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Kindergarten Retention is Not Successful

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KINDERGARTEN RETENTION IS NOT SUCCESSFUL

By

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August 1, 2003

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Degree of

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TABLE OF CONTENTS

	Page
TITLE PAGE	i
DECLARATION OF ORIGINALITY	ii
PROJECT COMMITTEE APPROVAL	iii
LIST OF TABLES	vi
ABSTRACT	vii
CHAPTER	1
1 INTRODUCTION	1
Title of Project	1
Introduction	1
Problem Statement	2
Rationale for Study	2
Independent Variable	2
Dependent Variable	3
Hypothesis	3
Limitations of Study	3
Location	3
Subject Characteristics	3
Testing	4
Sample Size	4
Variables	4
External Validity	4
Definition of Terms	4
Retention	4
Social Promotion	5
Terra Nova	5
Summary	5
2 REVIEW OF LITERATURE	6
Introduction	6
Research	6
Summary	11

3	METHOD	13
	Introduction	13
	Subjects	13
	Sampling Procedure	14
	Research Design/Procedure	14
	Instrumentation	15
	Data Collection Procedures	17
	Summary	17
4	RESULTS	19
	Introduction	19
	Results	19
	Analysis of Data	25
	Deductive Conclusions	27
	Summary	27
5	DISCUSSION.....	29
	Introduction	29
	Implication for Effective Schools	29
	Recommendations	30
	Summary	30
	REFERENCES	31
	VITAÉ	33

LIST OF TABLES

Table		Page
1	Terra Nova Objectives	19
2	Chi-Square for Terra Nova Objectives	20
3	Language F-Test Two-Sample for Variances	21
4	Language T-Test: Two-Sample Assuming Unequal Variances	21
5	Math F-Test Two-Sample for Variances	22
6	Math T-Test: Two-Sample Assuming Unequal Variances	22
7	Reading F-Test Two-Sample for Variances	23
8	Reading T-Test: Two-Sample Assuming Unequal Variances	23
9	Social Studies F-Test Two-Sample for Variances	24
10	Social Studies T-Test: Two-Sample Assuming Equal Variances	24
11	Science F-Test Two-Sample for Variances	25
12	Science T-Test: Two-Sample Assuming Equal Variances	25

Abstract

This study investigated the academic effects of kindergarten retention on a group of eighth grade students who had been retained at the kindergarten level (n=22). The comparison group used consisted of eighth grade students who had been recommended for kindergarten retention but who were not actually retained (n=27). The students' fifth grade Terra Nova Standardized Test scores were analyzed to gather data for this study. The retained students had more not-mastered or partially mastered Terra Nova Performance Objectives and fewer mastered objectives than the students who were not retained. Some significant differences in academic achievement level were found in the subjects of science and math. The retained students also scored lower than the comparison group in the subjects of reading and social studies though not significantly lower. The overall results of this study indicate that grade retention as an academic intervention was ineffective and alternatives to retention are discussed.

INTRODUCTION

Kindergarten Retention Is Not Successful

Introduction

Grade retention or nonpromotion affects a significant number of children of all grades every year in the United States. Many reasons are given for retaining children. These include such things as to promote emotional development, to promote maturity, and to improve academic achievement. Both the public and many education professionals advocate retention policies. Yet, many popular beliefs about retention are contradicted by literature. The positive effects of retention, if there really are any, are by far outnumbered by the negative ones. Negative effects include social, personal, emotional, behavioral, and academic aspects.

Numerous references state that retention does not benefit students either in areas of personal adjustment or academic achievement. Students that are retained have a high chance of having low self-esteem. These students feel inadequate in relation to their peers. Their friends are promoted, and they are left to make new friends who are in most cases younger than them. These retained students begin to view being retained as a punishment as they try to go through the social adjustment, which gives them a negative self-concept. This easily creates more problems for the children by providing an emotional strain on them.

In most cases, retention does not seem to improve academics. Many references show that students who are retained a year may show some academic improvement during the second year when they repeat the grade. This academic gain, however, is only temporary. Improvement is shown because students are repeating the same course instruction and are retested at the end of the year with the same test or at least the same form of test.

Problem Statement

It is believed by some that if children are to be retained, it should take place during kindergarten. Some educators believe that students retained at this young age do benefit socially and academically. The children who are retained waste one year of their life and still have continued academic problems with added social and emotional ones. Surely there are other possible alternatives that can be explored and implemented to take the place of retention. So, the purpose of this study is to show that retention, even at an early age, will not improve scores on standardized end-of-the-year tests as measured by the Terra Nova.

