

**The Indiana Inclusion Study
Year 1
Final Report**

Indiana Institute on Disability and Community
The University Affiliated Program of Indiana
Center on Education and Lifelong Learning
2853 East Tenth Street
Bloomington, IN 47408

**Prepared for
Indiana State Department of Education
Division of Special Education**

May 2000

The academic progress of students across inclusive and traditional settings

Nancy Waldron, Ph.D.

College of Education, University of Florida

Cassandra Cole, EdD.

Indiana Institute on Disability and Community, Indiana University

*This study was funded by the Indiana Department of Education,
Division of Special Education*

Abstract

This study investigated the effects of inclusive programs for students without disabilities and students identified with mild disabilities in six Indiana school corporations. Students' academic progress in reading and mathematics were compared using a curriculum-based measure, the Basic Academic Skills Sample (BASS), and selected portions of the Indiana Statewide Test of Educational Progress (ISTEP+).

This study addressed the following guiding research questions:

- How does the academic progress in reading and mathematics of students with mild disabilities who are educated in inclusive settings compare to the progress made by students who are educated in traditional resource/pull out settings?
- How does the academic progress of students with mild disabilities who are educated in inclusive and traditional resource settings compare to students without disabilities.
- How does the academic progress of students without disabilities who are educated in inclusive general education classrooms compare to the progress made in non- inclusive general education classrooms?

Six school corporations/special education cooperatives from across the state of Indiana participated in the study. These corporations/cooperatives were selected to represent various geographic regions of the state, and also to reflect school locations that were urban, suburban, and rural. Each school corporation/cooperative selected two inclusive elementary schools and two elementary schools that use a resource or pullout model in providing special education services to students with mild disabilities. The total number of students with disabilities in grades 2 through 5 included in this study was 428; total number of students without disabilities in grades 2 through 5 was 607.

The results of this investigation reveal that students without disabilities educated in inclusive settings made significantly greater academic progress in mathematics. Their progress in reading was not significantly different from students without disabilities who were educated in traditional settings. While a significant difference was not noted, further analysis of progress scores and group means demonstrated a consistent pattern in favor of inclusive settings. For students with disabilities, there were no significant differences in reading and math achievement across the comparison groups. However, a review of group means and the percentage of students making comparable or greater than average academic progress when compared to students without disabilities indicates a pattern in favor of inclusive settings. This finding was also supported when considering the academic progress of students with specific disability labels, namely learning disabilities and mild mental handicaps.

Introduction

An increasing number of schools are adopting inclusive education models in which students with disabilities receive special education support services in general education classrooms (McLeskey, Henry, & Hodges, 1999). As more students are served in inclusive environments, there is a need to evaluate achievement outcomes not only for students with disabilities, but also for students without disabilities who are receiving their education in these settings (Waldron, 1997). This study investigated the effects of inclusive programs on the academic progress of students without disabilities and students identified with mild disabilities in six Indiana school corporations. Students' academic progress in reading and mathematics were compared using a curriculum-based measure, the Basic Academic Skills Sample (BASS), and selected portions of the Indiana Statewide Test of Educational Progress (ISTEP+).

This study addressed the following guiding research questions:

- How does the academic progress in reading and mathematics of students with mild disabilities who are educated in inclusive settings compare to the progress made by students who are educated in traditional resource/pull out settings?
- How does the academic progress of students with mild disabilities who are educated in inclusive and traditional resource settings compare to students without disabilities.
- How does the academic progress of students without disabilities who are educated in inclusive general education classrooms compare to the progress made in non- inclusive general education classrooms?

Method

Participants

Six school corporations/special education cooperatives from across the state of Indiana participated in the study. These corporations/cooperatives were selected to

represent various geographic regions of the state, and also to reflect school locations that were urban, suburban, and rural. Each school corporation/cooperative selected two inclusive elementary schools and two elementary schools that use a resource or pullout model in providing special education services to students with mild disabilities. Demographic data was collected for each of the 24 schools that participated in the study, (see Table 1) including student population, ethnic composition, per pupil expenditure, number of students receiving free lunch, and identification rate for students with mild disabilities.

