in locomotor skills such as running, hopping, skipping, and jumping was evidenced only by the NH group. It can be concluded that the NH children were able to improve in locomotor skills during the four weeks of instruction while the EMI children apparently needed more time to demonstrate improvement.

Quantitative motor performance as measured by the 20-yard dash, standing long jump, and softball throw for distance did not improve over the four weeks of instruction. Therefore, it may be concluded that neither setting was useful in improving quantitative motor performance for either group after four weeks of instruction.

The results of the motor performance data do not clearly identify one educational setting as more appropriate for the physical education of EMI and NH children. Both settings appeared to be equally appropriate. One of the most significant conclusions which may be drawn is that the presence of EMI children in the integrated class with NH children did not negatively affect the motor skill achievements of the

NH children in this study. This may be encouraging to parents, administrators, and teachers faced with decisions of mainstreaming young EMI children. Caution must be emphasized as the results must be interpreted within the limits of this study. This project included 2nd and 3rd grade NH children and EMI children in Grades 2, 3, and 4. The setting also was not a school physical education setting. Future research should employ similar variables for study in an actual school physical education setting for an entire school year. With an extended period of instruction, it is possible that further improvements may occur.

Perceived competence. For the EMI children in this study, perceived competence as measured by the Pictoral Scale did not change throughout the four-week period. With no changes on the Pictoral Scale, it was concluded that placement into integrated and nonintegrated classes had no significant impact on the perceived competence of the EMI children. Because perceived competence would not be expected to change unless there is a change in reference groups, it is recommended that future research examine more carefully the educational background of the EMI children in reference to integrated and nonintegrated experiences in physical education.

As was hypothesized, no significant changes in perceived competence occurred during the study for the younger NH children taking the Pictoral Scale. However, an increase from pretest to midtest to posttest in perceived scholastic competence was discovered for the older children taking the Verbal Scale. It is concluded from these results that the presence of EMI children in the integrated setting did not negatively influence the perceived competence of the nonhandicapped children. The EMI children integrated into classes with the NH children also did not demonstrate any decrease in perceived competence. Thus, integration did not negatively affect the perceived competence of the EMI children in this study. This may encourage parents and educators concerned with the impact of integrated settings on perceived competence.

Future research with perceived competence of EMI and NH children should examine additional variables of interest. Valuable contributions could be made by discovering whether differential changes occur in the perceived competence of children who improve in motor skill performance compared to those who do not experience significant gains in performance. Similar variables also could be studied in the context of an actual school physical education program. A longer period of experimentation also may be more appropriate in determining significant changes in perceived competence.

Teacher-Student Interaction Patterns with EMI and NH Children

The teachers in this study differed in their individual approaches to interacting with the students. The interaction patterns of the softball instructor tended to be more frequent toward the EMI for three of the categories measured. The soccer instructor tended to interact more frequently with the EMI children only for one category. Thus, within the limits of this study, the differences in interaction patterns between EMI and NH children appear to be mostly due to individual teaching styles rather than whether a child was identified as EMI or NH.

The data clearly revealed differences in teacher-student interaction patterns in integrated and nonintegrated settings. The frequency of interactions was significantly greater for the EMI/NI group compared to the EMI/INT. These differences may be due to the smaller class size of the EMI/NI group. Further research is recommended with equal class sizes to determine whether these differences were due to the research design or actual differences in types and frequency of interactions in nonintegrated settings with young EMI children.

The teacher-student interaction patterns of the NH/INT and NH/NI were not significantly different. The data revealed that the presence of the EMI children integrated into the class with NH children did not detract from the interaction of the teacher with the NH children. These findings are perhaps the most important information to be gained from including teacher-student interaction patterns in research with integrated physical education settings. Such information may encourage teachers and parents of EMI and NH children. It is important that integrated settings not detract from the educational achievement of any of the children. This research demonstrated that for the young EMI and NH children in this study, the presence of EMI children did not disrupt interaction patterns with NH or EMI children. Also of great importance is the finding that the EMI/INT children demonstrated significant achievement in motor skills while requiring less interaction with the teacher compared to the EMI/NI. Further research is needed in order to determine whether these differences are due to class placement or to the smaller class size of EMI/NI as reported earlier. Further research of this nature is recommended in an actual school physical education program in order to increase the generalizability of the results.

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APPENDICES

APPENDIX A

Description of the Motor Performance Study

Description of the Motor Performance Study

The Motor Performance Study (MPS) provides an instructional setting in which children and youth can learn the motor skills involved in the games, dances, and sports of the American culture. For example, children in the lower grades receive skill instruction in basketball, locomotors, ball-control, swimming, ice-skating, basic rhythms, soccer, and gymnastics. Upper grade children can select activities such as archery, baseball, basketball, cheerleading, flag football, golf, gymnastics, ice-skating, racquetball, soccer, softball, swimming, and tennis. Children in Grades K-7 are eligible to attend 8-weekly two-hour sessions on Saturday mornings during the Fall, Winter, and Spring terms. Children entering Grades K-9 may attend a 4-week summer program in which classes are held during the morning, Monday through Thursday. A fee of $30 per child is assessed for each 8-week term during the academic year, and a fee of $80 is assessed for the Summer program.

APPENDIX B

Test Instruments

Name ______________________________

School/Agency ______________________________

Sex: Male ________ Female ________ Grade ________

TGMD

TEST OF GROSS MOTOR DEVELOPMENT

Dale A. Ulrich

TESTING INFORMATION

1ST TESTING	Year	Month	Day	2ND TESTING	Year	Month	Day
Date Tested	____	____	____	Date Tested	____	____	____
Date of Birth	____	____	____	Date of Birth	____	____	____
Chronological Age	____	____	____	Chronological Age	____	____	____

1ST TESTING	2ND TESTING
______________________________ Examiner's Name	______________________________ Examiner's Name
______________________________ Examiner's Title	______________________________ Examiner's Title
______________________________ Purpose of Testing	______________________________ Purpose of Testing

RECORD OF SCORES

1ST TESTING Subtests	Raw Scores	%iles	Std. Scores	2ND TESTING Subtests	Raw Scores	%iles	Std. Scores
Locomotor Skills	____	____	____	Locomotor Skills	____	____	____
Object Control Skills	____	____	____	Object Control Skills	____	____	____
Sum of Standard Scores		=	____	Sum of Standard Scores		=	____
Gross Motor Development Quotient (GMDQ)		=	____	Gross Motor Development Quotient (GMDQ)		=	____