Rationale for Study

Retention can be painful mentally and emotionally for children. School should be viewed as a happy place to learn, a place where students look forward to going. Children who are retained eventually dread going to school. All of their old friends are a grade level ahead of them. Retained students have to therefore make new friends. They are also now the oldest in their classrooms and view themselves as being dumb for having to stay behind and repeat a grade. Retention is definitely not in the best interest of children.

Independent Variable

The independent variable of the study was retention. The two levels are eighth grade students that were retained in kindergarten and eighth grade students that were recommended for kindergarten retention but were not retained.

Dependent Variable

The dependent variable of the study was the scores that the now eighth grade students retained in kindergarten and those recommended for kindergarten retention but not retained received on their fifth grade Terra Nova Achievement Test. This test is a standardized achievement test designed to provide achievement scores that are valid for most types of educational decision-making when analyzing the strengths and weaknesses of a student's achievement.

Hypothesis

The hypothesis was that fifth grade students who were retained during kindergarten will score lower on their fifth grade Terra Nova test than their peers who were recommended for kindergarten retention but were not retained.

Limitations of Study

Location

All subjects of the study were eighth grade students in the suburban city of Arnold, Missouri with an approximate population of 20,000 who attended the Fox C-6 School District with a population of approximately 12,000.

Subject Characteristics

The subjects in the study did not all have the same kindergarten teacher.

Therefore, the kindergarten teachers' teaching styles and methods that the subjects of the

study were exposed to may have been different, effecting the subjects' need to be retained.

Testing

The achievement test data analyzed in the study was fifth grade Terra Nova scores. The subjects in the study were not all in the same fifth grade classroom when taking the Terra Nova. Therefore, testing conditions at the time may have been different for each student.

Sample Size

The sample size for this study was 49. If the subject population had been significantly larger, it would have been possible to generalize the results of this investigation to other groups with more confidence.

Variables

Only academic variables were tested in this study. It would have been useful and interesting to assess social-emotional status of the subjects as well. It would have been intriguing to assess and compare differences in social-emotional status between the retained group of students and the students recommended for retention but not retained.

External Validity

The students in this study were all eighth graders from the Fox C-6 School District which educates approximately 12,000 students. This school district was in the suburban city of Arnold, Missouri which was located 15 miles south of St. Louis.

Definitions of Terms

Retention

Retention or grade retention referred to the practice of requiring a student to repeat a year of academic instruction at a particular level.

Social Promotion

Social promotion referred to allowing a student to be promoted to the next grade level to stay with his/her peers even if the student did not academically pass the particular level.

Terra Nova

The Terra Nova is a standardized achievement test designed to provide achievement scores that are valid for most types of educational decision-making when analyzing the strengths and weaknesses of a student's achievement in the areas of science, reading, language, math, and social studies.

Summary

In summary, even though there is an increasing amount of literature against retention, it is still widely practiced in schools all over the United States. The best interests of the children need to be kept in mind when retention is being considered. Obviously, a treatment such as retention has not been found to benefit a majority of students. It is ineffective and should be abandoned.

REVIEW OF LITERATURE

Introduction

Grade retention or nonpromotion is the practice of requiring a student to repeat a year of academic instruction at a particular level (Jackson, 1975). Retention became an issue in public education once school systems began to organize their pupils into grade levels in order to allow teachers a more homogeneous student grouping in which instruction could be addressed (Holmes & Matthews, 1984). Children were grouped mainly by chronological age, although level of academic achievement also played a role in determining grade level placement. Inadequate achievement resulted in retention established in most urban schools in the United States by the end of the Civil War (Holmes & Matthews, 1984). Since that time, the practice of retention has been marked by cycles of popularity (Rose, Medway, Cantrell, & Marcus, 1983). However, even though retention is still practiced today, many wonder if it is beneficial or effective for children. As the following research will indicate, there are many negative social and academic aspects associated with retaining children.

