

A STUDY OF THE COST-UTILITY OF OUTCOMES OF VARIOUS METHODS  
OF INCREASING THE FOUR-YEAR GRADUATION RATE IN OSCEOLA  
COUNTY PUBLIC SCHOOLS

by

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## **ABSTRACT**

The purpose of this study was to determine which interventions were deemed to be effective at increasing the four-year graduation rate in Osceola District Schools. This had become a concern due to the fact that this rate had decreased in recent years, and may be utilized as a predictor of the dropout rate. The interventions were then prioritized according to Levin's cost-utility theory, so that the order of implementation could be prioritized.

The study was conducted in January and February of 2005, and responses were elicited from 600 people. Students currently in Osceola District Schools high schools comprised 200 of this total, and 400 former Osceola District Schools high school students were also selected. The 600 people were randomly selected from directory information lists supplied by the school district.

A questionnaire consisting of thirteen interventions that could be utilized to increase the four-year graduation rate was mailed to them a few days after an introductory letter was mailed. A letter enclosed with the questionnaire requested that they fill out and return the

questionnaire in the enclosed return envelope. A postcard was mailed as a reminder to people that may not have responded to the letters, and had not yet filled out the questionnaire. Returned questionnaires were then used to calculate mean effectiveness ratings. Of the 600 questionnaires mailed, 154 were returned, and 123 contained no non-responses, and were therefore usable for this study.

The order in which the cost-utility in the study prioritized the implementation of the thirteen interventions was:

Offer three-year diploma options.

Have mentors available for students, with a mentor for every 100 students.

Have ten percent more seats for academy/ magnet/ vocational programs.

Offer a diploma option that removes the FCAT graduation requirement.

Offer a diploma option that removes the Algebra I graduation requirement.

Offer a diploma option that lowers the 2.0 Grade Point Average (GPA) graduation requirement on a four point scale to a 1.9 GPA.

Offer a diploma option that removes the FCAT Algebra I and GPA graduation requirements.

High school classes should have a maximum of 25 students

Grades four to eight classes should have a maximum of 22 students

Kindergarten to third grade classes should have a maximum of 18 students.

Schools larger than 500 students should be divided into smaller learning units, such as schools-within-a-school.

Free quality preschool should be provided.

Guidance counselors should be available, with one for every 100 students.

Four of the items would require statute changes before they could be implemented. They were the interventions that concerned GPA, Algebra I, and the FCAT graduation requirements. The items were prioritized because fiscal constraints may not permit all of the interventions to be implemented, and the interventions that yielded the greatest improvement in four-year graduation rate per unit cost were to be implemented first.

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## TABLE OF CONTENTS

<b>LIST OF TABLES</b> .....	x
<b>LIST OF FIGURES</b> .....	xii
<b>CHAPTER I INTRODUCTION</b> .....	1
Statement of the Problem .....	10
Research Questions .....	11
Null Hypotheses .....	12
Methodology .....	13
Definitions of Terms Used .....	16
Theoretical Framework .....	18
Significance of this Study .....	21
Delimitations .....	23
Limitations .....	23
<b>CHAPTER II REVIEW OF LITERATURE</b> .....	25
Risk Factors for Dropping out of School .....	25
Higher Standards Required for Graduation in Florida ...	30
Successful School Restructuring Programs .....	35
Programs Utilized to Increase School Success .....	47
Funding Florida Educational Programs .....	66
The Costs of Dropping Out .....	73
<b>CHAPTER III METHODOLOGY</b> .....	86
Overview of the Study .....	86
Research Questions .....	86
Hypotheses .....	87
Procedural Methods .....	88
Sampling Methodology .....	92
Data Analysis .....	95
<b>CHAPTER IV ANALYSIS OF DATA</b> .....	98
Introduction .....	98
Analysis of Questionnaire Returns .....	98
Research Question One .....	102
Research Question Two .....	108
Research Question Three .....	137
Results of the Hypotheses .....	141
Null Hypothesis One .....	141
Null Hypothesis Two .....	145
<b>CHAPTER V DISCUSSIONS, CONCLUSIONS, AND</b> <b>RECOMMENDATIONS</b> .....	165
Summary .....	165
Discussion .....	168



Conclusions .....	169
Recommendations .....	171
Recommendations for Further Study .....	176
<b>APPENDIX A: PRE-LETTER SENT TO RESPONDENTS.....</b>	<b>178</b>
<b>APPENDIX B: QUESTIONNAIRE SENT TO RESPONDENTS ..</b>	<b>180</b>
<b>APPENDIX C: SECOND CONTACT LETTER.....</b>	<b>183</b>
<b>APPENDIX D: THIRD CONTACT POSTCARD.....</b>	<b>185</b>
<b>APPENDIX E: INSTITUTIONAL REVIEW BOARD APPROVAL</b>	<b>187</b>
<b>APPENDIX F: RESPONDENT WRITE-IN SUGGESTIONS ....</b>	<b>189</b>
<b>LIST OF REFERENCES.....</b>	<b>199</b>

## LIST OF TABLES

Table 1. Number of Questionnaires Sent and Returned. . .	99
Table 2. Questionnaire Return Rate Adjusted for Undeliverable Mail. ....	100
Table 3. Questionnaires Utilized and Questionnaires Eliminated for Non-responses. ....	101
Table 4. Percent of Questionnaires Eliminated for Non- responses. ....	102
Table 5. Mean Responses for the 29 Questionnaire Items for All Respondents. ....	104
Table 6. Mean Responses for the 29 Questionnaire Items by the Education Level of the Respondent. ....	107
Table 7. Mean Responses for the Four Range Interventions for All Respondents. ....	138
Table 8. Cost Utilities for the 13 Interventions. ....	139
Table 9. Prioritization of Interventions by Cost Utility for Implementation. ....	140
Table 10. Cumulative Annual Cost of Implementation of Interventions. ....	141
Table 11. Paired Samples t-tests Between the 29 Interventions, and their Adjusted Grand Means. . . .	142
Table 12. Free Preschool: Statistical Contrasts and Significance. ....	147
Table 13. Mentors, 100:1: Statistical Contrasts and Significance. ....	148
Table 14. Guidance Counselors, 100:1: Statistical Contrasts and Significance. ....	150
Table 15. K-3 Class Size Maximum of 18: Statistical Contrasts and Significance. ....	151
Table 16. Grades 4-8 Class Size Maximum of 22: Statistical Contrasts and Significance. ....	153
Table 17. High School Maximum Class Size of 25: Statistical Contrasts and Significance. ....	154
Table 18. Three year Diploma Options: Statistical Contrasts and Significance. ....	155
Table 19. Diploma Option with no FCAT Requirement: Statistical Contrasts and Significance. ....	156
Table 20. Diploma Option with no Algebra Requirement: Statistical Contrasts and Significance. ....	158
Table 21. Diploma Option with 1.9 GPA Requirement: Statistical Contrasts and Significance. ....	160

Table 22. Diploma Option with no FCAT, Algebra, or GPA Requirements: Statistical Contrasts and Significance. ....	161
Table 23. Increase seats in magnet/academy/vocational programs by ten percent: Statistical Contrasts and Significance. ....	163
Table 24. Divide schools of over 500 students into schools-within-a-school: Statistical Contrasts and Significance. ....	164

## LIST OF FIGURES

Figure 1. Reduce class size to a maximum of 22 students per class in grades 4-8. . . . .	192
Figure 2. Reduce class size to a maximum of 25 students per class in grades 9-12. . . . .	193
Figure 3. Offer three year diploma options in high school. . . . .	194
Figure 4. Offer a diploma option that does not require passing the FCAT for graduation. . . . .	195
Figure 5. Offer a diploma option that eliminates the FCAT, GPA, and Algebra requirements for graduation. . .	196
Figure 6. Offer a diploma option that does not require passing the FCAT for graduation. . . . .	197
Figure 7. Divide schools over 500 students into smaller learning units, such as schools-within-a-school. .	198

## CHAPTER I INTRODUCTION

According to the Florida Information Resource Network (FIRN, 2003), between the 1997-1998 and 1998-1999 school years several changes were mandated by the Florida legislature for public high school graduation. Such mandates coincided with a decrease in the four-year graduation rate in Osceola County schools, from 81.95 percent to 55.67 percent (FIRN), although part of this decline in the four-year graduation rate may have been attributed to a change in the record keeping procedures between those two school years. Schargel and Smink (2001) listed and ranked the percentage of graduating high school students by state for both the 1991-1993 school years, and the 1994-1996 school years. During the 1991-1993 school years, 84.5 percent of Florida public high school students graduated, compared to 85.7 percent for the United States. By the 1994-1996 school years, the Florida rate declined to 80.1 percent, as the United States rate increased to 85.8 percent, leaving Florida ranked forty-eighth out of fifty of the states (Schargel and Smink).

Florida legislators passed legislation that required smaller schools, but permitted large schools to be divided

into schools-within-a-school, citing the benefits of these smaller learning communities (§1003(4) F.S.), and many of the advantages noted by McAndrews and Anderson (2002). However, as these changes were scheduled to go into effect, with schools planned during 2003 and later, they were eliminated by the legislature, as the legislature instead funded reduced class sizes as a method of improving student achievement (FIRN, 2004).

The costs associated with additional schooling or dropping out, were, are, and will be ultimately borne by the taxpayers. Anthony and Jacobson (1992) reported that the dropout problem had an estimated annual cost to the nation of \$71 billion in lost tax revenues, and \$6 billion in increased expenditures, split approximately equally between crime-related costs and entitlement programs.

Florida funded dropout prevention classes in public schools, which was done by allocating them a higher program cost factor than the 1.000 that was generated by grades 4-8 mainstream classes. During the 1994-1995 school year the program cost factor for Dropout Prevention classes was 1.571 (Murray and Murray, 1995), but due to a funding change for the 1999-2000 school year, the legislators eliminated that category entirely. In place of these

classes, money was allocated for "second chance schools" which were more commonly known as alternative schools, and categorical funding (FIRN, 2000).

Having vocational classes available for at-risk students is an intervention used to keep students in school, teach them useful skills, and lower the dropout rate, according to Craig (1997). However, Florida legislators decreased the funding weight assigned to vocational classes. For the 1994-1995 school year, there were ten different subdivisions in the Vocational-Technical field, which yielded an average program cost factor of 1.357. For the 1999-2000 school year, the program cost factor for Vocational Education had decreased to 1.211 (FIRN, 2000). This program cost factor was completely eliminated for middle schools for the 2004 school year (FIRN, 2005c). The program cost factor for vocational programs at the high school level was reduced to a 1.187 for the 2004-2005 school year (FIRN, 2005).