Table 1:
Demographic Comparison of Inclusive and Traditional School

	Inclusive	Traditional
Average Student Population	581	521
Percent of School Population Identified with Disabilities	7%	6%
Percent of Student Population Receiving Free or Reduced Lunch	25%	23%
Ethnic Composition of Student Population	82% White 11% Black 2% Hispanic 2% Asian 3% Multiracial	86% White 9% Black 2% Hispanic 1% Asian 2% Multiracial
Average Per Pupil Expenditure	\$6,245	\$5,667

All students identified with mild disabilities in grades 2 to 5 from the 24 elementary schools participated in the study. This resulted in a sample size of 428 students with mild disabilities: 234 students (54.7% of the sample) were served in special education resource settings and 194 students (45.3% of the sample) were served in inclusive settings. Demographic data was collected on all students with mild disabilities (see Table 2) to ensure that the two groups (inclusive and resource instruction) were

comparable on variables such as gender, grade, ethnic background, disability label, general intelligence, achievement levels, and special education services received.

Table 2:

Demographic Comparison of Inclusive and Traditional Schools of Students with Disabilities

	Inclusive	Traditional
Gender	64.9% male 35.1% female	71.4% male 28.6% female
Grade	20.6% grade 2 25.3% grade 3 25.3% grade 4 28.9% grade 5	15.8% grade 2 18.4% grade 3 33.3% grade 4 32.5% grade 5
Ethnic Background	80.9% White 16.5% African Amer. 2.1% Hispanic .5% Asian	78.2% White 18.8% African Amer. .9% Hispanic 2.1% Multiracial
Disability Label	71.6% Learning Disabled 20.6% Mild Mental Disability 7.2% Emotional Disability .5% Other Health Impaired	67.9% Learning Disabled 26.1% Mild Mental Disability 6.0% Emotional Disability
Mean Score: Full Scale IQ	85.5	87.4
Mean Score: Math Achievement	82.0	82.3
Mean Score: Reading Achievement	77.8	79.6
Percentage LRE	Full Time: 10.3 Part Time: 29.9 Resource: 52.6 Consult: 7.2	Full Time: 16.2 Part Time: 29.9 Resource: 45.3 Consult: 8.5

To obtain the sample of students without disabilities, 36 elementary classrooms were randomly selected from the participating elementary schools. Classrooms were selected to yield an equal number for grades 2 through 5, half being inclusive general education classrooms and the other half non-inclusive general education classrooms. Each elementary school was asked to nominate classrooms for participation in the study, and identified each classroom as inclusive or non-inclusive. From this nominated group one or two classrooms were randomly selected from each school to make up the representative state sample. This resulted in approximately 607 students without disabilities being included in the study, with a comparable number representing each grade level. Demographic data was not collected for students without disabilities that participated in the study; only information required to match student fall and spring test scores based on class, grade and school.

Academic Progress Measures

The academic progress of students was evaluated using a curriculum-based measure, the Basic Academic Skills Samples - BASS (Espin, Deno, Maruyama, & Cohen, 1989). Data is available to support the technical adequacy of the BASS when used with elementary students in grades 2 to 6 (Espin et al., 1989; Jenkins & Jewell, 1992). The BASS has been used frequently to measure the progress of students with mild disabilities in inclusive school settings (Klingner, Vaughn, Hughes, Schumm, & Elbaum, 1998; Waldron & McLeskey, 1998; Zigmond et al., 1995).

The BASS is a group administered instrument designed to assess student achievement in the academic skill areas of mathematics and reading. The mathematics section consists of two 1-minute probes with a variety of mathematical problems, including addition, subtraction, multiplication, and division. Students are assessed according to the average number of digits correct on the two probes. The reading section consists of a modified cloze procedure. Three reading passages are used, with every seventh word deleted and three choices offered to the students, only one of which makes sense in the passage. Students are allowed one minute for each probe and scores are calculated by taking the total number of correct responses after a ceiling of three consecutive incorrect responses is reached. According to Jenkins and Jewell (1992), the

BASS is a stable and valid instrument that correlates well with norm-referenced measures of academic achievement.

As a second measure of academic progress, data were collected from the Indiana Statewide Test of Educational Progress (ISTEP+). ISTEP+ includes a criterion-referenced test that measures student performance against Indiana State performance standards in language arts and math. Students receive a scale score on the criterion-referenced test that reflects the student's knowledge of essential skills and the ability of the student to apply those skills. As the ISTEP+ is only administered at selected grade levels, the study included Language Arts and Math scores for third graders (with and without disabilities) at each of the participating schools.