COMMENTS/RECOMMENDATIONS

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LOCOMOTOR SKILLS

Skill	Equipment	Directions	Performance Criteria	1st	2nd
RUN	50 feet of clear space, colored tape, chalk or other marking device	Mark off two lines 50 feet apart Instruct student to "run fast" from one line to the other	1. Brief period where both feet are off the ground		
			2. Arms in opposition to legs, elbows bent		
			3. Foot placement near or on a line (not flat footed)		
			4. Nonsupport leg bent approximately 90 degrees (close to buttocks)		
GALLOP	A minimum of 30 feet of clear space	Mark off two lines 30 feet apart Tell student to gallop from one line to the other three times Tell student to gallop leading with one foot and then the other	1. A step forward with the lead foot followed by a step with the trailing foot to a position adjacent to or behind the lead foot		
			2. Brief period where both feet are off the ground		
			3. Arms bent and lifted to waist level		
			4. Able to lead with the right and left foot		
HOP	A minimum of 15 feet of clear space	Ask student to hop 3 times, first on one foot and then on the other	1. Foot of nonsupport leg is bent and carried in back of the body		
			2. Nonsupport leg swings in pendular fashion to produce force		
			3. Arms bent at elbows and swing forward on take off		
			4. Able to hop on the right and left foot		
LEAP	A minimum of 30 feet of clear space	Ask student to leap Tell him/her to take large steps leaping from one foot to the other	1. Take off on one foot and land on the opposite foot		
			2. A period where both feet are off the ground (longer than running)		
			3. Forward reach with arm opposite the lead foot		
HORIZONTAL JUMP	10 feet of clear space, tape or other marking devices	Mark off a starting line on the floor, mat, or carpet Have the student start behind the line Tell the student to "jump far"	1. Preparatory movement includes flexion of both knees with arms extended behind the body		
			2. Arms extend forcefully forward and upward, reaching full extension above head		
			3. Take off and land on both feet simultaneously		
			4. Arms are brought downward during landing		

LOCOMOTOR SKILLS

Skill	Equipment	Directions	Performance Criteria	1st	2nd
SKIP	A minimum of 30 feet of clear space, marking device	Mark off two lines 30 feet apart Tell the student to skip from one line to the other three times	1. A rhythmical repetition of the step-hop on alternate feet		
			2. Foot of nonsupport leg carried near surface during hop		
			3. Arms alternately moving in opposition to legs at about waist level		
SLIDE	A minimum of 30 feet of clear space, colored tape or other marking device	Mark off two lines 30 feet apart Tell the student to slide from one line to the other three times facing the same direction	1. Body turned sideways to desired direction of travel		
			2. A step sideways followed by a slide of the trailing foot to a point next to the lead foot		
			3. A short period where both feet are off the floor		
			4. Able to slide to the right and to the left side		
			LOCOMOTOR SKILLS SUBTEST SCORE		

OBJECT CONTROL SKILLS

Skill	Equipment	Directions	Performance Criteria	1st	2nd
TWO-HAND STRIKE	4-6 inch light-weight ball, plastic bat	Toss the ball softly to the student at about waist level Tell the student to hit the ball hard Only count those tosses that are between the student's waist and shoulders	1. Dominate hand grips bat above nondominant hand		
			2. Nondominant side of body faces the tosser (feet parallel)		
			3. Hip and spine rotation		
			4. Weight is transferred by stepping with front foot		
STATIONARY BOUNCE	8-10 inch playground ball, hard, flat surface (floor, pavement)	Tell the student to bounce the ball three times using one hand Make sure the ball is not underinflated Repeat 3 separate trials	1. Contact ball with one hand at about hip height		
			2. Pushes ball with fingers (not a slap)		
			3. Ball contacts floor in front of (or to the outside of) foot on the side of the hand being used		

OBJECT CONTROL SKILLS

Skill	Equipment	Directions	Performance Criteria	1st	2nd
CATCH	6-8 inch sponge ball, 15 feet of clear space, tape or other marking device	Mark off 2 lines 15 feet apart. Student stands on one line and the tosser on the other. Toss the ball underhand directly to student with a slight arc and tell him/her to "catch it with your hands." Only count those tosses that are between student's shoulders and waist.	1. Preparation phase where elbows are flexed and hands are in front of body		
			2. Arms extend in preparation for ball contact		
			3. Ball is caught and controlled by hands only		
			4. Elbows bend to absorb force		
KICK	8-10 inch plastic or slightly deflated playground ball, 30 feet of clear space, tape or other marking device	Mark off one line 30 feet away from a wall and one that is 20 feet from the wall. Place the ball on the line nearest the wall and tell the student to stand on the other line. Tell the student to kick the ball "hard" toward the wall.	1. Rapid continuous approach to the ball		
			2. The truck is inclined backward during ball contact		
			3. Forward swing of the arm opposite kicking leg		
			4. Following-through by hopping on nonkicking foot		
OVERHAND THROW	3 tennis balls, a wall, 25 feet of clear space	Tell student to throw the ball "hard" at the wall	1. A downward arc of the throwing arm initiates the windup		
			2. Rotation of hip and shoulder to a point where the nondominant side faces an imaginary target		
			3. Weight is transferred by stepping with the foot opposite the throwing hand		
			4. Following-through beyond ball release diagonally across body toward side opposite throwing arm		
			OBJECT CONTROL SKILLS SUBTEST SCORE		

Quantitative Motor Assessment

Twenty-Yard Dash

On the command "Go," the subject will be directed to run as fast as possible on a straight 30-yard course measured on a hard flat surface. Two sets of cones will be placed on each side of the course, the first set at 10 yards from the starting line and the second set at the finish line. The stopwatch will be started as the subject reaches the first set of cones and stopped as the subject passes through the second set of cones. This will provide a net time in seconds over a distance of 20 yards, thus deleting starting and acceleration time. Two trials will be given to all, the score being the mean of the two trials to the nearest 1/10 second.