Research

During the 19th and early 20th centuries, it was common to retain children, and this practice was used as a treatment of choice for slow learners (Sandoval & Fitzgerald, 1985). From the 1930's until the early 1960's, the concept of social promotion was in vogue (Rose et al., 1983). During the 1960's, a downward trend in national standardized

achievement test scores was noted, and critics began to point to social promotion as a primary reason why more children were leaving the public school system with a less demonstrable grasp of the academic fundamentals (Sandoval & Fitzgerald, 1985). During the late 1970's and early 1980's, educators began to respond to the public demand of graduation or promotion (Jimerson, Carlson, Rotert, Eneland, & Stroufe). The goal was to ensure the students would possess adequate academic skills upon graduation from high school, but a frequent side effect was an increase in the rate of retention (Holmes, 1983). As a result, nonpromotion has again become the vogue. As more and more states move toward minimum competency testing throughout grades, the practice of retention will increase as one consequence of students failing to meet competencies (Rose et al., 1983).

Today, the primary goal of student retention is to give the students a year for growth, so they can catch up with other students (Thomas, 1992). Unfortunately, decisions to retain are made without consulting the available research on retention, and these children pay with a year of their lives and possible continued academic, social and emotional problems (Foster, 1993). Despite the popular belief that repeating a grade is an effective remedy for students who have failed to master basic skills, the large body of research on grade retention is almost uniformly negative (Shepard & Smith, 1990). According to Meisels and Liaw (1993), retention does not equalize outcomes even when retained students have been in school a year longer. Meisels and Liaw (1993) compared students who were not retained with those who were, and the retained students showed a disadvantage on later school performance outcomes. In a study by McCoy and Reynolds

(1999) grade retention was associated with significantly lower reading and mathematics achievement at age fourteen.

Children do make progress during the first year in which they repeat a grade, but not as much progress as similar children who are promoted (Smith & Shepard, 1987). Thomas (1992) points out the retained students are viewed as having more internalizing problems than those who are promoted. One study found that retained students are characterized as being significantly less confident, less self-assured, and less engaging than their academic similar peers (Jimerson et al., 1997). The study by Thomas (1992) shows that retention is not associated with long-term beneficial effects, but rather appeared to be associated with poorer academic and social functioning. Based on the finding of Jimerson and Carlson (1997), the practice of retention appears to be ill advised. This research suggests that retention may appear to facilitate early academic performance that disappears over time and may prove potentially harmful regarding adjustment.

A major reason given for retaining children in grades is to improve academic achievement (Pomplun, 1988). Shepard and Smith (1987) point out that educators believe that grade retention is an effective solution for problems of academic failure and social immaturity. Contrary to popular belief, the average negative effect of retention on achievement is even greater than the negative effects on emotional adjustment and self-concepts (Smith & Shepard, 1987). Retention is not found to benefit children and has proven to have negative effects on measured achievement and social adjustments (Niklason, 1987). Children who repeat a grade are consistently worse off in achievement and personal adjustment than comparable children who are promoted with their age-mates (Holmes, 1983).

The fact that most children who are retained or held back a grade are not helped academically, but actually experience less growth than like-functioning children who are promoted, has been well established in recent studies (Pierson & Connell, 1992). According to Holmes & Matthews (1984), retention has consistent negative effects on students. In a study by Sheehan (1993), the greatest difference found was related to academic achievement. Retained students scored about one-third standard deviation less than similar children who were promoted. Results on reading and arithmetic measures demonstrated that promoted students made more progress the following year than did those who had been retained. According to Overman (1986), in a study involving more than 6,000 cases of retained students, it was found that only 20% to 35% of retained students learned more material during the second year in the same grade than they had learned the first time around. As many as 40% of the retained students actually learned less during the year they repeated a grade. Sandoval and Fitzgerald (1985) completed a study, which evaluated the long-term effects of repeating grades. According to their results, grade repeaters made less progress in high school and had lower mathematics grades. Research that compares achievement before and after retention suggests that retention had little benefit for students beyond the sixth grade (Walters & Borgers, 1995). According to Mantzocopoulos & Morrison (1992), the later in school the grade retention, the poorer the academic performance. Most investigators urge teachers to retain students as early as possible, if they are going to retain them at all. Pomplun (1988) argues against retention as a means of encouraging greater gains in academic achievement because once a child has been retained, he or she never seems to catch up with classmates. Byrnes and Yamamoto (1985) report that children retained in first grade

made greater gains in reading and mathematics than did older children. However, they also report that the gains of the first graders decreased within a few years. In a study of fifty seven students who repeated grades 1, 2, or 3, it was found that more than eighty percent of the first-graders but less than half of the second- and third-graders achieved at a satisfactory level the second time around, but the increased achievement did not last the following year (Overman, 1986).