Procedures

The BASS was administered to participating students in fall, 1998 and spring, 1999, to assess academic progress in reading and math during the course of one school year. One investigator was assigned to each of the six corporations/cooperatives, and administered the BASS to all second through fifth grade participants using standardized instructions (see Espin et al., 1989). Group administration of the BASS occurred in all general education classrooms that participated in the study. For students identified with disabilities, administration of the BASS occurred either in their inclusive general education classroom, or as part of a small group in their special education resource room or another location in the school building. The procedures and times for administration of the BASS were the same for all students with and without disabilities included in the study. Total administration time for the reading and mathematics portions of the BASS was 15 to 20 minutes. Administration procedures were the same during both the fall and spring administrations.

A scoring protocol was used to score the two math probes and the three reading probes. Scoring was done between three individuals for triangulation. Score reliability across the math and reading probes was 90% or better.

The total number of students in grades 2-5 tested in the fall data collection cycle was 1182. During the spring cycle, 147 of the original participants were unavailable for testing, primarily because they had moved out of the school corporation or to a non-participating school. This 12.4% attrition rate was not different across the comparison

groups (students with mild disabilities, and students without disabilities, or students attending inclusive or traditional schools). Students with disabilities in the inclusion and traditional groups were compared on beginning achievement test scores, amount of special education services, and intelligence test scores. No significant differences were found on these measures. (See Table 2)

The ISTEP+ was administered in each school during the state designated time period in September, 1998. ISTEP administration was done by school personnel using standardized instructions. The study utilized available ISTEP scores for third grade students in participating schools. To obtain the sample of students with disabilities, ISTEP+ scores for language arts and math were collected for all third grade students with disabilities in our study. This resulted in approximately 73 students; 46 in inclusive schools and 27 in traditional schools. To obtain the sample of students without disabilities, ISTEP+ scores for language arts and math were collected for all third grade students in the study. This resulted in approximately 111 students; 53 in inclusive schools and 58 in traditional schools.

Results

Basic Academic Skills Sample (BASS)

Student achievement gains on the BASS were analyzed in two ways: first, to determine whether significant differences existed in reading and math scores for the two comparison groups (inclusion and traditional) used in the study, and secondly, to compare the educational achievement of students with disabilities to that of students without disabilities (Waldron & McLeskey, 1998; McLeskey & Waldron, 1996; Zigmond et.al., 1995). One method used in previous research is to compare "students' test standings relative to their grade level peer group at the beginning and end of the school year, to determine whether students actually start to catch up to their peers who are achieving at an average level" (Zigmond et. al., 1995, p.539). Standard scores (z scores, in this case) are used to examine student progress and determine the percentage of students that made progress comparable to or greater than their typical grade level peers. The

results of these analyses will subsequently be presented for students with and without disabilities.

With regards to students without disabilities, those educated in inclusive settings made significantly greater progress in math, while their progress in reading was not significantly different from students without disabilities educated in traditional settings. While a significant difference was not noted, further analysis of progress scores and group means demonstrated a consistent pattern in favor of inclusive settings. Table 3 shows the percentage of students without disabilities in the two settings who made progress in math and reading over the course of the school year. As Table 3 indicates, in math 58.8% of students without disabilities in inclusive schools made progress on the BASS as compared to 39.0% of students without disabilities in traditional schools. When comparing the two groups on the BASS in the area of reading, 50.7% of the students without disabilities in inclusive schools made progress, as compared to 47.1% of students in traditional schools.

Table 3:

	Inclusive	Traditional
Math	58.8 %	39.0%
Reading	50.7%	47.1%

When considering the achievement of students with disabilities, no significant difference was found in reading or math progress scores when comparing students educated in inclusive settings to those in traditional, resource settings. While a significant difference was not noted, further analysis of progress scores and group means demonstrated a consistent pattern in favor of inclusive settings. Table 4 shows the percentage of students with disabilities who made progress over the course of the school year, relative to the progress made by students without disabilities across all grade levels. As Table 4 indicates, 43.3% of students with disabilities who were educated in inclusive classrooms made progress on the BASS that was comparable to or greater than the progress made by students without disabilities in math. In comparison, 35.9% of the students with disabilities who were educated in traditional or resource programs made progress in math. In the area of reading, 45.9% of students with disabilities educated in

inclusive settings made progress comparable to or greater than their peers without disabilities, while 41.9% of students with disabilities who were educated in pull out resource programs made progress.