Standing Long Jump

The subject will stand with both feet slightly apart and with toes just behind a clearly marked take-off line. The subjects will be directed to jump as far as possible, using a two-foot take-off, and to land on both feet simultaneously. In the case of a mistrial, e.g., subject falling backward, the trial will be repeated. The jump will be measured as the distance between the take-off line and the point of heel contact closest to the take-off line. The score is the mean of the two trials to the nearest half inch.

Softball Throw

An illustration of the layout for the throwing test is shown in Figure 1. Using softballs, the subjects will be instructed to throw "as far as you can between the two lines". Additional trials will be given when the ball falls outside the limited area and when the subject steps out of the throwing area or uses an underarm pattern. The angle formed by the two lines will be approximately 30 degrees. On each throw, an observer will note the point at which the ball lands, with the measurement being taken from the arc nearest the thrower. The score will be the average of two throws to the nearest foot.

The Perceived Competence Scale For Children

What I Am Like

(Verbal Scale)

Name ______________________ Age ______ Birthday ______________ Group ______
Month Day

Boy or Girl (circle which)

SAMPLE SENTENCE

	Really True for me	Sort of True for me				Sort of True for me	Really True for me
(a)	☐	☐	Some kids would rather play outdoors in their spare time	BUT	Other kids would rather watch T.V.	☐	☐
1.	☐	☐	Some kids feel that they are very *good* at their school work	BUT	Other kids *worry* about whether they can do the school work assigned to them.	☐	☐
2.	☐	☐	Some kids find it *hard* to make friends	BUT	Other kids find it's pretty *easy* to make friends.	☐	☐
3.	☐	☐	Some kids do very *well* at all kinds of sports	BUT	Other kids *don't* feel that they are very good when it comes to sports.	☐	☐
4.	☐	☐	Some kids are *happy* with the way they look	BUT	Other kids are *not* happy with the way they look.	☐	☐
5.	☐	☐	Some kids often do *not* like the way they *behave*	BUT	Other kids usually *like* the way they behave.	☐	☐
6.	☐	☐	Some kids are often *unhappy* with themselves	BUT	Other kids are pretty *pleased* with themselves.	☐	☐
7.	☐	☐	Some kids feel like they are *just as smart* as as other kids their age	BUT	Other kids aren't so sure and *wonder* if they are as smart.	☐	☐
8.	☐	☐	Some kids have *alot* of friends	BUT	Other kids *don't* have very many friends.	☐	☐

	Really True for me	Sort of True for me				Sort of True for me	Really True for me
9.	☐	☐	Some kids wish they could be alot better at sports	BUT	Other kids feel they are good enough at sports.	☐	☐
10.	☐	☐	Some kids are *happy* with their height and weight	BUT	Other kids wish their height or weight were *different*.	☐	☐
11.	☐	☐	Some kids usually do the *right* thing	BUT	Other kids often *don't* do the right thing.	☐	☐
12.	☐	☐	Some kids *don't* like the way they are leading their life	BUT	Other kids *do* like the way they are leading their life.	☐	☐
13.	☐	☐	Some kids are pretty *slow* in finishing their school work	BUT	Other kids can do their school work *quickly*.	☐	☐
14.	☐	☐	Some kids would like to have alot more friends	BUT	Other kids have as many friends as they want.	☐	☐
15.	☐	☐	Some kids think they could do well at just about any new sports activity they haven't tried before	BUT	Other kids are afraid they might *not* do well at sports they haven't ever tried.	☐	☐
16.	☐	☐	Some kids wish their body was *different*	BUT	Other kids *like* their body the way it is.	☐	☐
17.	☐	☐	Some kids usually *act* the way they know they are *supposed* to	BUT	Other kids often *don't* act the way they are supposed to.	☐	☐
18.	☐	☐	Some kids are *happy* with themselves as a person	BUT	Other kids are often *not* happy with themselves.	☐	☐
19.	☐	☐	Some kids often *forget* what they learn	BUT	Other kids can remember things *easily*.	☐	☐
20.	☐	☐	Some kids are always doing things with *alot* of kids	BUT	Other kids usually do things *by themselves*.	☐	☐

	Really True for me	Sort of True for me				Sort of True for me	Really True for me
21.	☐	☐	Some kids feel that they are *better* than others their age at sports	BUT	Other kids *don't* feel they can play as well.	☐	☐
22.	☐	☐	Some kids wish their physical appearance (how they look) was *different*	BUT	Other kids *like* their physical appearance the way it is.	☐	☐
23.	☐	☐	Some kids usually get in *trouble* because of things they do	BUT	Other kids usually *don't* do things that get them in trouble.	☐	☐
24.	☐	☐	Some kids *like* the kind of *person* they are	BUT	Other kids often wish they were someone else.	☐	☐
25.	☐	☐	Some kids do *very well* at their classwork	BUT	Other kids *don't* do very well at their classwork.	☐	☐
26.	☐	☐	Some kids wish that more people their age liked them	BUT	Other kids feel that most people their age *do* like them.	☐	☐
27.	☐	☐	In games and sports some kids usually *watch* instead of play	BUT	Other kids usually *play* rather than just watch.	☐	☐
28.	☐	☐	Some kids wish something about their face or hair looked *different*	BUT	Other kids *like* their face and hair the way they are.	☐	☐
29.	☐	☐	Some kids do things they know they *shouldn't* do	BUT	Other kids *hardly ever* do things they know they shouldn't do.	☐	☐
30.	☐	☐	Some kids are very *happy* being the way they are	BUT	Other kids wish they were *different*.	☐	☐
31.	☐	☐	Some kids have *trouble* figuring out the answers in school	BUT	Other kids almost *always* can figure out the answers.	☐	☐
32.	☐	☐	Some kids are *popular* with others their age	BUT	Other kids are *not* very popular.	☐	☐

	Really True for me	Sort of True for me				Sort of True for me	Really True for me
33.	☐	☐	Some kids *don't* do well at new outdoor games	BUT	Other kids are *good* at new games right away.	☐	☐
34.	☐	☐	Some kids think that they are good looking	BUT	Other kids think that they are not very good looking.	☐	☐
35.	☐	☐	Some kids behave themselves very well	BUT	Other kids often find it hard to behave themselves.	☐	☐
36.	☐	☐	Some kids *are* not very happy with the way they do alot of things	BUT	Other kids think the way they do things is *fine*.	☐	☐