The national dropout rate remained at a fairly constant rate of approximately 11 percent of the 16-24 year old population according to the National Center for Education Statistics (NCES, 1996a). However, the average dropout utilized a disproportionately higher percentage of

services funded by taxpayer dollars. For example, 52 percent of welfare dollars were spent on high school dropouts, and 82 percent of the prison population was comprised of high school dropouts (Lunenberg, 1999). Of this prison population, a disproportionate percentage of those on death row consisted of dropouts (NCES, 1996b), and 85 percent of the juvenile inmates were dropouts (Lunenberg). These statistics suggested that dropouts comprised a large part of America's net tax consumers, and not America's net taxpayers. Therefore, people in the United States, and especially those in Florida would seem to have benefited by having taken steps needed to increase the four-year graduation rate in Florida.

Although the above studies cited statistics that indicated that a student not getting a high school diploma would likely be detrimental to society, legislation was introduced to increase the requirements for obtaining a Florida high school diploma. A major change in the requirements for high school graduation was added whereby Florida public high school students had to take and pass the Florida Comprehensive Assessment Test (FCAT) test, beginning with incoming ninth grade students during the 1999-2000 school year (§229.57 F.S.). Students must pass



both parts of the FCAT in order to earn a high school diploma (§1003 F.S.). While a student initially took this test to meet the high school graduation requirement in the tenth grade, any part of the test on which the student did not score satisfactorily would have to be retaken in the eleventh, and if necessary, twelfth grade. In March 2001, the FCAT was taken by about 144,000 tenth grade students statewide. The results were that about 36,000 failed the mathematics portion, and about 46,000 students failed the reading portion, while some of these students failed both portions and were doubly included (FIRN, 2003). The passing grade at the time was 295 for the mathematics portion, and 287 for the reading portion. Students who took the tenth grade test for the first time starting in March of 2002, needed to meet the new standard that raised the minimum passing score to 300 for both tests (FIRN). Although 25 percent of the students failed the math component and 32 percent failed the reading component, the new higher standard was anticipated to result in a 30 percent failure rate for the mathematics component, and a 42 percent failure rate for the reading component of the FCAT (Hegarty, 2003). During the 2002-2003 school year, 15,065 of the twelfth graders took the reading component of

the FCAT again, as did 12,072 in mathematics. Only 31 percent passed the reading component, and 42 percent passed the mathematics component (FIRN, 2003). These pass rates were the same for both the State of Florida and for the twelfth graders in Osceola County (FIRN).

Another addition to the high school graduation requirements was that students, beginning with ninth graders in the 1997-1998 school year, were required to take and pass algebra (§232.246 and 1003 F. S.). Berliner and Biddle (1995) reported that in a survey to determine the least important attributes for employment, mathematics came out at the top of the list. As an unintended consequence, some students may have been prevented from getting their high school diplomas (Broward, 2003), for knowledge that was lowest valued by potential employers (Berliner and Biddle). Also, the statewide minimum grade point average (GPA) required for graduation, which used to be a 1.5, on a four point scale, was raised to a 2.0 beginning with the 1997-1998 school year, for incoming ninth graders (§1003 F.S.).

School restructuring was one of the keys needed for lowering the dropout rate (National Dropout Prevention Center). The State of Florida required school

restructuring, believed that smaller was better when it came to schools, and set a cap for new elementary schools at 500 students, a cap for new middle schools at 700 students, and a cap for new high schools at 900 students for all new schools that were planned after July 1, 2003 (Bingler, et al., 2002). Since Florida school districts facilities were designed to accommodate much larger student populations than those new construction limits, the Florida State Legislature incorporated a provision for retaining the same number of students in the existing school buildings, while at the same time breaking that school up into smaller school units (§1013.43 F.S.).

Smaller schools were found to be more successful with low socioeconomic status students, which was one of the risk factors associated with dropping out of school (Bingler, et al., 2002). However, just because a provision existed for breaking up a large school into smaller schools-within-a-school, there was no automatic guaranty of successful results. How the schools-within-a-school were set up will determine their successes, according to Gregory (2001). In order to be successful as independent schools, and reap their benefits, Gregory found that there are five common errors to be avoided. The first is the lack of

autonomy that can happen when the large school is still used for several functions such as counseling and discipline. The large school facility tends to intrude on the autonomy of the schools-within-a-school. The second error relates to size. Gregory found that the smaller schools are still too large to deal as effectively as an even smaller school could. The third error relates to the lack of continuity that often exists when a division is made based on grade level. This means that as a student moves up, the student's group or school changes, which requires an additional transition period that could be avoided if more careful planning was done. The fourth error relates to time. In a truly small school, time is flexible, while in a larger school the bell rules. Often this is also the case in schools that had been converted to schools-within-a-school. The final error is that of control. In a smaller school, movement about the school is readily accomplished, while in a larger school it is more controlled (Gregory, 2001).

In addition to utilizing smaller schools as a method to reduce the dropout rate in Florida, smaller class sizes were also proposed. During the Florida election that took place in November of 2002, voters approved Amendment 9 that

required a cap be placed on class size. Although the class enrollment cap varied with grade level, the voters expressed their opinion that class size should be reduced and controlled in Florida. Beginning with the 2003-2004 school year, classes were reduced by two students per year until the class size goals were met. The goal for grades K-3 was 18 students per class, for grades 4-8, 22 students per class, and for grades 9-12 25 students per class by the 2010 school year (FIRN, 2004).

Programs of study were designed to appeal to students by offering various academy, or specialization programs that students could have selected in their area of interest. Since these programs were designed to generate student interest, they were shown to be successful in reducing the dropout rate for students in those programs (Education USA, 2000i).

As the researcher attempted to ascertain the best way to increase the four-year graduation rate in Osceola County, Florida, it was important that all common aspects of school restructuring were carefully considered, and that solutions with long-term, lasting results be sought. One potential shortcoming of the patchwork of programs and legislation about Florida schools was that decisions were

made in such a manner that would not be the rule for a successful company in the business world. In the world of education, attempts were made to comply with the changes, mandates, or increases, in various rules and requirements, while not knowing whether or not funding, already budgeted for, would be cut. Educators also found themselves with decreasing power, and in some areas, decision-making by teachers and administrators was no longer possible.

#### Statement of the Problem

Osceola County, Florida students had been graduating from high school after four years, at a rate lower than that in the base year 1994 (FIRN, 2000). If a student was still in high school after four years, taxpayers would have to pay for additional education for that student. The costs associated with these students dropping out of school, and dealing with the increased likelihood that problems would occur imposed a tremendous financial burden on Osceola County, the State of Florida, as well as the dropouts themselves (Catterall, 1985). This was true both in terms of reduced tax revenues, and increased entitlements and other government services that were

provided, such as welfare (Lunenberg, 1999). Lunenberg reported that 52 percent of the welfare recipients were high school dropouts, as was 82 percent of the prison inmate population.

Levin (1983) used cost utility as a decision making tool to facilitate the evaluation of different alternatives. Levin compared the costs of these alternatives, and estimates of the effectiveness of their outcomes. This estimation was necessary when cost benefit analysis and cost effectiveness would not work well because both required quantitative data that was not readily available. A shortcoming of this cost utility analysis however, was that since effectiveness assessments were subjective, they were not always replicable (Levin, p. 26).

### Research Questions

This study was to investigate the following research questions:

1. Based on respondent data, how effective were each of the interventions in the study at improving the four-year graduation rate, as perceived by former and current students?

2. How much would each of the interventions cost to implement?
3. How would the implementation of each of the interventions be prioritized, based on Levin's Cost Utility of Outcomes analysis?

### Null Hypotheses

The following null hypotheses were tested in this study:

1. No difference existed between the dropout prevention interventions mean effectiveness rating, and the mean effectiveness rating of each of the interventions.
2. No difference existed among
  - a. Current high school students
  - b. High school graduates
  - c. Dropoutswith respect to each intervention's mean effectiveness rating.



## Methodology

High school students and former students in Osceola County were randomly selected to complete a questionnaire, in which they answered a series of questions, based on how effective they felt each of thirteen interventions would be at increasing the four-year graduation rate in Osceola County high schools.

The respondents were divided into three groups: current students, former students that graduated from high school, and former students that did not graduate from high school. First, an introductory letter was sent to 200 students and 400 former students. After five days another letter and the questionnaire followed, included with a return addressed, stamped envelope, and a dollar bill offered as a token of appreciation (Dillman, 2000). In order to gather information about the respondent, the last part of the survey was about the demographics of the respondent, while otherwise leaving the respondent unidentified. The inside flap of the return envelope was coded so that the researcher could keep track of which respondents returned the surveys. During the data

gathering process, the responses of the former students who had graduated high school were separated from the responses of the former students that did not graduate from high school. The first part of the questionnaire asked the respondents to rate the effectiveness of a series of potential changes to Osceola County, Florida public schools, based on how effective they felt that the change would be in increasing the four-year graduation rate. Respondents were advised in the second contact letter that came with the questionnaire, to ignore the cost, and only rate the effectiveness of the items. The choices on a Likert scale were from one to five. A legend indicated that a rating of one was Completely Ineffective, a rating of two was Slightly Effective, a rating of three was Moderately Effective, a rating of four was Very Effective, and a rating of five was Extremely Effective.

The researcher analyzed the perceptions of current high school students and former high school students, both graduates and dropouts, about how effective thirteen interventions would be, if implemented, at increasing the four-year graduation rate in Osceola County schools. The thirteen potential interventions were:

1. Make free preschools available.

2. Have more mentors.
3. Have more guidance counselors.
4. Have three-year graduation options.
5. Lower class size in kindergarten to grade three.
6. Lower class size grades four to eight.
7. Lower class size in high school.
8. Lower the GPA needed for graduation.
9. Remove the algebra requirement for graduation.
10. Remove the FCAT requirement for graduation.
11. Remove the GPA, FCAT, and algebra requirements needed for graduation.
12. Increase the number of seats available in magnet/academy/vocational programs.
13. Divide schools larger than 500 students into schools-within-a-school.

Once the questionnaires were returned, they were separated into the three different groups involved, and coded so that the mean effectiveness rating and standard deviation of the effectiveness of each item could be calculated. Any nonresponse on a questionnaire removed that questionnaire from the study. Once that was done, the data was entered into SPSS (Statistical Package for the Social Sciences, 2003). The mean effectiveness rating for

the various choices were compared between the three groups, in order to search for statistically significant differences in responses. Costs of implementation for interventions were calculated based on existing budget data, where available, or an extrapolation of cost was based on existing data, and was calculated only when the actual cost was not available. Once that was done, these figures, either the actual cost, or a data based cost estimate needed to implement each of the interventions was applied. When divided by the mean effectiveness rating of an item, it yielded the potential cost utility of the outcome of that item. That in turn helped to prioritize the implementation of any potential changes.