There are numerous negative effects involved with retention besides measured achievement and adjustment. According to Shepard and Smith (1990), the costs of educating a pupil are increased by eight percent assuming the pupil remains in school to graduate. Nationwide, this cost can run into billions (Sheehan, 1993). The annual cost to school districts of retaining 2.4 million students per year is nearly ten billion dollars, and the approximate cost per student to repeat a grade is \$4,051 (Holmes, 1983).

It has also been found that retention or nonpromotion may increase the likelihood of a student eventually dropping out of school. Byrnes and Yamamoto (1986) point out that dropouts are five times more likely to have repeated a grade. Retention is also likely to increase the number of students who are inappropriately identified as having disabilities, especially learning disabilities (Safer, 1986). Retained students are usually those who find learning difficult and need more intensive and high quality teaching than is typically available in the general classroom to meet achievement standards (Van Sciver & Fleetwood, 1997). This does not mean that these students should have to repeat a grade. There are other alternatives besides retention.

The many alternatives to retention are more effective in helping low achievers. These include remedial help, before- and after-school programs, summer school,

instructional aides to work with target children in the regular classroom, and no-cost peer tutoring, changing teacher and administrative perceptions, and increasing teacher expectations (Owings & Magliaro, 1998). One alternative in particular involves classrooms in which teachers used differentiated instruction to maximize student growth and individual success and to respond to the learner's needs. Torrance (1995) reveals the importance of fostering individual interest as a means of enhancing student motivation, achievement, and productivity. According to Sternberg (1997), student achievement can be improved by just partially matching instruction to individual learning patterns of the students. The diversity of styles among students implies that they need a variety of means of assessment to maximize and to show their talents and achievements (Grigorenko & Sternberg, 1997). The issue we should be addressing is not about retention of students but is about how should we improve the academic skills of numerous children and ultimately prevent failure (Byrnes & Yamamoto, 1985). Many believe addressing the individual learning styles of students through flexible and differentiated instruction can do this.

Hopefully, student retention rates will decrease with the implementation of the federal government's recent *No Child Left Behind Act* of 2001. According to the No Child Left Behind website, <http://www.nochildleftbehind.gov>, this new law contains four basic education reform principles: an emphasis on teaching methods that have proven to work, increased flexibility and local control, expanded options for parents, and stronger accountability for results. If schools are held accountable for student achievement and retention rates, they will be motivated to find methods to close the achievement gap between students so everyone has a chance to be successful.

Summary

In summary, literature shows that retention does not equalize the outcomes of students. In fact, it can affect students by making them less self-assured, less confident, and less popular. Besides these negative effects, research shows that retention does not benefit students academically. Studies prove that students who are retained end up making less academic progress in the long run. More alternatives need to be developed and utilized to replace grade retention so students needing help can benefit socially and academically instead of wasting a year retained with no real future improvement occurring.

METHOD

Introduction

This study showed that retaining students in kindergarten does not improve their future achievement on standardized tests compared to students that were recommended for kindergarten retention but were not retained. Achievement test data were compared for 22 students that were retained in kindergarten to 27 students that were potential retainees who were not actually retained.

Subjects

The population for this study was eighth grade students who were retained in kindergarten and eighth grade students who were recommended for kindergarten retention but were not retained. The study took place in Arnold, Missouri, and the subjects of the study attended the Fox C-6 School District.

The city of Arnold is a suburban city located in Jefferson County 15 miles south of St. Louis with a population of approximately 20,000. The residents of the city are mainly middle class. The Fox C-6 School district educates approximately 12,000 students that are primarily Caucasian. The district has 10 elementary schools, 3 middle schools, and 2 high schools.

The subjects consisted of 49 eighth graders divided into two study groups based on several criteria. The first group included 22 students (15 males, 7 females) who had been retained at the kindergarten level. The second group included 27 students (17

males, 10 females) who had been recommended for retention at the kindergarten level, but for various reasons did not actually repeat a grade.

Sampling Procedure

The 40 subjects were selected from a pool of 910 eighth grade students in the district. To be included in the next subject pool, subjects needed to meet all of the following criteria:

- (a) Their primary language was English.
- (b) They did not receive special education services.
- (c) They had not been grade-retained later than the kindergarten level.
- (d) They had not transferred from other school districts.

Information of the early retention status of the subject pool was obtained through several methods, including reviews of students' cumulative files, consultation with building-level administrators, specialists, and teachers, and examination of school placement rosters and other data. After reviewing the obtained data on the 910 eighth grade students, a total of 49 students were included in the final two-group subject pool for this study. The retained students were selected from a pool of 22 meeting the criteria. The students recommended for retention but not retained were also selected of 27 meeting the criteria. All of the students that fit the criteria were used in the study.