The Pictorial Scale of Perceived Competence and Social Acceptance for Young Children*
Individual Recording and Scoring Sheet, Form 1-2

Child's Name ______________________ Age ________ Gender: M F

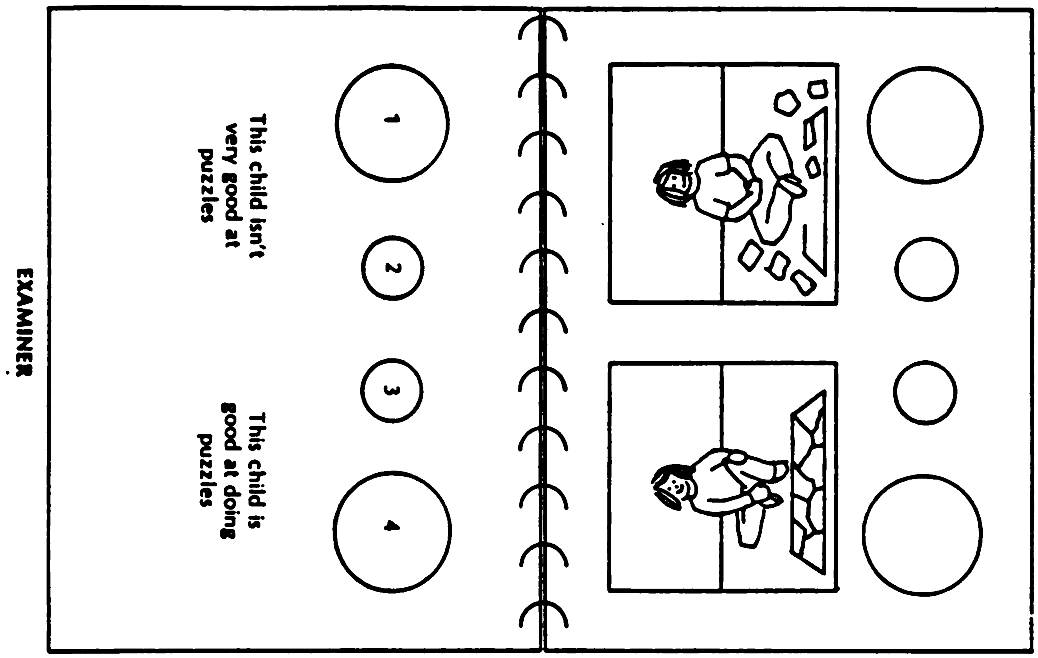
Class/Grade ______________________ Teacher ______________ Testing Date ________

Item Order and Description	Cognitive Competence	Peer Acceptance	Physical Competence	Maternal Acceptance
1. Good at numbers	1 ___			
2. Friends to play with		2 ___		
3. Good at swinging			3 ___	
4. Eats at friends				4 ___
5. Knows alot in school	5 ___			
6. Others share		6 ___		
7. Good at climbing			7 ___	
8. Mom takes you places				8 ___
9. Can read alone	9 ___			
10. Friends to play games with		10 ___		
11. Good at bouncing ball			11 ___	
12. Mom cooks favorite foods				12 ___
13. Good at writing words	13 ___			
14. Has friends on playground		14 ___		
15. Good at skipping			15 ___	
16. Mom reads to you				16 ___
17. Good at spelling	17 ___			
18. Gets asked to play by others		18 ___		
19. Good at running			19 ___	
20. Stays overnight at friends				20 ___
21. Good at adding	21 ___			
22. Others sit next to you		22 ___		
23. Good at jumping rope			23 ___	
24. Mom talks to you				24 ___
Column (Subscale) Total:	☐	☐	☐	☐
Column (Subscale) Mean: (Total Divided by 6)	______	______	______	______

Comments:

*Susan Harter and Robin Pike, University of Denver, 1983

Sample of the Pictorial Materials



Accompanying the verbal description which the examiner reads is a *scoring* key for that item. For each of the four possible circles which the child may choose as his or her response, there is a corresponding circle on the examiner's page designating the numerical score for that choice. These scores range from 1, for the least competent choice, to 4 for the most competent choice. Recording these responses and scoring is described in the next section.

Instructions

The child is given a sample item at the beginning of the booklet and instructed as follows:

I have something here that's kind of like a picture game and it's called WHICH BOY (GIRL) IS THE MOST LIKE ME. I'm going to tell you about what each of the boys (girls) in the picture is doing.

Sample: In *this* one, (E then points to picture on the left) this boy/girl is usually kind of *happy*, and this boy/girl (E points to the picture on the right) is usually kind of *sad*. Now, I want you to tell me which of these boys/girls is the most like *(Child's Name)*.

The Categories of CAFIAS

Categories 2-17	Teacher Behaviors
Categories 8-19	Student Behaviors
Categories 10	Confusion
Categories 20	Silence

Relevant Behaviors

Categories	Verbal	Non-verbal
2-12	2 (A positive value assessment) Praises, commends, jokes, encourages	12 Face: Smiles, nods energetically with smile, winks, laughs Posture: Applauds by clapping hands or patting student on shoulder or head; shakes student's hand, embraces joyfully, laughs to encourage
3-13	3 No value implied) Accepts, clarifies, uses, and develops suggestions and feelings of the student N.B. Flanders category one, which refers to teacher acceptance of student feelings and emotions, is included in this category. Coders are reminded to use 1 and 11 on the tally sheets. These behaviors are tallied separately for analysis purposes and included for parameter purposes in the matrix as 3s and 13s	13 (Elevates student performance onto a par with teacher performance) Face: Nods without smiling, tilts head or sighs empathetically Posture: Shakes hands, embraces sympathetically, places arm around shoulder or waist, catches an implement thrown by student, accepts *facilitation* from students, takes part in game with students, supports student during the activity or spots in gymnastics
4-14	4 Asks questions requiring student answers	14 Face: Wrinkles brow, opens mouth, turns head with quizzical look Posture: Raises hands in air quizzically to expect answer, stares awaiting answer, scratches head, cups hand to ear and stands still awaiting answer

THE CATEGORIES OF CAFIAS (Continued)