#### Definitions of Terms Used

Student A student was a person who was enrolled in and attended a mainstream program, a special program, or an alternative program of education, which led to a high school diploma.

Dropout A dropout was a living person who was no longer a student, and has neither graduated from high school, nor transferred to another school.

Cost Cost was the dollar value placed on providing labor, services, or materials.

Cost utility of outcomes Cost utility of outcomes was the process by which various outcomes are evaluated by comparing them to the costs of those outcomes (Levin, 1983). It was the decision-making tool used to rank and determine the effectiveness of interventions when quantitative data was not readily available.

Economies of scale This was a term that described the saving often realized when something was done on a larger scale. For example, a school could have been built to educate more students, with a lower cost per student station than a smaller school, according to Viadero (2001).

Instructional square foot This is a square foot of space in a school building that has instruction of students as its primary purpose. Classrooms are instructional, but cafeterias, hallways, and restrooms are not.

Four-year graduation rate This was the rate at which students successfully completed high school by having received a high school diploma, with no more than four years elapsed from the time that they started public high school in Florida. It was expressed as a percent of the

original number of students in the school, program, or district.

Opportunity cost Opportunity cost was the cost for the loss of use of a resource, which was unable to be utilized, because it was utilized in another manner. For example, if the budget would only have permitted the implementation of interventions that cost \$5,000,000 and the school district officials had the opportunity to implement interventions that cost \$12,000,000 to increase the four-year graduation rate, the school district officials must choose which interventions to implement, and which changes cannot be implemented. The failure to implement some of those interventions will result in a less than optimal four-year graduation rate. In this case, the opportunity cost is the difference between these graduation rates, when multiplied by the number of students and then by the cost to society of each student not graduating in four years.

### Theoretical Framework

In this study, the theoretical framework is concerned with analysis. This type of analysis "...refers to the evaluation of alternatives according to a comparison of

their costs and the estimated value or utility of their outcomes" (Levin, 1983, p. 26). This economic decision-making tool evaluated various alternatives by comparing both their costs and an estimated value of their outcomes (Levin). For example, if a school district considered purchasing a computer program to help their students pass the FCAT mathematics test, they would have projected an increased pass rate on the FCAT mathematics test. The cost of purchasing and implementing the computer program, divided by the projected increase in pass rate, would have yielded the estimated cost-utility of that outcome. This cost utility could then be compared to the cost to society of not implementing this program. This analytical tool is often utilized when a subjective assessment is needed about the probability of an outcome. Although this assessment tool is by nature subjective, it is useful when the available information is not as concrete as with the traditional cost-effectiveness or cost-benefit approach (Levin). The cost-effectiveness or cost-benefit approaches may also be utilized for an existing program where both the costs and benefits are known. The cost-benefit and cost-effectiveness forms of analysis have the major limitation of hard quantitative data being required in order to

properly evaluate alternatives (Levin). Cost-utility analysis is often utilized when there were many possible interventions to be evaluated, and the resources were not available to construct a stringent cost-benefit or cost-effectiveness evaluation (Levin).

Perceived outcomes of interventions were measured on a utility scale, which ranked the effectiveness of the possible interventions. The cost-utility of a specific outcome was the quotient of the calculated cost and the utility, or effectiveness of that intervention. The cost-utilities could then be ranked from most to least productive. For example, if a program that cost an additional \$44.88 per student was utilized, and the effectiveness of this program was a 4.12, then the cost-utility of this outcome was  $\$44.88/4.12$ , which yielded a 10.9197 utility rating. The lower the utility rating, the greater the effectiveness per unit cost (Levin). This intervention would be implemented before an intervention that had a cost per student of \$40.00, and an effectiveness rating of a 2.50, which yield a 16.0000 utility rating.

However, Levin found some shortcomings with the cost-utility approach. He found that many of the assessments are highly subjective, in this case the effectiveness



ratings, and therefore it was possible that two people with the same idea about the utility of an intervention could have rated the effectiveness of that intervention very differently. In the instances where this was the best approach, such as when data are not concrete, it would be either time or cost prohibitive, or both, to have utilized a different approach (Levin).

#### Significance of this Study

The State of Florida experienced a reduction in the four-year graduation rate of high school students between the years 1994 and 1999. Although there was some recovery from 1999-2003, the four-year rate was still below what it was in 1994 (FIRN, 2005b). While there were very many variables that affected this solitary statistic, such as poverty (Roderick, 1993), or school size (Raywid, 1999), the result was clearly undesirable. Since the four-year graduation rate was more accurately measured than the actual dropout rate, this study focused on data about the four-year graduation rate. This study was designed to determine how thirteen interventions are best utilized and sequenced to have optimized this four-year graduation rate,

thereby having reduced the dropout rate, over both the short and long term. This was accomplished with input gathered from current students, former high school students that graduated, and those that dropped out.

This study examined various interventions that could have been utilized to increase the four-year graduation rate, such as class size (FIRN, 2004), and how effective these interventions were at increasing the rate of students graduating high school within four years. The researcher, based on existing data, calculated the cost for implementing an intervention, and then determined the cost-utility of that intervention based on the effectiveness rating of the respondents on a questionnaire. For example, the cost of a guidance counselor per year, including fringe benefits was budgeted at \$48,738, and an elementary assistant principal at \$75,618 (Osceola, 2004). This calculation was performed for all of the interventions. Costs were based on budget data, where available, or extrapolations of budget data and effectiveness, which was based upon questionnaire results. When the cost was divided by the mean effectiveness rating, the result is the cost-utility of that intervention or outcome. It is only when the cost-utility of the various outcomes were

analyzed, that any potential modifications could have been prioritized. A result of this research was that determinations could have been made about how to best improve the public education of students in Florida public schools by increasing the four-year graduation rate, thereby lowering the rate at which students drop out of school.

#### Delimitations

This study was delimited to students and former students in Osceola County, Florida. This county has rural, suburban, and urban areas. Therefore, generalizations made from this study may be applied to similar districts.

#### Limitations

The limitation of this study included the following: The respondents in this study answered questions accurately, there were a sufficient number of responses, the numbers used in calculations were accurate estimations

where concrete numbers were unavailable, and the subjectivity of the cost-utility analysis process.

## CHAPTER II REVIEW OF LITERATURE

### Risk Factors for Dropping out of School

Much research was done on the characteristics of at-risk students; however, it was extremely important that the at-risk students' classroom experiences were known, so that the patterns that influenced students to drop out might be understood. Understanding these experiences could have helped prevent these situations or conditions from being perpetuated, because without this understanding there would have merely been a replication of a system that consistently lost too many of its students (Catterall, 1985).

Among the many reasons that students dropped out of school, or characteristics of students who dropped out of school were:

1. The student had low self-esteem.
2. The student was older than many in his class, because he had been retained at least once during his years in school.
3. The student routinely got poor grades.

4. The student had conflicts with other students and teachers.
5. The student got pregnant, which in turn brought additional childcare problems.
6. The student found it difficult to deal with the bureaucracy of welfare and/or single parenthood.
7. The student had a learning disability that had gone unnoticed, uninvestigated, or undiagnosed (Craig, 1997).

The National Center for Education Statistics (2002) analyzed dropout characteristics and rates. Their report found that 55.1 percent of dropouts were male, and 44.9 percent were female, although both groups were represented in society in approximately equal numbers. This report also indicated that in 2000 the total dropout rate for sixteen to twenty four year olds was 10.9 percent. For white non-Hispanics the dropout rate was 6.9 percent, for black non-Hispanics it was 13.1 percent, for Hispanics it was 27.8 percent and for Asian/Pacific Islanders it was 3.8 percent (NCES). However, the National Center for Education Statistics 1992 report indicated that when they controlled for socioeconomic status (SES) there was no increased

likelihood of dropping out by ethnic minorities (NCES, 1992).

The NCES (2002) report went into further detail about the relatively high Hispanic dropout rate. For 16-24 year old dropouts, the rate was 44.2 percent for Hispanics born outside of the 50 United States and the District of Columbia (thereby excluding Puerto Rico from the United States for the purpose of the study), 14.6 percent for first generation Hispanic youth, and 15.9 percent for second generation Hispanic youth. The report further explained that 62.5 percent of the foreign-born (including Puerto Rico) Hispanic youth entered the United States but did not enroll in school. Of those youth, 79.8 percent of those who never enrolled in a public school in the United States were reported to speak English poorly or not at all. However, for foreign-born non-Hispanics the dropout rate was reported to be 8.2 percent (NCES, 2002).

In Osceola County, Florida 59.6 percent of the population was reported to be white, compared with 65.4 percent for the entire state (United States Census, 2000). The Hispanic population of Osceola County was reported to be 29.4 percent, compared to 16.8 percent for the entire State of Florida (United States Census), which, based on

these statistics, indicated an increased likelihood of an Osceola County student being Hispanic, and therefore subjected to an increased likelihood of dropping out of school. In January, 2005, the Osceola school district demographics indicated that Hispanic students comprised 45.9 percent of the student population in the public schools (Osceola County, 2005).

However, predicting who was truly at risk and therefore needed added interventions was often not so certain. Schargel and Smink (2001) noted that in the National Education Longitudinal Study of 1988 of students and six at-risk factors, that these factors did not predict with anything resembling certainty, who would have dropped out of school. The factors considered were:

- a. Had been in a single-parent family
- b. Had a family income of less than \$15,000 a year
- c. Had been home alone in excess of three hours daily
- d. Had limited proficiency in English
- e. Had a sibling who dropped out of school
- f. Had parents who did not have a high school diploma.

The Schargel and Smink study found that 53 percent of the students in the study that dropped out of school had none of the above risk factors. One of the risk factors



was common to 27 percent of the dropouts, and only 20 percent of the dropouts had two or more of the risk factors. The study instead found that:

1. Approximately 66 percent of the dropouts were white.
2. Approximately 87 percent of the dropouts came from a home where English was spoken
3. Approximately 68 percent of the dropouts came from a two-parent home.
4. Approximately 71 percent of the dropouts had never repeated a grade.
5. Approximately 60 percent of the dropouts had an average of a "C" or better.
6. Approximately 80 percent of the dropouts had no children and were not married.
7. Approximately 42 percent of the dropouts were from high schools in the suburbs (National Education Longitudinal Survey 1988 in Schargel and Smink, 2001).