Research Design/Procedure

This study was a causal-comparative study because both the effect and the alleged cause have already occurred. The study investigated the academic effects of early (kindergarten) retention on a group of eighth grade students who had been retained at the kindergarten level ($n=22$). The comparison group used consisted of eighth grade students

who had been recommended for retention at the kindergarten level but who were not actually retained ($n=27$). The academic effects tested were the scores on the standardized test, the Terra Nova. The hypothesis was that eighth grade students who were retained in kindergarten scored lower on their fifth grade Terra Nova Standardized Test than students who were not retained. Once the subjects had been selected from the initial pool and divided into the two study groups, the cumulative academic file of each subject was examined to obtain standardized academic achievement data.

Instrumentation

Each of the 22 retained subjects and 27 not retained subjects in the study had been administered the Terra Nova Standardized Test during the spring of their fifth grade year, using 5.7 grade level norms, as had all other fifth grade students in the district. The Terra Nova is a California Test of Basic Skills. The results of the test provide academic achievement information for the subjects of reading, language, mathematics, science, and social studies. The Terra Nova test for fifth grade was chosen because it asks questions that are grade level appropriate and provides standardized achievement test scores. Two types of scores are given for the subject areas, norm-referenceds and percentages on the performance objectives. In this study, the percentages on the performance objectives were used to provide the data needed.

The content of the Terra Nova closely resembled instructional materials and included a full range of testing format options. The test also had clearly written construct/learning statements and guidelines for appropriate use of scores. There was also high inter-rater reliability ($0.85 - 0.97$) for constructed-response items. Some weaknesses of validity included slightly underrepresented students from the Midwest

(19.4% sample vs 23.9% national) and from urban areas (22.4% sample vs 32.3% national). The test inter-rater reliability data for constructed-response items were based upon test levels 13, 16, and 18 which represent various grade levels.

Grade level scores for each subject were recorded from the following Terra Nova content/subject areas: reading, language, mathematics, science, and social studies. Each of these subjects had objectives. The reading objectives included basic understanding, analyzing text, evaluating meaning, and identifying reading strategies. The language objectives included sentence structure, writing strategies, and editing skills. The mathematics included number relations, computation and estimation, operation concepts, measurement, geometry and spatial sense, data and status, patterns and functions, and problem solving and reasoning. The science objectives consisted of science inquiry, physical science, life science, earth and space science, science and technology, and personal and social perspectives. Finally, the social studies objectives were geographic perspectives, history and culture, civics and government, and economic perspectives. Subjects were scored individually on these objectives, and the final score was given out of a percentage of 100.

The Objective Performance Index (OPI) is a percentage from zero to one hundred. The OPI is used to indicate mastery of each objective. An OPI of 75 and above characterizes mastery. An OPI between 50 and 74 indicates partial mastery, and an OPI below 50 indicates non-mastery. This study compared the OPI for each individual objective and also for each of the five separate subjects – math, science, social studies, language, and reading.

Data Collection Procedures

Each subject's cumulative file was used to gather the Terra Nova achievement data for the retained and not retained groups. The Objective Performance Index for each objective mastered, partially mastered, or not mastered was calculated for the 27 non-retained subjects and also for the 22 retained subjects. The non-retained group of 27 subjects had 675 total objectives. Out of these, 249 objectives were mastered, 338 objectives were partially mastered, and 88 objectives were not mastered. The retained group of 22 subjects had 550 total objectives. Out of these, 163 objectives were mastered, 283 objectives were partially mastered, and 104 objectives were not mastered. This data was placed into a Chi-Square to find out if there was any statistical significance.

The Terra Nova achievement test data was also sorted by each of the five subjects. For all five subjects, the average OPI percentage was calculated for each student in both the retained and the non-retained groups. This data was placed into an F-Test to find the equality of variances. Then, the data were placed into a T-Test and analyzed to find the equality of means.

Summary

This study compared 22 students retained in kindergarten to 27 students recommended for kindergarten retention but not retained to see if there were any significant differences on their fifth grade Terra Nova Achievement Test scores. Students were selected from a pool of 910 eighth graders in the Fox C-6 School District. Their cumulative files were viewed to gather the achievement data needed for the study. The data that was used consisted of an Objective Performance Index percentage for each

objective tested in the subjects of reading, math, science, social studies, and language.