Categories	Verbal	Non-verbal
5-15	5 Gives facts, opinions, expresses ideas, or asks rhetorical questions	15 Face: Whispers words audibly, sings or whistles Posture: Gesticulates, draws, writes, demonstrates activities, points, points to board
6-16	6 Gives directions or orders that will result in immediate observable student response	16 Face: Points with head, beckons with head, yells language other than recognizable words Posture: Points finger, blows whistle, holds body erect while barking commands, pushes a student in a given direction
7-17	7 (A negative value assessment) Criticizes, expresses anger or distrust, uses sarcasm or extreme self-reference	17 Face: Grimaces, growls, frowns, drops head, throws head back in derisive laughter, rolls eyes, bites, spits, butts with head, shakes head Posture: Hits, pushes away, pinches, grapples with, pushes hands at student, drops hands in disgust, bangs table, damages equipment, throws things down
8-18	8 Student response entirely predictable, such as obedience to orders and responses not requiring thinking beyond the comprehension phase or knowledge (after Bloom)	18 Face: Poker-face response, nods, shakes, gives small grunts, quick smile Posture: Moves mechanically to questions or directions, responds to any action with minimal nervous activity, robot-like, practices drills, awaits in line, responds by putting hand up when answering to teacher direction

THE CATEGORIES OF CAFIAS (Continued)

Categories	Verbal	Non-verbal
8-18	8 Predictable student responses that require some measure of evaluation, synthesis, and interpretation from the student. The initial behavior is in response to teacher initiation. Student interpretation from teacher in discussed activity. A student questioning when related strictly to topic under discussion	18 Face: Look of thinking, pensive, formal expressions Posture: Interprets movements, tries to show some arrangement that requires interpretive thinking, works on gymnastic routine, test taking, interprets task cards; plays games. Student puts hands in air to give answer to teacher question
9-19	9 Pupil-initiated talk purely the result of their own initiative and could not be predicted (either positive or negative behavior)	19 Face: Makes interrupting sounds, gasps, sighs Posture: Puts hands up in air to ask (unsolicited) question of teacher, gets up and walks around without provocation, begins creative movement education, makes up own games, makes up own movements, shows initiative in supportive movement, introduces new movements into games not predictable in the rules of games
10-20	10 Confusion, chaos, disorder, noise	20 Face: Silence, children sitting doing nothing, noiselessly awaiting teacher just prior to teacher entry

APPENDIX C

Sample Lesson Plans

SOCCER OVERALL TERM OBJECTIVES

Motor Objectives:

To kick a soccer ball with a mature pattern in a soccer lead-up game setting.

To demonstrate proper methods of trapping a rolling ball with the foot.

To demonstrate proper methods of trapping a bouncing ball with the foot.

To demonstrate proper methods of trapping a ball with the knee tossed from 10 feet.

To demonstrate the proper technique of heading a ball tossed from 10 feet.

To be able to dribble a ball in and out of cones while maintaining control for a distance of 30 feet.

To be able to pass the ball using the inside of the foot to a partner 20 feet away.

Cognitive Objectives:

To understand the concept of the throw-in, goal kick, and kick-off.

To understand the concept of off-sides.

To understand the role of force absorption in trapping.

To understand the role of warming-up before physical activity.

Affective Objectives:

To develop an appreciation of working together with peers to accomplish a goal.

To develop an appreciation of vigorous physical activity.

To relieve the fear associated with contacting a ball with the head.

SOCCER DAILY OUTLINE

Week 1

1. Passing and trapping inside and outside of foot introduction
2. Passing and trapping review. Introduce dribbling inside and outside of foot.
3. Review passing and trapping. Review dribbling (Slalom Dribble). Introduce knee and instep trap. Introduction of sole of foot trap, instep trap.
4. Practice passing and trapping. Practice dribbling. Introduce heading.

Week 2

1. Integration of passing and trapping into most activites from this point on. Review heading (Return heading, Jump heading). Review dribbling (Confined dribble, Slalom dribble). Introduce throw-in.
2. Integration of dribbling into other activities from this point on. Practice heading. Practice throw in. Introduce long passing.
3. Review drills (Turn and pass, One touch overlap). Practice long passing. Introduce instep shooting.
4. Explain and introduce goal kick. Long passing drills (Restricted zone). Line soccer game.

Week 3

1. Offense-defense concepts. Goal keeper concept and skills. Advanced line soccer.
2. Review drills (Dribble-gallop, Dribble-skip). Alley soccer - 2 groups of 12.
3. Explain and demonstrate concept of off-sides. Advanced alley soccer.
4. Review drills (Goal keeper drills- Throwback, 3 cone goal). Modified soccer.

Week 4

1. Review drills (Return heading, jump heading). Advanced alley soccer.
2. Review drills (dribble gallop, hop, slide relay). Modified soccer.
3. Review drills (Turn and pass, One touch overlap). Soccer game.
4. Review drills (Throw-in and trap, Restricted zone). Soccer game.

SKILL OBJECTIVES:

EQUIPMENT: 14 SOCCER BALLS

1. To be able to pass and trap the ball using the inside and outside of the foot while working with a partner 15-feet away.

DAY 1

TIME	ACTIVITY	ORGANIZATION	TEACHING CUES
5-7 MIN	Warm-up: 1. Circle stretch 2. Introduction of teacher and assistants. 3. Run the perimeter of the field 1 time.		
	1. To be able to pass and trap the ball using the inside and outside of the foot while working with a partner 15-feet away.		
5 Min	a) In large group, the teacher demonstrates the proper technique for inside of foot pass.	Students should be in semi-circular arrangement so all may view demonstration.	
	b) In large group, the teacher demonstrates the proper technique for inside of foot trap.		
10 Min	c) Circle Pass	Children break into small groups of 6-8 children with a teacher assistant. Each group forms a circle approximately 10 feet in diameter. The assistant begins by passing to a child on the other side of the circle. Each child may select another to pass to on the other side of the circle. The pass should be accomplished with the inside of the foot and the receiver should trap with the inside of the foot.	

5 Min	d) In large group, the teacher demonstrates the proper technique for outside of foot pass.		
	e) In large group, the teacher demonstrates the proper technique for outside of foot trap.		
10 Min	f) Repeat step c with outside of foot trap and pass.		Increase distance as skill develops. Combine skills.
5 Min	h) Partner Pass	Each assistant pairs up the children in his/her group. Each pair has 1 ball. They practice passing and trapping the ball from various distances-not over 20 feet.	