The results of the study reported in Schargel and Smink (2001) included reasons that students dropped out of school, and their frequency. For males, the five most

common reasons given for dropping out and their percentages were:

- |                                       |              |
|---------------------------------------|--------------|
| a. Did not like school                | 57.8 percent |
| b. Could not get along with teachers  | 51.6 percent |
| c. Was failing school                 | 46.2 percent |
| d. Could not keep up with school work | 37.6 percent |
| e. Felt that they did not belong      | 31.5 percent |

For females the five most common reasons for dropping out and their percentages were:

- |                                       |              |
|---------------------------------------|--------------|
| a. Did not like school                | 44.2 percent |
| d. Was failing school                 | 33.1 percent |
| c. Pregnancy                          | 31.0 percent |
| d. Could not keep up with school work | 24.7 percent |
| e. Got married                        | 23.6 percent |

#### Higher Standards Required for Graduation in Florida

One change that may make a major impact on Florida's future dropout rate is the Florida Comprehensive Assessment Test (FCAT). Passing both parts of this test was added to the requirements for high school graduation for incoming ninth graders, starting with the 1999-2000 school year

(§229.57 F.S.). Students initially take this test to meet this high school graduation requirement in the tenth grade, however, any part of the test in which the student scored unsatisfactorily may be retaken in the eleventh, and if necessary, twelfth grade. In March of 2001 the FCAT was administered to 144,471 tenth grade students statewide. Of these, 36,117 students failed the mathematics portion, and 46,230 students failed the reading portion, including some that had also failed the math portion (FIRN, 2001). The passing grade for the March 2001 administration was 295 for the mathematics portion, and 287 for the reading portion. However, students that took the tenth grade test for the first time starting in March of 2002, needed to meet the new standard that raised the minimum passing score to 300 for both tests. Although 25 percent of the students failed the math component and 32 percent failed the reading component in the 2001 test, the new higher standards were anticipated to result in a 30 percent failure rate on the mathematics component, and a 42 percent failure rate on the reading component of the FCAT, and there was a movement afoot to boycott the FCAT (Hegarty, 2003). During the 2002-2003 school year these former students should have been seniors. During this 2002-2003 school year, 15,065 of

the twelfth graders had to take the reading component of the FCAT again, as did 12,072 in mathematics. Only 31 percent of the twelfth graders passed the reading component, and only 42 percent passed the mathematics component (FCAT, 2003). These pass rates were the same for both the State of Florida and also for the twelfth graders in Osceola County. During the 2003-2004 school year, the pass rates for twelfth graders in the State of Florida were 34 percent for the reading FCAT, and 26 percent for the math FCAT. In Osceola County the twelfth grade pass rates were below the state average, 32 percent for the reading FCAT, and 22 percent for the math FCAT (FIRN, 2004). Long before the FCAT existed, Orr (1987) found that as higher standards were imposed for high school graduation, more students would leave school without the benefit of a high school diploma. Without passing the FCAT, students were issued a certificate of completion. However, a student may have elected to spend up to an additional year in high school, full or part time in order to receive remedial instruction as he attempted to raise his FCAT score to a passing level (§1003.429(11)(9) F.S.).

The FCAT graduation requirement was part of a growing trend towards high-stakes testing by various states, up

from 18 states in 1998 to 29 states in 2003 (Heubert, 2000). There were disagreements over whether high-stakes testing would have helped or hurt minorities and the disabled. Those in favor of high-stakes testing argued that they forced schools and teachers to be accountable, and therefore tended to improve instruction in order to increase the pass rate on the test. Those against the testing argued that the students were retained or denied a diploma on the basis of this solitary test, and that minorities, and the disabled had failed these tests at higher rates than others. This could lead to an increased dropout rate, as low achieving students started the process of disengaging from school as the graduation test loomed in the future (Heubert). There was also evidence that low-performing schools would suffer from teacher flight, hurting the students even more. Education Secretary Richard Riley urged states to set standards that were both challenging to the students, realistic in their expectations of student performance, and that states should use more than one method of measuring the learning of the student.

Carpenter (2001)) noted that high-stakes tests could be a sound and objective method of having student

performance evaluated. Carpenter did note however, that tests should not be utilized as the sole measure of student performance, because to do so may have had unintended adverse consequences. Carpenter, writing in the American Psychological Association (APA) Monitor, listed methods of promoting fairness and avoiding unintended consequences. These included permitting multiple opportunities to pass a test that was required for graduation or promotion, and having an available alternative testing procedure available. The APA also maintained the principle that the tests needed to be monitored for possible adverse impact on minority and low Socioeconomic Status (SES) students, in order to have identified and minimized the possible negative consequences of the testing. When Limited English Proficient students were tested, the test results may have been nonrepresentative of the student due to a lack of language acquisition skills, instead of the skills that the test was actually designed to measure. For disabled students who received testing accommodations, Carpenter was concerned that there was not enough information available about how testing accommodations affected test scores (APA, 2005). More information also needed to be known about how

high-stakes testing affected dropout rates, graduation rates, student anxiety levels, and teaching practices.

Another graduation requirement was that students take and pass Algebra I, or another Level II math course, and English I to graduate (§232.246 and 1003 F.S.). In a longitudinal study in Broward County (2003), a cohort of 1997-1998 ninth grade students was compared to a cohort of 1998-1999 ninth grade students. For the 1997-1998 cohort, there was no requirement that these classes be passed in ninth grade. For the 1998-1999 cohort, this requirement for promotion to tenth grade was added. After four years, 8.1 percent of the 1997-1998 cohort consisted of students retained in district, but 11.2 percent of the 1998-1999 cohort consisted of students retained in district.

#### Successful School Restructuring Programs

The principal of North High School, a school with a very high dropout rate in Denver, Colorado devised a dropout prevention plan for his school that met the economic needs of the students (Vail, 1998). He first identified students that were chronically absent, and he then literally went door to door, seeking them out. He had

teachers, counselors, and community members knock on students' doors. Students often dropped out of school, according to Vail, because they felt that they would not be missed if they dropped out. When the principal, teacher, or other member of the school community showed up at your door, that feeling disappeared. The school provided academic help, counseling, and career training. The neighborhood was patrolled for students hanging out instead of going to school. A flexible block schedule was instituted that permitted students to catch up more easily. Students could attend part of the day and work part of the day if they needed to. Night school was an option for those who worked full time during the day. In addition, there was a General Equivalency Diploma (GED) program, a pregnant teen program, an alternative school within the school, a reading program, vocational training, mentoring of students, job shadowing, and college preparation. By meeting the students' needs, Principal Joe Sandoval was able to lower the number of students dropping out from 560 during the 1995-1996 school year, to 170 during the 1996-1997 school year. The school went from having the highest dropout rate in Denver to having the lowest dropout rate in Denver in only one year (Vail).



The Graduation Alternative Program was implemented by the Youngstown, Ohio City School District, as a method that could enable students at-risk of dropping out to learn vocational skills as well as earned their General Equivalency Diploma (GED). According to Craig (1997), this program was built on the premise that all students needed a high school diploma or GED, as well as job skills. Students that had few credits and were 17 or 18 years old were able to earn their GED as they learned job skills. A typical school day was half of a traditional school day, taking classes in GED and vocational skills, while leaving the other half of the day available for work.

The United States Department of Education recognized several high schools, the "New American High Schools" for their model efforts in reshaping themselves into schools that blended career preparation and academic strength. Patricia McNeil, the United States Department of Education Assistant Secretary for Vocational and Adult Education listed five principles that these schools had in common. These principles were:

1. The schools had high expectations for their students.

2. The schools made sure that change had taken place in the way courses were taught, compared to the way that they once were.
3. The schools instituted a series of small learning environments.
4. The schools' culture must have included trust, caring, and respect.
5. The leaders of school change needed to be the teachers (Education USA, 2000i, p.12).

One of these New American High Schools was actually The faculty, administration, and alumni developed a way to comply with the five principles of the Department of Education as they restructured their school into a series of small learning environments. When students entered the school as freshmen, they were placed into one of four houses, which were divisions that were set up to create smaller learning environments. During their first two years, the students remained in that house as they took courses in the required core curriculum. As students entered their junior year, the learning environments become even smaller, as they selected a career major from the fifteen available choices that included areas such as aerospace engineering, industrial design, Gateway to

Medicine, which is a medical research program, and architecture. As a result, the student experienced the intimate feeling of a small school, even though over four thousand students were enrolled.

There were many indicators of success at this school. Brooklyn Tech, as it is known, had a reputation for being one of the best technical schools in the nation. Alumni members were active, and assisted in establishing partnerships with researchers, colleges, and employers in the area. The postsecondary enrollment rate was 98 percent, the turnover rate for teachers was very low, with many of the teachers having tenures of 20 to 30 years, and many of them former graduates who returned to teach at their alma mater (Education USA, 2000b).

Eleanor Roosevelt High School was the largest high school in Maryland, with a student enrollment in excess of 3,000 students. In order to have offered a small school experience to its students, this New American High School award winner was divided into various academies. Some of the areas of specialization were law, advanced technology, business, and health and human services. The school offered both internships and work-based training in the

area of the student's specialization (Education, USA, 2000f).

As Eleanor Roosevelt High School restructured in 1990, it made business partnerships the key focus, and instituted as a critical goal that each student needed to be included in an ongoing effort to reform the school. Special education and low achieving students had the chance to get job training, do job shadowing, and work part time, while they received on-site training. Because of the location of the school, it was possible to arrange business partnerships with important organizations such as Johns Hopkins, the National Zoological Park, and the Smithsonian. Seniors who specialized in law got a chance to assist judges both in chambers and during court proceedings, and engineering students participated in a robotics competition with engineers and college students (Education USA, 2000f).

MAST Academy, an acronym for Marine And Science Technology, was a magnet school for approximately 500 students and was located in Key Biscayne, Florida. Because of the location this New American High School award winner had a multitude of nationally prominent marine research facilities within walking distance. The National Oceanographic and Atmospheric Administration (NOAA)

permitted students to conduct weather pattern research with their scientists. This research included raising marine animals, and noting fluctuations in their growth rate for the animals across different temperatures and weather patterns. Besides simply recording their findings, the students were also required to write a research paper about them. This prompted a United States Department of Education observer to comment that this experience was high-level, and that it was unlike many other internships where the student depended greatly on the adult (Education, USA, 2000a).

During their sophomore year, students were required to select from three areas of specialization. One of the graduation requirements was the successful completion of at least seven courses in the student's major. The school had a dual enrollment program, and students utilized it to take courses at the University of Miami, Florida International University, and Johnson and Wales University. School partnerships were formed with the Florida and Miami Marine Patrols, the Miami Seaquarium, and the Port of Miami (Education USA). There was a zero percent dropout rate, a daily attendance rate of 96 percent, and a postsecondary enrollment rate of 94 percent.