Table 4:

	Inclusive	Traditional
Math	43.3%	35.9%
Reading	45.9%	41.9%

The academic progress of students identified with different mild disability labels (e.g., learning disabilities and mild mental handicaps) was also analyzed across the two school settings, inclusive and traditional. Table 5 presents data for students in the sample identified with learning disabilities and the results are comparable to those obtained for all students with mild disabilities included in the study. The table shows that in the area of math, 41.7% of LD students made progress in inclusive settings, as compared to 34.0 % of the students with learning disabilities in traditional settings. In the area of reading, a comparable percentage of students with learning disabilities made progress in inclusive (48.2%) and traditional (47.8%) settings.

Table 5:

	Inclusive	Traditional
Math	41.7%	34.0%
Reading	48.2%	47.8%

The differences across the inclusive and traditional settings were even more pronounced for students identified with mild mental handicaps included in the study. Again, a greater percentage of MiMH students educated in inclusive settings made progress in math and reading when compared to students educated in traditional settings. The results in Table 6 state that in math, 50.0% of the MiMH students in inclusive settings made progress as compared to 37.7% in traditional settings. In reading, 40.0% of

the MiMH students in inclusive settings made progress, in contrast to 29.5% of MiMH students in traditional settings.

Table 6:

	Inclusive	Traditional
Math	50.0%	37.7%
Reading	40.0%	29.5%

Indiana Statewide Testing for Educational Progress QSTEP+I

Analyses of ISTEP+ language arts and math scores were completed for a sample of third grade students with and without disabilities included in the study. The criterion-referenced portion of the test was used, which measures individual student achievement against Indiana performance standards in language arts and math. Students are expected to demonstrate proficiency and meet Indiana Academic Standards by obtaining established scale scores on each section of the test. In Language Arts the established scale score is 475 and in Math it is 479.

With regard to students with disabilities it was found that in language arts 18.2% of students in inclusive settings met the Indiana proficiency standard, while 29.2% of students with disabilities in traditional settings met the standard. For math, the pattern was reversed with 34.8% of students with disabilities in inclusive settings meeting the standard and 18.5% of students in traditional settings (see Table 7). Table 8 shows the percentage of students with disabilities who met standards and scored as high or higher than the average score for Language Arts (mean=514.72) and math (mean=513.76) of third grade students without disabilities in the participating schools who took the ISTEP+ test. Data in Table 9 shows the percentage of students without disabilities in inclusive and traditional schools who met the ISTEP+ proficiency standard in language arts and math. In Language Arts, 73.6% of students without disabilities in inclusive schools met the standard as compared to 70.7% in traditional schools. The percentages in mathematics were 71.5% in inclusive schools and 86.0% in traditional schools. Table 10 gives additional information about the percentage of students without disabilities who met

standards and scored as high or higher than the average score of the sample of third grade students without disabilities in this study.

Table 7:

	Inclusive	Traditional	Total
Lang.Arts	18.2%	29.2%	22.1%
Math	34.8%	18.5%	28.8%

Table 8:

	Inclusive	Traditional	Total
Lang.Arts	9.1%	4.2%	7.4%
Math	10.9%	3.7%	8.2%

Table 9:

	Inclusive	Traditional	Total
Lang.Arts	73.6%	70.7%	72.1%
Math	71.7%	86.2%	79.3%

Table 10:

	Inclusive	Traditional	Total
Lang.Arts	49.1%	46.6%	47.7%
Math	47.2%	53.4%	50.5%

It is important to note that the ISTEP+ data does not provide enough information to accurately form any conclusions. The sample size for both students with and without disabilities is small, especially given that this sample was not selected randomly and therefore does not represent the third graders in the state. In addition, for students with disabilities, the sample size in inclusive schools is nearly twice as large as that in traditional schools. It is believed that this is due to the fact that many students with disabilities did not take the statewide exam or took it for diagnostic purposes only,

causing the numbers in inclusive and traditional schools to be disproportional. Thus, the information from the ISTEP+ portion of this study should be interpreted with great caution.