This percentage on each student participating in the study was analyzed for every objective.

RESULTS

Introduction

As found in the other studies on the topic, the group of students that were retained in kindergarten did have a different level of academic achievement than the group of students that were recommended for retention but were not retained. One comparison between the two groups tested was done using a Chi-Square test. Five other comparisons were completed which broke down the Terra Nova Achievement Test scores by each of the five subjects – math, science, social studies, reading, and language for both of the groups tested.

Results

The Terra Nova Achievement Test scores constituted the achievement data needed for this study. The Objective Performance Index for each objective mastered, partially mastered, or not mastered was tallied for the 27 non-retained subjects and also for the 22 retained subjects. The non-retained group of 27 students had 675 total objectives. There were 249 of these objectives mastered, 338 partially mastered, and 88 not mastered by the non-retained students. The retained group of 22 students had 550 total objectives. There were 163 objectives mastered, 283 partially mastered, and 104 not mastered by the retained students (see Table 1).

Table 1

Terra Nova Objectives

Objectives	Not Retained Group (n=27)	Retained Group (n=22)
Mastered	249	163
Partially Mastered	338	283
Not Mastered	88	104

These data were placed into an Interactive Chi-Square test and calculated to find the p-value. The p-value is the level of statistical significance. The p-value for the Chi-Square test was 0.00314954 (see Table 2).

Table 2

Chi-Square for Terra Nova Objectives

Chi-Square	11.521
Degrees of Freedom	2
P-Value	0.00314954

The null hypothesis for this data was that retention is independent of mastery; therefore, retained students will score lower. The alternative hypothesis was that retention and mastery are dependent on each other; therefore, students retained will score the same as those not retained. The Chi-Square test showed that the null hypothesis was correct since students that were retained did not master as many objectives as the students that were not retained.

The Terra Nova Achievement Test scores were analyzed on each of the five subjects tested - math, science, social studies, language, and reading. For all five of these subjects, the average Objective Performance Index percentage was calculated for both the retained and the non-retained groups of students. This data was put into charts and the F-Test: Two-Sample for Variances was calculated first to find the p-value of statistical significance. This determined whether or not the variances of the groups were

equal or unequal. It was assumed that the data were normally distributed and that the variances of the groups were equal. Then, the calculated p-value of the F-Test determined which type of T-Test needed to be completed which determined the equality of means for the data. If the p-value for the F-Test was less than .05, the T-Test: Two Sample Assuming Unequal Variance was used. If the p-value for the F-Test was greater than .05, the T-Test: Two-Sample Assuming Equal Variances was used.

For language, the p-value for the F-Test was .00000459 as shown in Table 3.

Table 3

Language F-Test Two-Sample for Variances

F-Test	Not Retained Group (n=27)	Retained Group (n=22)
Mean	67.8519	68.9091
Variance	26.20798	179.2294
Observation	27	22
Degrees of Freedom	26	21
F	0.146226	
P(F<=f) One-Tailed	0.00000459	
F Critical One-Tailed	0.505657	

Since this was less than .05, a T-Test: Two-Sample Assuming Unequal Variances was completed. The mean for the non-retained group was 67.8519, and the mean for the retained group was 68.9091 (see Table 4).

Table 4

Language T-Test: Two-Sample Assuming Unequal Variances

T-Test	Not Retained Group (n=27)	Retained Group (n=22)
Mean	67.8519	68.9091
Variance	26.20798	179.2294
Observation	27	22
Hypothesized Mean Difference	0	
Degrees of Freedom	26	

table continues

T-Test	Not Retained Group (n=27)	Retained Group (n=22)
T-Stat	-0.35014	
P(T<=t) One-Tailed	0.364529	
t Critical One-Tailed	1.705616	
P(T= t Two-Tailed)	0.729058	
t critical Two-Tailed	2.055531	

The p-value for the F-Test that used the math data was 0.000326 (see Table 5 below).

Table 5

Math F-Test Two-Sample for Variances

F-Test	Not Retained Group (n=27)	Retained Group (n=22)
Mean	72.18519	60.45455
Variance	42.31054	179.6883
Observation	27	22
Degrees of Freedom	26	21
F	0.235466	
P(F<=f) One-Tailed	0.000326	
F Critical One-Tailed	0.505657	

Since this was less than .05, a T-Test: Two Sample Assuming Unequal Variances was completed. The non-retained group had a mean of 72.18519, and the retained group's mean was 60.45455 as shown in Table 6 below.