Another New American High School award winner was Northeast Magnet High School in Wichita, Kansas. This urban school of approximately 400 students was located in an area that contained many aeronautical manufacturing plants. Although the school did not have a school-to-work program, most the business partners were from the aeronautics industry (Education USA, 2000e).

What differentiated this school from many others was its mentorship program, which was available in science, art, and law. This program had the student assisting individual researchers, scientists, and other professionals. Students who participated in the program with the Wichita School of Medicine aided scientists as they developed antibiotics and performed other research on bacteria.

Although the school did not require these mentorships, they were faculty initiated, and were part of the school's program. During their junior and senior years, students used career shadowing, as well as course and project mentors as students were aided in relating their studies to the real world. Student assessment was done with logs, portfolios, and other alternative means of assessment. This restructured environment led to a one percent dropout

rate and a 95 percent daily attendance rate (Education USA, 2000e).

Eastern Technical High School was Baltimore's magnet school of approximately 1,400 students, and a recipient of the New American High School award. This school had ninth graders explore the ten different majors offered by the school, including the education and skill levels required for each major (Education, USA, 2000g). By tenth grade the students started taking specialized courses that were integrated into the core curriculum. The school, in an effort to be flexible, offered courses that were interchangeable within many different courses of study, should a student decide to change his major field of study. Wherever possible, the school provided real world experience. The communications students designed public relations material for the school, and the culinary arts students managed and operated a small restaurant. The daily attendance rate at the school was 96.8 percent (Education, USA, 2000g).

East Grand Rapids High School was a suburban, 800-student school that did not rely on career academies for success. Instead it had two other advantages that it relied upon. One was a strong partnership between the

community, the parents, and the school. The other was a student-centered plan that was designed to meet the needs of each student, and was developed with input from the parent, the student, and the counselor, in order to ensure that they shared a common expectation of student success (Education USA, 2000c).

Technology was integrated into every phase of the liberal arts curriculum, and the school tried to continually improve itself with monthly meetings of the Parent Teacher Student Association, held to discuss curriculum and other issues. The school had less than a one percent dropout rate, a daily attendance rate that approached 97 percent, and a postsecondary enrollment rate of 94 percent (Education, USA, 2000c).

Palatine High School earned their New American High School award in a manner similar to East Grand Rapids. This suburban school of approximately 2,400 students focused its attention on its students with eight school counselors, two social workers, and two psychologists. The emphasis at this school was on the acceptance of all students, and permitting them to feel comfortable at the school. Although grouping into academies was common practice, Palatine had avoided this, while still offering



some of the same experiences from that type of setting. The school offered an accredited automotive training program, and continued to look to add additional programs and certifications that could be used as stepping-stones to the outside world (Education USA, 2001a).

Paint Branch High School, a 1,500 student suburban school started school restructuring in 1996. Students took traditional academic courses during their first two years, and during their junior and senior years elected to take a concentration in science, media, or both (Education USA, 2001b). In order to create a small learning environment, students got to select basic or advanced level courses in medical careers, biotechnology, engineering, nutrition, environment, multimedia, or business and technical media. Students in the engineering program worked with General Electric engineers to design a catapult and packaging system that protected an egg flung over 100 feet, an exercise that was routinely performed with college engineering students.

Approximately one quarter of the students took advanced placement examination, with 78 percent of the students granted college credit. The dropout rate was less

than three percent, and the postsecondary enrollment rate was 90 percent (Education USA, 2001b).

Another award winning school was Rex Putnam High School. In this school students selected their area of specialization, which they focused on during their junior and senior years. Because the school had a population of approximately 1,250 students, the number of specialized course offerings at the school was limited. However, by investigating resources in their community, they found that they were able to take advantage of specialized course offerings at a career education facility that was only a five-minute ride away. Although they were completely separate entities as recently as 1998, cooperation between the two facilities had increased greatly by 2000 (Education USA, 2000h).

International High School in New York City was formed as a charter school, and all enrolling students there were immigrants that had been in the United States a maximum of four years and were not fluent in English at the time of their enrollment. Almost 40 different languages were spoken at the school, and students were encouraged to read and write in their native language. Teachers went through an intensive staff development program, worked in teams

with about 75 students, and assessed students on a performance basis. By graduation, students needed to complete a portfolio and an oral defense of their work. Although the New York City public school dropout rate was 16.4 percent, the dropout rate for International High School was 1.7 percent. More than 90 percent of the graduates went on to college (Education USA,2000d).

These successful and innovative high schools varied from each other, but they all embodied the principles of the United States Department of Education in structuring or restructuring their schools for the maximum benefit of the students.

#### Programs Utilized to Increase School Success

Schargel and Smink (2001) studied the dropout problem in the United States extensively, and developed many strategies that they found to be effective in keeping at-risk students in school. They noted that these strategies could be employed at the local level to improve the situation for potential dropouts. One factor was family involvement. The level of family involvement in the education of their child was found to be a predictor of

school success. The education of students from birth to age three, Schargel and Smink noted, had been shown to raise IQ, so that early and quality instruction was important. Reading and writing programs that helped low achievers supported the other strategies. Mentoring, a one-on-one supportive relationship, helped students feel more comfortable, and improve academics. Service learning, which connected students' community service with academics, was used as a tool for school reform. Alternative schools often provided the potential dropout options for graduation. After school enhancement programs provided at-risk students with extra time that may have been needed to inspire the student, as well as minimize information loss.

Schargel and Smink (2001) also found that teachers who work with at-risk students need to feel supported through professional development in order to learn skills and strategies that help their students. They also need to be open to different learning styles and intelligences. Technologies that improve instruction should be utilized, and individualized learning should be made available for each student. Schools need to have in place a continuing process of evaluation and renewal. The entire community needs to provide support and a caring environment.

Guidance is essential, as schools provide skills for the workplace, and a non-violent method of conflict resolution needs to exist within the school. With all of those in place to care for the at-risk student, the likelihood of dropping out is minimized (Schargel and Smink, 2001).

Barber and Kagey (1977) studied a program for first through third graders that was implemented in order to improve attendance, one of the risk factors for dropping out of school. Students with three or fewer absences in a month got to go to a fun room where there was a movie, puppet show, games or art. Those with more than three absences for the month had to go to do their assignments in a workroom. Daily stickers were issued for an attendance chart in the classroom. A party was given once for the entire class, and after that it was given every three months only for students that had met their attendance goal. A significant increase in student attendance was found once the contingent parties began.

The Dropout Demonstration Assistance Program was funded from 1991-1996, and required a comprehensive approach to prevent students from dropping out of school. Included in this approach were support services including counseling and attendance monitoring, accelerated learning

strategies, outreach to parents, career-awareness activities, and improved articulation between middle and high schools (Spectrum, 2001). Test scores improved, as did teacher perceptions of the students in the program.

Economic feasibility played a role in determining educational policy. Webb, McCarthy, and Thomas (1988) found that there were some economies of scale in a school, but that these economies did not possess a linear relationship. Instead, the relationship formed a U-shaped curve; that is, when the school population was very small, there were large economies of scale for each additional student in the school; however, when the actual number of students approached the ideal number of students, the curve flattened out. When the ideal number of students in the school was exceeded, the long-term cost-per-student increased.

However, Webb, McCarthy, and Thomas also found several potential problems in the calculations that related to cost measurement that made comparisons difficult. First, there were differences in how costs were calculated. Therefore, the accurate comparison of costs between districts with different accounting methods would have been problematic. Second, costs were often calculated at the district level,

but not at the school level, although more meaningful data could have been acquired this way.

The cost per student in a smaller school was thought to be higher than that for a student in a larger school. However a study in New York City (Viadero, 2001) found that instead of measuring the cost-per-student, the cost-per-graduating-student would have been a more appropriate standard. Bingler (2002) found that the per-graduate cost was slightly lower in the smaller schools than in the larger schools, by less than one percent, although per-student, the larger schools in the study only spent about 81.5 percent on their students, of what the smaller schools did. When this per-graduate standard was utilized, it was determined that cost-per-graduate was lower in the smaller schools, due to their higher graduation rate.

Project STAR (Word, et al., 1990) was a study about the achievement of elementary school students in different size classes. More than 3,000 kindergarten to grade three students in Tennessee from rural, urban and inner-city schools were selected for this study. Students were randomly assigned to classes with twelve to 17 students or 22 to 27 students with a teacher, or 22 to 27 students with both a teacher and a full time aide. The results of this

study found that the students in the smaller classes achieved greater academic progress than the students in the larger classes based on scores from achievement and basic skills tests. The mostly minority, inner-city students in small classes, outscored the other students from both types of large classes. Findings about these students were that the benefits that the students in the smaller classes had in elementary school continued to benefit the students as they moved through the educational system, and into regular classes. The specific findings were that:

1. Seventeen percent of the students from the smaller classes were retained before grade ten, compared to from 30 to 44 percent of students from the larger classes.
2. Students from the smaller elementary school classes outscored the other students by more than ten points in English, Math, and Science.
3. Students from the smaller elementary school classes had fewer absences in high school than did the students from both of the regularly sized elementary classes.
4. Students from the smaller elementary school classes had fewer suspensions in high school than did the



students from both of the regularly sized elementary classes.

5. Students from the smaller elementary school classes had taken significantly more advanced courses in high school than did the students from both of the regularly sized elementary classes. Classes in this category were advanced placement and foreign languages.

Dr. Helen Pate-Gain, the lead researcher in this study expressed her hope that a future follow-up study of these same students would be conducted to determine if the students from the smaller elementary school classes made more productive citizens than students in the control group.

Mentoring had been used to help direct or redirect students in school. In a study of 722 mentoring programs, both community-based and school-based, Herrera, Sipe, and McClanahan (2000) identified eight factors that were extremely important in the impact of the program, as well as the design and operation:

- a. Engagement in social activities with the mentee
- b. Engagement in academic activities with the mentee
- c. The number of contact hours per month

- d. The decision-making process
- e. Provision for training before matching
- f. Provision for training and support after matching
- g. Provision for the matching process
- h. The age of the mentee in the program (Herrera, Sipe, McClanahan, 2000)

Sipe (1996) reported that effective mentors often engaged in these practices:

- a. Allowed the mentee to help determine how they will spend their time together
- b. Committed to being a consistent, dependable, and steady presence for the mentee
- c. Retained the responsibility for keeping the mentorship active
- d. Sought help appropriately from the program staff, while remembering the mentee's need for fun as part of the relationship
- e. Respected the viewpoint of the mentee
- f. Sought assistance when appropriate during planning

When a mentoring program in a school setting was planned, many steps were needed in order to achieve a successful program. They were:

- a. Focusing on the needs of the program
- b. Securing a commitment from the school district
- c. Selection of one person as the program coordinator
- d. Ensuring that the goals and objectives were clear cut
- e. The development of activities and procedures
- f. Identification of students that needed mentors
- g. Recruitment of mentors as the program was promoted
- h. Training of both the students and the mentors
- i. Matching the students and mentors
- j. Monitoring of the mentoring program
- k. Creation of a method to terminate the mentoring
- l. Modifying the program as necessary (Schargel and Smink, 2001)

However, there were some limitations for the mentoring process. According to Goodlad (1995) the limitation on available time was one of the detractors from a successful mentor-mentee relationship. Other reasons that the relationship would not have been as successful as possible were a social distance between the mentor and the mentee, a lack of training for the mentor, and the lack of a method of terminating the mentoring relationship when it was not effective, or was disruptive.