SKILL OBJECTIVES:

1. To be able to pass and trap the ball using the inside and outside of the foot while working with a partner 15-feet away.

2. To be able to dribble a ball using the inside and outside of the foot in general space while avoiding contact with other participants.

EQUIPMENT: 14 SOCCER BALLS
10 CONES

Day 2

TIME	ACTIVITY	ORGANIZATION	TEACHING CUES
5-7 MIN	Warm-up: 1. Circle stretch 2. Figure 8 Field	Children run first 1/2 of perimeter, slide middle line, run second 1/2 of perimeter, slide end line, run, slide etc.	Teacher or assistant may wish to lead the group.
	1. To be able to pass and trap the ball using the inside and outside of the foot while working with a partner 15-feet away. (Review)		
2 Min	a) In large group, the teacher demonstrates the proper technique for inside of foot pass.	Students should be in semi-circular arrangement so all may view demonstration.	
2 Min	b) In large group, the teacher demonstrates the proper technique for inside of foot trap.	Be brief as this is review.	
5 Min	c) Circle drill		
	2. To be able to dribble a ball using the inside and outside of the foot in general space while avoiding contact with other participants.		
5 Min	a) Teacher in large group demonstrates the proper technique for dribbling with the inside and outside of the foot.	Teacher emphasizes keeping the ball close and moving slowly	

10 Min	b) In small groups, children dribble from one line to another 20 yards away and return.		
10 Min	c) Space dribble	In large groups, as equipment allows, each child has a ball and dribbles in a generally delineated space as much as possible. Children try to avoid contact with others. The group then discusses how they avoided others and whether they covered the entire space. Children not participating observe and make up the perimeter of the general space. Participants then switch with observers. Variations: On signal, stop the ball and on the next signal begin again. Discuss what children did to stop the ball quickly.	Keep the ball close Look up while moving How did you avoid others? How did you stop quickly?

SOFTBALL OVERALL TERM OBJECTIVES

Motor Objectives:

To throw overhand to another player with a mature pattern in a softball lead up game setting.

To catch a thrown or hit ball with a mature pattern using a softball mit.

To demonstrate proper methods of catching a ground ball.

To demonstrate proper methods of catching a bouncing ball tossed from 20 feet.

To demonstrate the proper technique of hitting a ball from a tee.

To be able to strike a ball when tossed underhand from 20 feet.

To be able to run the bases safely and in the fastest manner.

Cognitive Objectives:

To identify and play the various positions on the field.

To understand the concept of a foul ball.

To understand the role of force absorption in catching.

To understand the role of warming-up before physical activity.

Affective Objectives:

To develop an appreciation of working together with peers to accomplish a goal.

To develop an appreciation of vigorous physical activity.

To relieve the fear associated with catching a ball after being batted.

<u>SKILL OBJECTIVES</u>:

1. To be able to catch the ball with a mit when tossed by a partner from 15 feet away.

2. To be able to throw the ball with an overhand pattern to the teacher from 20 feet away.

3. To be able to run to first and second base safely and quickly.

<u>EQUIPMENT</u>: SOFTBALLS
BASES

<u>DAY</u> 1

TIME	ACTIVITY	ORGANIZATION	TEACHING CUES
5-7 MIN	Warm-up: 1. Circle stretch 2. Introduction of teacher and assistants.		
	<u>Station activities</u>		
10 MIN	1. Teach catching: a. Teacher demonstration	Group	Give with the ball. Watch the ball into your mit.
	b. Line drill	Teacher throws ball to children in line. Change level of ball to waiste, head and shin height. Explain different positions of the mit. S S S S S T	
	c. Partner catch	Partners throw to each other from a distance of 15 feet. Increase distance with proficiency. Throw underhand only	
10 MIN	2. Teach throwing: a. Teacher demonstration	Small group	Step with opposite foot.
	b. Line drill	Teacher throws overhand to student who returns the ball with the same pattern.	

10 MIN	3. Base running:		
	a. First base running demo	Set up and name bases. Demonstrate overun of first base.	
	b. Single hit	Children practice running past the first base.	
	c. Second base run demo	Teacher demonstrates running from first to second base.	Emphasize not overruning the base.

SKILL OBJECTIVES:

1. To be able to catch the ball with a mit when tossed by a partner from 15 feet away.

2. To be able to throw the ball with an overhand pattern to the teacher from 20 feet away.

3. To be able to catch a fly ball and a rolling or bouncing ball.

4. To be able to strike a ball off a tee with a smooth swing.

EQUIPMENT: SOFTBALLS
BASES
BATS (PLASTIC AND REGULAR)
BATTING TEE

DAY 2

TIME	ACTIVITY	ORGANIZATION	TEACHING CUES
5-7 MIN	Warm-up: 1. Circle stretch		
	Station activities		
10 MIN	1. Review catching and throwing:		
	a. Teacher demonstration of catch.	Group	Give with the ball. Watch the ball into your mit. Emphasize fingers up for high ball, fingers for low ball.
	b. Partner catch	See Day 1	
	c. Teacher demonstration of throw.		
	d. Partner throw	Same concept as partner catch.	If too difficult for some, teacher should receive the thrown ball instead of the partner.
10 MIN	2. Teach Striking		
	a. Teacher demonstrates batting from tee.	Group	Emphasize step into the ball. Check hand position.
	b. Children take turns batting from the tee.	Set up bases. One child bats while another runs to first base on each swing. Once each child has run to the first base, a new batter takes a turn.	Encourage the runner as well as the batter. Switch the runner with each swing.

10 MIN	3. Teach catching grounders. and fly balls.		
	a. Teacher demonstration		Emphasize two-handed catch.
	b. Line drill		
	c. Play "flies and grounders"	One partner throws flies or grounders to other. The receiver returns the ball underhand. Roles switch when teacher signals.	