Table 6

Math T-Test: Two-Sample Assuming Unequal Variances

T-Test	Not Retained Group (n=27)	Retained Group (n=22)
Mean	72.18519	60.45455
Variance	42.31054	179.68883
Observation	27	22
Hypothesized Mean Difference	0	
Degrees of Freedom	29	
T-Stat	3.759761	
P(T<=t) One-Tailed	0.000382	
t Critical One-Tailed	1.699127	
P(T= t Two-Tailed)	0.000765	
t critical Two-Tailed	2.045231	

For the reading data, the p-value of the F-Test was 0.017937 (see Table 7).

Table 7

Reading F-Test Two-Sample for Variances

F-Test	Not Retained Group (n=27)	Retained Group (n=22)
Mean	73.40741	70.72727
Variance	114.8661	275.2554
Observation	27	22
Degrees of Freedom	26	21
F	0.417307	
P(F<=f) One-Tailed	0.017937	
F Critical One-Tailed	0.505657	

Since this was less than .05, a T-Test: Two Sample Assuming Unequal Variances was completed. This test calculated a mean of 73.40741 for the non-retained group and 70.72727 for the retained group as shown in Table 8.

Table 8

Reading T-Test: Two-Sample Assuming Unequal Variances

T-Test	Not Retained Group (n=27)	Retained Group (n=22)
Mean	73.40741	70.72727
Variance	114.8661	275.2554
Observation	27	22
Hypothesized Mean Difference	0	
Degrees of Freedom	34	
T-Stat	0.65455	
P(T<=t) One-Tailed	0.258581	
t Critical One-Tailed	1.690923	
P(T, -t) Two-Tailed	0.517161	
t critical Two-Tailed	2.032243	

The p-value for the F-Test for the social studies data was 0.100566 (see Table 9).

Table 9

Social Studies F-Test Two-Sample for Variances

F-Test	Not Retained Group (n=27)	Retained Group (n=22)
Mean	70.14815	68.40909
Variance	117.208	198.7294
Observation	27	22
Degrees of Freedom	26	21
F	0.589787	
P(F<=f) One-Tailed	0.100566	
F Critical One-Tailed	0.505657	

This was greater than .05, so a T-Test: Two Sample Assuming Equal Variances was used. The non-retained group had a mean of 70.14815, and the mean of the retained group was 68.40909 (see Table 10).

Table 10

Social Studies T-Test: Two Sample Assuming Equal Variances

T-Test	Not Retained Group (n=27)	Retained Group (n=22)
Mean	70.14815	68.40909
Variance	117.208	198.7294
Observation	27	22
Pooled Variance	153.6325	
Hypothesized Mean Difference	0	
Degrees of Freedom	47	
T-Stat	0.488503	
P(T<=t) One-Tailed	0.313732	
t Critical One-Tailed	1.677927	
P(T,=t) Two-Tailed	0.627465	
t critical Two-Tailed	2.011739	

The science p-value for the F-Test was 0.058657 as shown in Table 11.

Table 11

Science F-Test Two-Sample for Variances

F-Test	Not Retained Group (n=27)	Retained Group (n=22)
Mean	70.88889	65
Variance	122.5641	62.28571
Observation	27	22
Degrees of Freedom	26	21
F	1.967772	
P(F<=f) One-Tailed	0.058657	
F Critical One-Tailed	2.037392	

This was greater than .05 but very close. A T-Test: Two-Sample Assuming Equal Variances was used. The mean for the non-retained group was 70.88889, and the mean for the retained group was 65 as shown in Table 12 below.

Table 12

Science T-Test: Two-Sample Assuming Equal Variances

T-Test	Not Retained Group (n=27)	Retained Group (n=22)
Mean	70.88889	65
Variance	122.5641	62.28571
Observation	27	22
Pooled Variance	95.63121	
Hypothesized Mean Difference	0	
Degrees of Freedom	47	
T-Stat	2.096663	
P(T<=t) One-Tailed	0.020716	
t Critical One-Tailed	1.677927	
P(T,=t) Two-Tailed	0.041432	
t critical Two-Tailed	2.011739	

Analysis of Data

The Objective Performance Index data that was tallied for both the non-retained and retained groups showed a p-value of 0.0031 when put into a Chi-Square test. The null hypothesis for this data was that retention is independent of mastery; therefore, the

retained students will score lower. The alternative hypothesis was that retention and mastery are dependent on each other; therefore, students retained will score the same as those not retained. The data showed a statistical significant difference between the two groups. The retained students had significantly more non-mastered or partially mastered objectives than the students that were not retained. This data correlated with the null hypothesis of the study.