The number of people that a mentor was responsible for mentoring was addressed by Tyler (1998), who when discussing executive mentoring noted that while one-on-one mentoring is the most effective for that one individual mentee, having a senior mentor mentor a group can be very beneficial, while minimizing the amount of time used in mentoring. The mentoring relationship was not to exceed one year in duration, minimizing the termination problem noted by Goodlad. Benefits were shown in both the retention rates of the mentees, and their ability to be more successful, when measured in income earned.

School size had been extensively studied, and the consistent outcome was that a smaller school was both more effective and more productive, ingredients that were necessary for reducing the dropout rate (Raywid, 1999). The issue of how small was best was the subject of some debate. Lee and Smith (1994) found that there was more equitable student achievement and engagement in the smaller schools. Fine and Somerville (1998) suggested limits of 350 students in an elementary school, and 500 students in a high school. Lee and Smith (1997) recommended 600-900 students in a high school, based on test score performance. The United States Department of Education (2005) that high

schools have separate ninth grade centers separate from the main high school.

Viadero (2000) studied 150 small Chicago area public schools. Small was defined in this study as having less than 350 students. The national mean public school size was 741 students. The results of this study found that the students in the small schools attended school at a higher rate, had less violence, and got better grades in school, all indicators of success in school. As these students moved through the educational system, they dropped out less frequently than those students in larger schools.

Viadero (2001) found that although multiple studies had suggested that smaller schools enjoyed several advantages over larger schools, the educational trend was towards schools getting larger. Raywid (1999) noted that the indicators clearly showed that small schools were superior to larger ones. Low SES students tended to do better in smaller schools, while affluent students tended to do better in the larger schools.

Schools within schools, or schools-within-a-school are schools that have downsized into small autonomous schools but stayed in the same large building that they were in (McAndrews and Anderson 2002). They found that although

the size varies, a maximum size of 500 students was suggested. When compared to large schools, schools within schools have been shown to have students that:

- a. are happier
- b. are safer
- c. have fewer discipline issues
- d. have higher test scores
- e. drop out at a lower rate
- f. have higher student attendance rates
- g. cost less per graduate (McAndrews and Anderson (2002)).

McAndrews and Anderson also noted that a characteristic of schools within schools is the high level of autonomy granted to the small learning environment, in both budget and planning.

Florida legislators recognized the advantages of a small school, and also acknowledged the fact that many schools buildings in Florida were designed for large student populations. It permitted the creation of "schools-within-a-school" in one building (§1003(4) F.S., 2002), which allowed the continued use of existing large school buildings, while trying to reduce the anonymity of the students. In Garden City High School, with 1,835

students, there is a head principal, and four additional principals of those smaller schools-within-a-school. To facilitate the four schools-within-a-school, Garden City High School also has eleven secretaries (Garden City, 2005).

When new schools were designed in Florida, there were tight restrictions on how the money could have been spent, regardless of the size of the school. In 2001, for example, the caps on funds used for school construction from either Public Education Capital Outlay or Debt Services Trust Funds was \$11,300 for each elementary school student station, \$13,300 for each middle school student station, and \$17,600 for a high school student station (F.S. § 235). That is, schools could have enjoyed some flexibility on how the funds were spent, but it was tempting to enlarge the school in order to try to enjoy some of the economies of scale.

In November of 2002 the voters approved amendments to the Florida State Constitution Section 1 Article IX. It was amended to establish smaller class size requirements in core-curricula courses, which were to be fully met by the 2010-2011 school year. However, the small schools requirement was eliminated (§1003(4) F.S.), as small

classrooms took precedence. Compliance with the amendment was to have started with the 2003-2004 school year. Senate Bill 30-A (FIRN, 2005d) required that the average number of students in classrooms be reduced by at least two-per-year until the number of students in a classroom did not exceed the 2010-2011 maximums. These maximums were divided into three grade groups: Classes in prekindergarten through grade three had a maximum of 18 students per classroom. Classes in grades four through eight had a maximum of 22 students per classroom. Classes in grades nine through twelve had a maximum of 25 students per classroom (FIRN, 2004).

Funding for this program was allocated by the Legislature, and increased both the operating allocation and the capital outlay allocation that each school district received. The capital outlay funds were provided for facilities that were in excess of those listed in a school district's five-year capital facilities plan. During the 2003-2004 school year, \$22,596,087 was disbursed to Osceola County, under the categorical Classrooms for Kids Program. For the 2004-2005 school year, \$4,733,874 in funds was encumbered for the same program (FIRN, 2005c). Accountability required monitoring at the district-level



for compliance with the two student per classroom reduction each year, and a penalty would be assessed on districts that were not in compliance with this requirement, starting with the 2003-2004 fiscal year. For the 2005-2006 school year and subsequent years, the Department of Education determined noncompliance with the class size reduction based on the October survey, and gave districts until February of that school year to comply. If a district was still not in compliance, it must implement policies prescribed in order to put it compliance. During the 2006-2007 school year, schools that were not in compliance during the previous school year are required to implement one of the following: year-round schools, double sessions, school rezoning, or the improved utilization of instructional staff (FIRN, 2004).

Baseline data about Florida public schools was necessary, and was issued by the Florida Department of Education. Entering the 2003-2004 school year, the following statewide information of school district average class size, and classroom size compliance was made available:

1. An average of 23.45 students per classroom was found in prekindergarten through grade three statewide.
2. Approximately 79 percent of the classrooms in this grouping had classes over the 2010-2011 limit of 18 students per classroom.
3. An average of 24.54 students per classroom was found in grades four through eight statewide.
4. Approximately 62 percent of the classrooms in this grouping had classes over the 2010-2011 limit of 22 students per classroom.
5. An average of 23.58 students per classroom was found in grades nine through twelve statewide.
6. Approximately 48 percent of the classrooms in this grouping had classes over the 2010-2011 limit of 25 students per classroom (FIRN, 2004).

In addition to the funding mechanisms utilized to reduce class size, the Florida Legislature also devised another method of simultaneously reducing class size, school size, and the length of stay in high school for some students. It created §1003.429 F.S., which gave students and their parents a choice of two different three-year high school graduation options, as well as the traditional four

year option. One of the three-year options was for college-bound students, and the other three-year option was for career-bound students.

For students who elected the four year option, the graduation requirements according to §1003.429(1)(a) F.S. were:

- a. Four credits in English, concentrating in composition and literature.
- b. Three math credits (including Algebra I).
- c. Three science credits (two must have a lab).
- d. One American history credit.
- e. One world history credit.
- f. One-half economics credit.
- g. One half American government credit.
- h. One credit in either practical/fine/performing arts or career/technical education.
- i. One half credit in life management skills.
- j. One credit in physical education.
- k. Eight and a half credits in electives.
- l. Passed both parts of the FCAT.
- m. Earned a GPA of at least 2.0 on a 4.0 scale.

For college-bound students who elected the three-year option, the graduation requirements according to §1003.429(1)(b) F.S. were:

- a. Four credits in English, concentrating in composition and literature.
- b. Three math credits (must be Algebra I or higher).
- c. Three natural science credits (two must have a lab).
- d. Three social science credits.
- e. Two credits in the same foreign language.
- f. Three credits in electives.
- g. Passed both parts of the FCAT.
- h. Earned a GPA of at least 2.0 on a 4.0 scale.

For career-bound students choosing the three-year option, the graduation requirements according to §1003.429(1)(c) F.S. were:

- a. Four credits in English, concentrating in composition and literature.
- b. Three math credits (must include Algebra I).
- c. Three natural science credits (two must have a lab).
- d. Three social science credits.
- e. Two credits in the same foreign language.

- f. Three credits in electives.
- g. Passed both parts of the FCAT.
- h. Earned a GPA of at least 2.0 on a 4.0 scale.

Although the true ramifications of these changes are unknown, it appeared that more students would have graduated in four years or less, which would have raised the four-year graduation rate. A benefit for taxpayers is that they do not have to pay for the year of public education that would not have to be taken, should the student have elected one of the three-year graduation plans. These potential tax users would have become taxpayers a year earlier. This would also have benefited society because the NCES (2002) study showed that the dropout rate increased the longer a student stayed in school. This report indicated a dropout rate of 2.9 percent for 15 and 16 year-olds, a 3.5 percent rate for 17 year-olds, a 6.1 percent rate for 18 year-olds, a 9.6 percent rate for 19 year-olds, and a 16.1 percent rate for 20 through 24 year old students.

## Funding Florida Educational Programs

Berliner and Biddle (1995) ranked the State of Florida in the top quartile of States for funding equity between districts. The Florida Education Finance Program (FEFP) was used to calculate the amount of funding that a school district received for a student from the state (§ 236 F.S.). The four basic cost factors in this calculation were Full Time Enrolled students (FTE), program cost factors, a Base Student Allocation (BSA) and a District Cost Differential (DCD) (FIRN, 2004). The program cost factor adjusted for amount of revenue that was generated by a specific course. The weighted FTE (WFTE) was calculated by multiplying the program cost factor by the FTE.

Additional WFTE funds were generated by funding dropout prevention classes in public schools by having weighted it at a higher cost factor than the 1.000 that was generated by grades four to eight mainstream classes. During the 1994-1995 school year, the program cost factor for dropout prevention classes was 1.571 (Murray and Murray, 1995), and this additional weighting was eliminated with the calculation of funding for the 1999-2000 school

year, by having eliminated the category. In place of these classes, money was allocated for "second chance schools" which were more commonly known as alternative schools, and categorical funding (FIRN, 2000). This shift in the funding of dropout prevention in regular public schools had continued in each subsequent school year.