APPENDIX D

Protocol on the Protection of Human Subjects

1. Provide a brief abstract summarizing the research to be conducted.

This research is designed to determine the effects of integration in physical education classes on the motor performance and self-concept scores of educable mentally impaired (EMI) and nonhandicapped (NH) children aged 7-9 years. The 4-week study is scheduled to begin June 27 and end July 29, 1988. Subjects will include 66 NH children from the Motor Performance Study (MPS) at Michigan State University and 24 EMI children from a three-county area surrounding Lansing, Michigan.

Qualitative aspects of motor performance will be assessed using the Test of Gross Motor Development (TGMD). Skills to be assessed include various locomotor patterns, such as running, galloping, hopping, leaping, and jumping. Object-control skills such as throwing, kicking, catching, and striking also will be evaluated. From a quantitative perspective, the softball throw for distance, the standing long jump, and the 20-yard dash will be examined. Self-concept/perceived competence will be measured by the Self-Perception Profile for Children (Verbal Scale) and the Pictoral Scale of Perceived Competence and Social Acceptance for Young Children (Pictoral Scale) once prior to the instructional period, during the first week, and on the two days immediately following the 4-week physical education instructional period. An examination of the frequency of teacher-student dyadic interactions will be conducted using the Dyadic Adaptation of the Cheffer's Adaptation of the Flanders Interactional Analysis System (DAC). Video- and audio-taping of selected time-sampled segments of physical education classes will be used to accomplish accurate assessment of these variables.

The value of this research is in providing empirical evidence concerning the effects of integrating EMI children with NH children in physical education classes. This study should expand the research which examines which environment best facilitates learning. If EMI children can be successfully integrated into physical education classes, without adversely affecting the motor and social behavior of their nonhandicapped peers, then empirical inquiry should reflect this. Informed teachers should therefore be less apprehensive about the practice of integrating children with mild mental handicaps into physical education classes.

2. Explanation of requirements for subject population and rationale for proposed population.

The population for this study must consist of both nonhandicapped and educable mentally retarded (EMI) children aged 7-9 years. The children recruited as EMI subjects must be identified as EMI children, according to the Michigan Board of Education definition, by the school system in which they attend. Those subjects recruited as nonhandicapped must not have been assessed as in need of special education services in the school which they attend.

The rationale for using the special population is evident in the purpose of the proposed study. EMI children are needed in order to determine the impact of the various class settings on the motor performance and self-concept characteristics of the children in this study. Approximately 15,700 school-age children have been identified as EMI in Michigan public schools. Because of this, school administrators and teachers are regularly faced with educating this group.

EMI subjects will be contacted through the cooperation of the Ingham, Eaton, and Clinton County intermediate school districts. Letters to parents of the children who may be potential subjects will be distributed in classes or mailed to their homes depending on the policies of the various school systems. Local newspapers may also be used in order to facilitate awareness of the proposed study. Special Olympics organizers in the various counties involved also will be contacted with information about the study.

Nonhandicapped children will be recruited from the children involved in the ongoing Motor Performance Study on the MSU campus. The structure of the MPS will be slightly altered in order to accommodate this research. The MPS offers classes based upon the grades children will be entering in the Fall of the following school year. Those who enroll in Grades 2, and 3 will be involved in the study. The changes in the structure of the MPS involve adding the testing dates to the two days prior to and following the instructional period. All parents are aware that the Motor Performance Study may involve research activities and they have given informed consent prior to participation in the program. Nevertheless, a separate informed consent form has been developed in order to clarify the purpose for the additional testing days.

3. Analyze the risk/benefit ratio.

A. Describe/assess any potential risks. Risks associated with this study are minimal. The physical education sessions which are a part of this study involve considerable physical activity. Because of this, opportunity for fatigue or minor injury may be possible (i.e., muscle strains, scraped knees). Very few injuries of any type have been reported in the 20 years of the operation of MPS. During this time span, the most serious injury on record is a broken arm.

Testing procedures, likewise, provide for possible risks. The activities involved in the assessment of motor performance involve some physical exertion. These risks are of no greater concern than those mentioned above. Other testing procedures are not expected to offer risk to the subjects involved.

Psychological and social risks appear to be minimal. It is possible that the EMI children may experience a feeling of rejection when integrated with the nonhandicapped population. This possibility should be minimized as the identity of the EMI children will not be made known to the other children or the classroom instructors. It is not expected that the assignment of subjects to groups will produce psychological, social, or legal risk to the children.

B. Procedures for protecting against or minimizing the potential risks. Precautions will be taken in order to minimize potential physical injury. This will be accomplished by hiring and training of experienced and qualified teachers. The use of lesson plans which are designed for safe procedures and adequate rest periods also will assure safety. Risk of physical injury also will be reduced by the presence of two teachers in each classroom. In regard to testing of motor performance, the use of nine trained test administrators for each group of nine students tested will assure proper supervision.

Confidentiality safeguards will be in place for this study. The author, dissertation committee chairperson, and Director of MPS will be the only individuals with knowledge of the mental abilities of the children. Various sessions will be video- and audio-recorded. For these sessions, children will be identified by number rather than by name to prevent others who may view the films from learning the identity of the EMI children. Reported findings of the study will not identify any subjects by name in order to ensure anonymity. This information is included in the consent form to be signed by the parent.

C. Assessing the potential benefits. Benefits to those involved in this study are numerous. Children involved will receive opportunity to improve their motor abilities due to instruction in this area. Most children also find the MPS program to be very enjoyable. Parents of the children involved in the study also may benefit from the information revealed in the testing. An interpretation of the scores of the various tests will be made available to any parent who requests specific information about his or her child. Thus, a parent can be provided with a measure of the motor performance level and rated self-concept of his or her child.

The educational community will potentially benefit from the information revealed in this study. Knowledge concerning the least restrictive environment in physical education for EMI children for the age group involved may possibly result. This may have an impact on educators as they make placement decisions for EMI children. The impact of the presence of EMI children on the nonhandicapped children will also be examined. This information will potentially impact the way parents of both handicapped and nonhandicapped children view the role of integration.

4. Describe the consent procedures to be used.

The consent procedure for NH and EMI children will differ slightly. Consent for the NH subjects will be obtained by mailing the consent form in the initial mailing of MPS registration materials to the parents of those children involved in MPS. The mailing is scheduled to be disseminated prior to the end of Spring term. The consent form will be attached to this program description (see Appendix A).