The results of the T-Test on the language data showed that the means of both the non-retained group and the retained group did not vary greatly. The p-value for the T-Test was 0.3645. Both students that were retained and students that were not retained scored similarly on the Terra Nova in the subject of language.

The math data resulted in a T-Test that showed a statistical difference between the means of the non-retained and retained groups. The p-value for the T-Test was 0.000382. The retained students scored significantly lower on the math section of the Terra Nova as opposed to those students that were not retained.

The results of the reading data in the T-Test showed no statistical significant differences between the means of the not retained and retained groups because the p-value was 0.2586. The averages of both groups on the reading section of the Terra Nova were close.

The social studies data resulted in a T-Test that showed no statistical significance between the means of the non-retained and retained groups. The p-value of the T-Test was 0.3137. The Terra Nova scores of the non-retained group had an average similar to the retained group.

The results of the science data in the T-Test showed a significant difference in the

means of the non-retained group and the retained group because the p-value was 0.0207. This difference shows that the students retained in kindergarten did worse on the science section of the Terra Nova than those students that were not retained.

Deductive Conclusions

The most apparent conclusion to be drawn from this investigation was that the use of kindergarten grade retention was not effective as an academic intervention. This conclusion was warranted by the finding that there were significant differences in the achievement test scores between the group of retained students and the group of recommended but not retained students. These significant differences were found in the subjects of math and science. The students in the retained group scored significantly lower than the students in the non-retained group for the subjects of math and science. There was also a significant difference in the overall number of objectives mastered, partially mastered, and not mastered by both groups on the Terra Nova. The retained students had a lower number of mastered objectives and more not mastered objectives than the non-retained group which also supports the conclusion that retaining students in kindergarten is not an effective academic intervention. The means of the Terra Nova scores for social studies and reading were lower for the retained group when compared to the non-retained group. However, these scores were not significantly lower.

Summary

The data of this study showed that kindergarten retention was not academically beneficial to students. The retained students had more Terra Nova objectives not mastered and fewer mastered objectives than the non-retained group which showed a significant statistical difference when the numbers of mastered, partially mastered, and

not mastered objectives were placed into a Chi-Square. This showed that retention is independent of mastery because the retained students scored lower on the numbered of mastered objectives. The means of the math and science Terra Nova scores for the retained students were significantly lower than the non-retained students which also showed that kindergarten retention is not beneficial. The means of the social studies and reading Terra Nova scores for the retained students were also lower than the not retained group but not low enough to be considered a statistically significant difference.

DISCUSSION

Introduction

Similar to other studies on the topic of early retention, the group of students in this study that were retained in kindergarten had a different level of academic achievement than the group of students that were recommended for retention but were not retained. Overall, the group of students that were retained scored lower on the Terra Nova Test. The retained students had more performance objectives not mastered and had lower means in the subjects of science and math when compared to the non-retained students. The social studies and reading Terra Nova scores for the retained students were also lower than the non-retained group, but they were not low enough to be considered a significant difference. However, this data showed that kindergarten retention did not improve the academic achievement of students.

Implication for Effective Schools

Since the results of this study show that retaining students did not improve student academic achievement, one implication is that educational professionals should look at other interventions as alternatives to retention. Some intervention strategies might include remedial education programs, summer school, strategic grouping of students within grades based on their academic needs, and special education intervention where appropriate.

Another implication is that educational professionals need to be more adequately informed on what the data indicates concerning the practice of retention. Before students are retained, current research should be completed on the effects and outcomes of retention.

Recommendations

Further research on the effects of retention and social promotion would be beneficial when educational professionals are considering retaining students.

Researching the actual impact of alternatives to retention such as summer school programs, strategic grouping of low achieving students, remedial programs, and special education services would help educational professionals find more beneficial ways to help students improve academically.

Summary

The data from this study did not support the use of kindergarten grade retention as an effective intervention for improvement of academic achievement. To help students improve their academic achievement, education professionals need to investigate and utilize effective, creative alternatives to retention. There are no long-term beneficial effects associated with retaining students. Retention may sound like a good idea at the time, but the retained students do not make great academic gains in achievement as opposed to their peers. Instead, they lose a year of school to repetition.

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