Another funding change in Florida public education was the decrease in the funding weight assigned to vocational classes. For the 1994-1995 school year, there were ten different subdivisions in the Vocational-Technical field, which yielded an average program cost factor of 1.357. For the 1999-2000 school year, the FEFP program cost factor for Vocational Education had decreased to 1.211 (FIRN, 2000). This program cost factor weight was eliminated for middle schools beginning with the 2004 school year (FIRN, 2004).

The State of Florida changed the way it funded dropout prevention programs, starting with the 1999-2000 school year (FIRN, 2000). The funding for dropout prevention classes was removed from a weighted FTE, and replaced with a Supplemental Academic Instruction Categorical Fund under Florida Statutes §230.2316 and §236.08104 .

This change permitted students to enter an academic intervention program as early as the first grade, where

fourth grade was the lowest point of entry in prior years. The program employed alternative methods of teaching as well as curriculum, activities, and assessments. The program provided the student with both character education and law education in their classes. The participation of students in the program was voluntary, and required a written acknowledgement of the parent before the placement could have been made.

Before a student could have been declared eligible, the student must have first been identified as having possessed at least one of the following four characteristics:

1. Displayed evidence of a failure to become academically successful by the fact that the student:
  - a. Had been retained.
  - b. Had low test scores.
  - c. Had failing grades.
  - d. Had a low grade point average.
  - e. Had not met proficiency levels in reading, writing or math.
2. Displayed a pattern of excessive absences, or that of having been truant habitually.



3. Had a history of disruptive behavior in school.

Disruptive behavior was defined as student behavior that interfered with the learning of the student, or the educational process, which in turn affected other students. The student's behavior had to be such that the student required more assistance than could have been provided in a traditional classroom, or his behavior threatened the general welfare of students or others that the student came in contact with (FIRN, 2000).

4. Had committed an offense that had expulsion or an out-of-school suspension as a consequence.

The second chance schools that the students were sent to were to be used for students who had committed serious offenses, or were violent or disruptive, and applicable statutes and rules were found in Florida Statutes §230.23161.

Before placement in a second chance school, schools were to try alternative programs at the student's regular school. If that failed to improve the student's deficiency a child study team must have evaluated whether or not placement in a second chance school was best for the

student. Emotionally disturbed students were not eligible to be placed in a second chance school.

Eligible students were in grades six through ten and had exhibited at least one of the following characteristics:

1. Habitually truant, with excessive absences tied to the student lacking motivation. This in turn had affected the academic progress of the student, which in turn increased the risk of the student dropping out of school.
2. Habitually truant and a staffing committee determined that a second chance school would be beneficial to that student.
3. Exhibited behavior that was both disruptive and in violation of the code of student conduct.
4. Interfered with his own learning, or with the learning of other students, and in turn required more assistance than the regular program could have provided.
5. Committed a serious offense that had as a possible consequence suspension or expulsion. Examples were violence, possession of drugs or a weapon, or harassing or verbally abusing others.

Before a student left a second chance school and reentered his regular school, he must have first completed a program in character education, and then demonstrated that he was ready to reenter his regular school.

Successful dropout prevention programs have demonstrated that if schools had identified potential dropouts, modified the school curriculum, created a comfortable classroom atmosphere, and generally addressed the needs of these students they could have dramatically reduced the number of high school dropouts. For some students the receipt of their high school diploma would have been sufficient to put them back on track. For other students, the lowered standards of an alternative classroom or school, with support systems in place, may give these students a false sense of security in their expectations of the real world. The success of each student not only depended upon the individual student, but also on the structure of the program. While it was necessary to have maintained high standards in a program, unless these standards were accompanied by a restructuring effort and a mediation mechanism, a high dropout rate from the program was a likely outcome (Smink, 1995). Therefore Smink had as a proper goal of the program the combination of maintaining

high standards with restructuring, mediation, counseling, school-to-work programs, and other support systems.

Schargel and Smink (2001) noted that Florida is one of only a handful of states that have not defined what constitutes an at-risk student before they encountered difficulties in the school system, and therefore have no programs designed to proactively meet the needs of the at-risk student.

Parker (1995) found that there were many concerns about not having been successful in implementing initiatives or programs. They were a lack of stability, attitude and culture, planning and implementation, timing, early results, focus, cost growth, and training. A lack of stability may have happened when large changes were planned within an organization. This may have resulted in work disruptions, and may have caused employees to become more concerned with the security of their job, rather than with the job that they needed to do. Another concern was about the attitude and culture of the workplace. An initiative may have been implemented best with a whole team effort, and not one that was causing conflict between different departments. The implementation of items that were either poorly conceived, or poorly planned may have caused a lack of acceptance and commitment. An inadequate amount of time

permitted would have tended to constrain the success of the item. Having searched for a quick positive result, often the lack of one could have poisoned the future of a change, and the focus needed to be on the long-term, instead of just having reacted to the short-term situation. Costs may have grown in the short-term, but they may have had the effect of having raised standards that may have improved quality, thereby having caused long-term costs to decline. Parker wrote that to have been effective there must have been an all-encompassing training program, or resistance and indifference may have inhibited the successful implementation of a program.

#### The Costs of Dropping Out

One reason for the wealth of literature on dropping out of school was the tremendous costs that were associated with such. Levin (1972) found that these costs included both diminished national income and tax revenues, and increased use of various government services, including both health and social services, by dropouts. Society as well as the dropout therefore loses when a student drops out of school. Catterall (1985) found that students who

failed to complete high school, as a group had lower wages, lower employment rates and lower standards of living. Also, the costs to society include a higher crime rate, higher expenditures for welfare, unemployment compensation, and medical expenditures, but lower tax revenues (Catterall, 1985). The 1972 Levin study, and the Educational Testing Service study (1995) found that dropouts earned about one half of what the high school graduate did, and were the head of approximately one half of the welfare families. The NCES (1996b) found that there was an increased rate of high school dropouts dependent upon public assistance programs when compared to high school graduates. The NCES also found that the unemployment rate for high school dropouts was almost twice as high as the rate for graduates. High school dropouts who found employment earned less money than high school graduates (NCES, 1996b). Lunenburg (1999) found that the median income of high school dropouts who did find employment, was approximately half of the income level of high school graduates.

The National Dropout Prevention Center (2003) found that prevention of dropouts was to be emphasized over the recovery of those who had already dropped out of school.

The reason for this was that the center found that the recovery of dropouts was less cost-effective and less successful than the application of interventions that prevented the potential dropout from dropping out. Their philosophy was one that valued intervention early in the student's academic career wherever possible, in order to achieve the best results.

The National Dropout Prevention Center (2005) reported the estimated loss of tax revenue from 25-34 year old males that dropped out of high school amounted to \$944 billion, and the resulting increases in government entitlements and crime was estimated at \$24 billion. The Center also reported that the \$10,038 expense of an after school program produced benefits between \$89,000 and \$129,000 per program participant.

The difference in earnings between high school graduates and high school dropouts grew substantially since the 1960's (Stern et al., 1988). Therefore, any data that were utilized to reduce the dropout rate is more valuable than it was 20 or 30 years ago. The National Dropout Prevention Center (2005) reported this difference to be \$9,425 annually. Stern evaluated eleven California academies in public high schools that were designed to

retain likely dropouts in school. These academies were schools within schools, and combined courses that were vocational and academic. These academies were replicas of the original concept, which began on the San Francisco Peninsula, and were subsidized by the State of California and known as the Peninsula Academies. Students in an academy were enrolled in grades ten through twelve in most of the Peninsula Academies, and grades nine through twelve in a few others. Each academy focused in one occupational sector, with a vertical employment outlook, as opposed to training with just a lower level focus. The teachers in the academy, brought in people that volunteered from local employers when relevant to the student's education, and coordinated the curriculum as necessary to suit the student's needs. These volunteers brought in from outside employers either served as mentors with the students, or helped the student better understand the connection between school and work. Some of the other tasks that they performed were attending advisory committee meetings, speaking to groups of students, attending or leading field trips, helping with job placement, and helping with job supervision.



For the study, students were non-randomly matched with another student, when one student entered the academy, the matched was in a comparison group, but not in the academy, for purposes of comparison. The students were approximately matched for common characteristics such as race, gender, poor attendance, poor grades, poor test scores, and low accumulation of course credits. Because of the selection technique, there may have been some bias in the outcome of this study.

A regression model was utilized to test whether students in the academies performed better in school than did students in their regular high school setting. The results of the regression were controlled for several factors, including educational performance during the previous year, gender, race, and age. Statistics were gathered for attendance rate, credits earned, GPA, courses failed, and the probability of the student dropping out during the school year.

The results of the 270 tests resulted in the academy students performing significantly better in 61 of them, and the comparison group performing significantly better in eleven of them. At a level of significance of  $p < .05$  Stern reported that fewer than 14 tests were expected to yield

statistically significant results if the tests were statistically independent of each other. Here the preponderance of test results for the academy students was significantly positive.

The next step in the study was to estimate the actual number of potential dropouts that were averted by the Peninsula Academies program. This was especially important because continued funding for this program in California was contingent upon the program showing the reduced rate of dropping out was a positive result of this program. The number of students prevented from dropping out by the Peninsula Academies was calculated by comparing the dropout rate from the comparison group to the dropout rate of the academies. The difference in dropout rates between the two groups was then attributed to attending one of the academy programs, and therefore being prevented from dropping out by utilizing the dropout prevention interventions effectively. In this study, the differences in dropout rates indicated that 29.3 students were prevented from dropping out by the academies.

The next calculations to be performed were the costs and economic benefits of preventing the potential dropout from becoming an actual dropout. In order to do this,

Stern calculated all of the costs of the educational system related to the academies. The first cost was that of the teacher, who by virtue of this program, had many fewer students than did a teacher in the conventional high school. The cost per student of a conventional school was based on mean teacher salary plus thirty percent for fringe benefits, divided by the number of students served. The same calculation was used for the academies, and the difference between these two was an extra cost of the academies program. At the time of the study, teachers were assigned a cost of \$40,000 per year, aides \$20,000 per year, and administrators \$50,000 per year (Stern et al., 1988). The additional facilities and equipment cost was estimated to run an extra twenty percent of the same cost in a conventional school. Employer representatives that worked as mentors, or for other volunteer services were assigned a cost of \$200 per day. While this charge represented their lost productivity in their other job, it was not a cost borne by taxpayers. During the course of the 1987-1988 school year, 2,718 days were donated to the academies program, including 100 days to help as they planned and evaluated the successfulness of the programs. In the study, two school academies had a greater than

expected rate of students that dropped out, when compared with the rate of students in the regular program. The other six academies in the study had a less than average rate of students dropping out, when compared with the rate of students in the regular program. When analyzed as a group, including those with a higher than anticipated dropout rate, the study found the incremental cost of the academies attendance per saved potential dropout to be approximately \$41,000 to society over the three year period of attendance. Approximately \$25,000 of this was borne by the taxpayers. Stern attributed the difference between these two costs to the volunteers in the academies. In addition, the study estimated that the regular cost of education for a student over the course of their education for this time period would not exceed an additional \$10,000 for the taxpayers, for a total societal cost of approximately \$51,000, and a total taxpayer cost of approximately \$35,000. The \$10,000 figure was borne by taxpayers as a cost to be paid for keeping a student in school who would have otherwise dropped out.