Initial contact with EMI subjects will be made via schools in the Clinton, Ingham, and Eaton County school districts. Once potential subjects have been identified, information about the study and the consent form will be mailed to parents. The consent form must be signed before admittance to the study is permitted (see Appendix A).

5. Provide copies of any consent form to be used.

Attached

6. Provide copies of information and instrumentation.

The dependent variables of this study include qualitative aspects of motor performance, quantitative aspects of motor performance, self-concept, and teacher-student dyadic interactions. These variables will be assessed using the following instruments and procedures.

Qualitative Motor Performance. The Test of Gross Motor Development (TGMD) will be used to assess qualitative aspects of motor performance. The TGMD yields three scores: (a) a locomotor skills subtest based upon performance of running, hopping, skipping, jumping, and galloping; (b) an object-control skills subtest based upon performance of throwing, catching, kicking, striking, and bouncing; and (c) a gross motor composite score. This test will be administered in groups of three children with three test administrators on the two days prior to the instructional period (pretest), and on the two days following the instructional period (posttest). Directions for administering the test are provided in the manual, and these directions will be followed when gathering the data. Nine trained physical education graduate students or faculty will be involved in collecting data for each child. Children will rotate to three different stations to perform the test items at each station. Each station will be staffed by a station manager, data collection assistant, and a video-tape operator. All performances will be video-taped for later analysis.

Quantitative Motor Performance. Three motor test items will be used for measuring quantitative aspects of motor performance: the softball throw for distance, standing long jump, and twenty-yard dash. These measures will be recorded during the performance of the qualitative measures as each of the three items in the quantitative test battery overlap with some of the activities of the TGMD.

Self-Concept. The Self-Perception Profile for Children (Verbal Scale) and the Pictoral Scale of Perceived Competence and Social Acceptance for Young Children (Pictoral Scale) will be used to measure self-concept on the two days prior to the instructional period (pretest), the 5th day of class (1st week), and on the two days immediately following the instructional period (posttest). Procedures for administering the test will follow the directions indicated in the manual and will thus be administered individually and in small groups.

Dyadic Teacher-Student Interactions. Frequency and duration of teacher-student dyadic interactions will be assessed using both videotaped and audio-recordings. Of the 16 days of class, every third day will be selected for video taping. During each of the resulting 5 days, one 10-minute stratified and randomly-selected time-sampled segment of instruction will be recorded. Audio tapes will be used in conjunction with the videotaping to identify the types of teacher-student interactions. Each teacher will carry a mini-cassette recorder in his/her pocket and will wear a clip-on microphone during audio-recorded sessions. The schedule for audio recordings is identical to that for video recording.

The Dyadic Adaptation of The Cheffers Adaptation of the Flanders Interaction Analysis System (DAC) will be used to identify interaction patterns and to determine categories of interactions between the teacher and students. The categories measured by the DAC are:

1. Empathic behavior given to the student
2. Teacher's acceptance of student's ideas
3. Teacher's directions
4. Teacher's questioning
5. Teacher's criticism of student's ideas

6. Teacher lecturing
7. Teacher praise/encouragement
8. Student rote response
9. Student confusion and silence resulting from teacher's questions or directions.

Students will wear assigned identification numbers on their nametags. All the above behaviors will be tallied from the video and audio tapes with a numbered subscript representing the individual student to or from which the behavior was directed. Separate tallies will be recorded at 3-second intervals as long as an interaction continues by trained observers.

7. Graduate advisor's signature.
See Cover Page.

8. Provide one complete copy of the methods section of the research proposal.
Accomplished

CONSENT FORM

This program is designed to study the relationship of self-concept and motor skill performance of children in physical education classes. Children will participate in a 4-week physical education program consisting of instruction in fundamental motor skills, including locomotor skills such as running, hopping, and jumping, and object control skills such as throwing, catching, and kicking. Evaluation of improvement in these skills will be assessed by testing the childrens' skills at the beginning and at the end of the program. Self-concept will also be evaluated prior to the beginning of instruction, during the first week, and at the end of the program. For this reason it is necessary to schedule each second and third grade child to a 1-1/2 hour slot for testing on one of two days prior to the beginning of the study (June 26,27) and immediately following the regularly scheduled summer program (July 27,28).

This program is more closely supervised than most physical education classes offered in the schools. Therefore, there no unusual risks associated with this program.

1. There will be a minimum of three teachers for every 26 students.

2. Each of the teachers and assistants in the program will be safety-trained. They will use lesson plans designed to ensure safe participation by all children.

3. Overall, MPS has a remarkable safety record during its 20 years of operation.

By signing this consent form, you as parent or guardian, are agreeing to allow your child to participate in the program and are stating the following:

1. The purpose of the program has been explained to me and I am freely consenting to allow my child to participate in the program. I also have explained the program to my child and he/she is willingly participating. I realize that I am free to remove my child from the program at anytime without recrimination.

2. I understand that the results of the program will be treated with strict confidence and that the identity of all children will be kept anonymous when reporting the findings of this study. I also understand that the results of the testing on my child will be reported to me at the conclusion of the study.

3. I understand that if I am injured as a result of my participation in this research project, Michigan State University will provide emergency medical care if necessary, but these and any other medical expenses must be paid from my own health insurance program.

4. I understand that my child will be evaluated in motor performance, self-concept, and interactions with teachers. Video and audiotaping will be used

___ Yes, I give consent

___ No, I do not give consent. I am returning this form for your records.

____
Child's name

____
Child's signature

____
Date

____
Signature of parent/guardian

Mail to: Michigan State University
Room 134 IM Sports Circle
East Lansing, MI 48824-1049

APPENDIX E

Schedule of Video- and Audio-Taping

Taping Schedule for INT and NI-NH

		9:30-10:10				10:15-10:55				11:00-11:40			
		A	B	C	D	A	B	C	D	A	B	C	D
JUNE	29												
	30												
JULY	5						SOC						SOF
	6												
	7												
	11	SOC									SOF		
	12												
	13												
	14	SOF						SOC					
	18												
	19												
	20							SOF			SOC		
	21												
	25												
	26			SOC								SOF	
	27												

Note: SOC indicates soccer class to be taped. SOF indicates softball classes to be taped. A, B, C, D, represent 10-minute segments of class.