Discussion

The results of this investigation reveal that students without disabilities educated in inclusive settings made significantly greater academic progress in mathematics, while their progress in reading was not significantly different from students without disabilities educated in traditional settings. While a significant difference was not noted, further analysis of progress scores and group means demonstrated a consistent pattern in favor of inclusive settings. For students with disabilities, there were no significant differences in reading and math achievement across the comparison groups. However, a review of group means and the percentage of students making comparable or greater than average academic progress when compared to students without disabilities indicates a pattern in favor of inclusive settings. This finding was also supported when considering the academic progress of students with specific disability labels, namely learning disabilities and mild mental handicaps.

The table below provides a summary of the results from this investigation:

Students with mild disabilities (LD, MiMH, EH)	Academic progress was comparable to or greater in inclusive settings in math and reading
Students with learning disabilities	Academic progress was comparable to or greater in inclusive settings in math and reading
Students with mild mental disabilities	Academic progress was comparable to or greater in inclusive settings in math and reading
Students without disabilities	Academic progress was significantly greater in math and comparable to or greater in reading in inclusive settings
Indiana Statewide Test of Educational Progress	Sample was small and unequal across the two settings; unable to make accurate statement of results.

These results speak well for the inclusive school programs in the six Indiana corporations/cooperatives involved in this study and the positive impact they have on the academic achievement of students with and without disabilities. This investigation makes it clear that for students with mild disabilities, the inclusive school programs in the six participating districts provide an instructional experience that is at least as good, and in many cases better than the education these students would receive in a traditional school setting. It can also be concluded that clear achievement benefits accrue to students without disabilities who receive their education in inclusive general education classrooms. While individual classrooms were not analyzed in this study, other researchers have speculated that benefits to typical students are likely the result of additional supports provided in inclusive classrooms to all students; focus on adapting and differentiating instruction and increased teacher knowledge of student diversity and needs.

Future Research

During the 1999-2000 school year, data from three of the original six school districts will continue to be gathered and analyzed. The research questions, achievement measure and procedures from the first year of the study will be used in year two.

Using the results and data from the first two years of the Indiana Inclusion Study, a qualitative study will take place during the 2000-01 school year in three inclusive schools who participated in the first two years of the study. The purpose of the proposed research is to examine and describe the teaching practices and school structures that exist within three inclusive elementary schools in which students demonstrated high rates of academic progress in the first two years of this study. Researcher will record observation notes from observations in general education classrooms and conduct document reviews regarding instructional practices, curriculum organization and classroom climate. Classroom teachers, principals, related service personnel, and parents will be asked to participate in individual or focus group interviews. In addition, all teachers in the schools will be asked to complete a survey of teacher attitudes and beliefs regarding inclusive schooling. The information collected in this study will contribute to a growing body of research regarding effective teaching and school practices within inclusive school arrangements.

References

- Espin, C., Deno, S., Maruyama, G., & Cohen, C. (1989, March). The Basic Academic Skills Samples (BASS): An instrument for the screening and identification of children at risk for failure in regular education classrooms. Paper presented at the American Education Research Association Convention, San Francisco, CA.
- Jenkins, J., & Jewell, M. (1992). An examination of the concurrent validity of the Basic Academic Skills Samples (BASS). Diagnostic. 17. 173-188.
- Klinger, J., Vaughn, S., Hughes, M., Schumm, J., & Elbaum, B. (1998). Outcomes for students with and without learning disabilities in inclusive classrooms. Learning Disabilities Research and Practice. 13(3) 153-161.
- McLeskey, J., Henry, D., & Hodges, D. (1999). Inclusion: What progress is being made across disability categories? Teaching Exceptional Children. 31 (3), 60-64.
- McLeskey, J. & Waldron, N. (1995). Inclusive elementary programs: Must they cure students with learning disabilities to be effective? Phi Delta Kappan. 77. 300-303.
- Waldron, N. (1997). Inclusion. In G. Bear, K. Minke, & A. Thomas (Eds.), Children's Needs II: Development, Problems, and Alternatives (pp.500-510). Washington, DC: The National Association of School Psychologists.
- Waldron, N. & McLeskey, J. (1998). The effects of an inclusive school program on students with mild and severe learning disabilities. Exceptional Children. 64. 395-405.
- Zigmond, N., Jenkins, J., Fuchs, L., Deno, S., Fuchs, D., Baker, J., Jenkins, L., & Couthino, M. (1995). Special education in restructured schools: Findings from three multi-year studies. Phi Delta Kappan. 76. 531-540.