Stern compared these costs to the economic benefits to society by preventing students from dropping out of school. The main benefit derived by society was the increased

output of the graduate, compared to the dropout. An indicator of this additional output was the mean difference in gross earnings between high school dropouts and graduates. The researchers in this study raised the point that this economic benefit only had validity if the difference in output was due to the effects of the additional education, and was not due to preexisting differences in the students.

After using data from the United States Bureau of the Census (1987) and adjusting for inflation, Stern determined that the difference in output over the earning lifetime for the graduate was approximately \$86,000 more than for the dropout. Stern and his other researchers believed that this was a conservative estimate. Not included in this figure were some of the other benefits enjoyed by both society and graduates. These included a lower risk of incarceration, and lower health care costs.

Utilizing the \$86,000 estimate of additional output as a benefit to society, Stern calculated a net benefit for the cohort of 327 students of between \$1,000,000 and \$1,300,000, depending upon whether the regular costs of schooling were included. The study also found that although many schools were involved in this replication,

their effectiveness varied greatly. Stern wrote that schools involved in the replication should be monitored continually, offered technical assistance when necessary, and discontinued when ineffective, to best utilize scarce resources.

Taxpayers footed the bill of about \$800 per year per dropout according to the Joint Economic Committee (1991). Another calculation made by Catterall (1985), determined that each year enough students dropped out to cost the United States over \$200 billion in diminished earnings and tax revenues over the course of the dropout's lifetimes. While these calculations may be valid as estimates, it is often important to look at the longer-term implications of the dropout. In the NCES 2002 report, students were grouped by family income, either in the lowest 20 percent, the highest 20 percent, or the middle 60 percent. From students in the lowest 20 percent the dropout rate was 10 percent. For students in the middle 60 percent, the dropout rate was 5.2 percent, and for students in the top 20 percent of family income, the dropout rate was 1.6 percent.

In a study of the Falls River, Massachusetts public school system, Roderick (1993) reported that this district

had the lowest median education level, 8.8 years, and the lowest per-capita income in Massachusetts, based on 1980 census data. Roderick also reported that the district had high school graduates who comprised 35.5 percent of the over 25 population, compared with 72.7 percent for the entire state. Roderick also noted that 44.1 percent of the families had annual incomes of less than \$10,000 in 1980. A cohort of all of the non-special education seventh graders was tracked through the Falls River school system. Of the 1052 students in the cohort, 399 graduated from high school in the district, while 368 students dropped out of school. That is, approximately 48 percent of the students who were tracked through this school system, dropped out of school. This increased likelihood of dropouts, which continued from generation to generation may have escaped the notice of those calculating the cost of dropping out, and may need to be added to calculate the true cost of dropping out of school.

There is an additional cost to taxpayers for the increased rate of incarceration and public entitlements used by dropouts. A State of Florida inmate cost the taxpayer \$17,604. per-year of incarceration in 2004 (Florida Department of Corrections, 2005a), which was

approximately three times the annual expenditure on a Florida public school student. This was in addition to adjudication costs. Although the school dropout rate was relatively high, the prison recidivism rate was much higher, with a 48.2 percent 60 month reoffense rate for the release cohort from July 1995 to June 2001. Therefore, the taxpayer could expect to pay for the incarceration of the inmate more than once (Department of Corrections, 2005b). While the health care costs of the typical taxpayer were routinely paid for by the taxpayer, or his employer, the health care costs of the inmate were provided by the state, and ultimately wholly paid for by the taxpayer, except for a four-dollar inmate co-pay. While incarcerated, an inmate may have been required to work. However, many Florida prison industries had been operating at a loss, and some of these industries, such as food service, had therefore been discontinued, leaving inmates with little positive to do or learn while in prison. Education while incarcerated, was offered, but only budgeted for at the rate of \$1.04 per day per inmate during 2004, much less than in the public educational system (Department of Corrections, 2005a).

Titone (1982) found that the loss in government revenues by high school dropouts was about 30 percent of



the total loss of income of these dropouts. The welfare expenditure due to the dropout's inadequate education was about 1.26 percent of the total loss in personal lifetime earnings for each year of their life. An estimate made by the Select Senate Committee on Educational Opportunity was that for every dollar spent on education, six dollars were generated over the lifespan of the person (Titone).

## CHAPTER III METHODOLOGY

### Overview of the Study

The purposes of this study were threefold. One purpose was to determine the perceived effectiveness of thirteen interventions that may be utilized to increase the four-year graduation rate in Osceola District Schools. The second purpose was to evaluate whether or not differences in perceived effectiveness of these thirteen interventions varied significantly between the three groups that participated in this research: current high school students, and former high school students, both dropouts and graduates. The third purpose was to determine the order in which to implement these interventions, given that budgetary constraints may not permit all of the interventions to be implemented.

### Research Questions

The study of the effectiveness of various interventions at increasing the four-year graduation rates was guided by these research questions:

1. Based on respondent data, how effective was each of the interventions in the study at improving the four-year graduation rate, as perceived by former and current students?
2. How much would each of the interventions cost to implement?
3. How would the implementation of each of the interventions be prioritized, based on Levin's Cost Utility of Outcomes analysis?

### Hypotheses

Based on the research questions, the following null hypotheses were tested in this study:

1. No difference existed between the dropout prevention interventions mean effectiveness rating, and the mean effectiveness rating of each of the interventions.
2. No difference existed among
  - a. Current high school students
  - b. High school graduates
  - c. Dropouts

with respect to each of the intervention's mean effectiveness rating.

### Procedural Methods

To begin the research, an instrument that rated several potential interventions used to increase the four-year graduation rate was designed by the researcher, adhering to the design principles of Dillman (2000). The instrument had a Likert scale of one to five, and was developed and then revised after receiving input about ambiguous language used on the instrument, reducing the number of interventions, and clarifying and simplifying the language used, by his committee.

Interventions selected for this study were, in some cases funded by the Florida Education Finance Program (FEFP), such as the interventions that provide free preschool starting with the 2005-2006 school year, and the intervention that reduced class size. In the reduced class size categories in this study, the researcher treated grades kindergarten through three independently from grades four to eight, which were treated independently from high school, as they largely were in the funding process by the

Florida legislature (FIRN, 2004). The schools-within-a-school intervention for school buildings with over 500 students was selected, because it had been a component of the small schools initiative that was eliminated when the class size reduction bill 30A that was instituted beginning with the 2003-2004 school year. The schools-within-a-school size of 500 students was selected because it was the maximum size mentioned as being common practice, by McAndrews and Anderson (2002). Staffing in these schools was determined by the researcher to be similar to Garden City High School (2005), and complying with McAndrews and Anderson, after searching for a recommended staffing level among accrediting associations, but being unable to determine any existing standards.

Four interventions were selected that are not funded by the FEFP, and would require a change in statute to implement. These items were related to statutes enacted since 1998 that added to existing graduation requirements for high school students that coincided with a decrease in the four-year graduation rate. The interventions selected on that basis were adding diploma options that eliminated some of the newly enacted graduation requirements, as the legislature had done in 2003, by adding three-year diploma

options, which in turn had eliminated some former graduation requirements. The potential items to be removed or altered from 2004-2005 graduation requirements were the passing of the FCAT, the passing of Algebra I, the lowering of the minimum grade point average required, and the elimination of all of these items, in an attempt to boost the four-year graduation rate.

Since Smink (1995) and Sipe (1996) considered mentoring as very important for minimizing the dropout rate, a mentoring intervention was included. The guidance counselor was included because the researcher wanted to investigate the effectiveness of the Osceola County guidance counselors in carrying out their plan which is "...proactive and preventative and ensures academic, personal, social and career skills, which inspires all students to reach their highest potential" (Osceola, 2004a p. 22). Gysbers (2004) found that guidance counselors in a well staffed and designed program had students that scored higher on standardized test, took more advanced and vocational classes, and had a higher GPA.

Craig (1997) noted the relationship that existed between at-risk students and the potential assistance offered by vocational programs, which when noted by the

researcher caused him to include the intervention that would increase the number of seats available in magnet/ academy/ vocational classes.

At a meeting of the researcher's committee, it was decided that four interventions were expanded to allow the respondents to rate an intervention in a range. The first of these items was the mentee to mentor ratio that would be effective in increasing the four-year graduation rate. The five choices in this range concerned effective mentee to mentor ratios. The choices offered in the range as decided by the researcher were a 100:1 ratio, a 50:1 ratio, a 20:1 ratio, a 10:1 ratio, and a 5:1 ratio. The second of these items was the student to guidance counselor ratio that would be effective in increasing the four-year graduation rate. The five choices offered in the range were a 100:1 ratio, a 50:1 ratio, a 20:1 ratio, a 10:1 ratio, and a 5:1 ratio, with the ratios being identical to those for mentors to determine which group, guidance counselors or mentors would be more effective at the same student ratio. The third of these items was a reduction in the grade point average (GPA) that should be required for graduation, and how effective each would be in increasing the four-year graduation rate. The five choices offered in this range

were a reduction in the minimum GPA required for graduation from a 2.0 on a 4-point scale to a 1.9, 1.8, 1.7, 1.6, or a 1.5 GPA, with the 1.5 GPA being the previous standard before the legislature raised it to a 2.0. The fourth of these items was the percent expansion of available seats in magnet/academy/vocational programs of study, and how effective each increase would be in increasing the four-year graduation rate. The five choices in the range were selected by the researcher to increase the number of available seats by 10 percent, 25 percent, 50 percent, 100 percent, or 200 percent.

### Sampling Methodology

The next step in the research was to obtain a representative sample of the population to whom the questionnaire would be sent. Since the population was current and former students of Osceola public schools, the School District of Osceola County was requested to supply lists of current and former high school students with directory information, including their last known addresses in the case of the former students, and current addresses in the case of the current students. This ensured that the



potential respondents selected to participate in the study had attended public school in Osceola County. When the lists were delivered, 200 names were randomly selected from the current student list, and 400 names were randomly selected from the former student list. Permission was requested and granted by the University of Central Florida Institutional Review Board to use the revised instrument to survey current and former students of the School District of Osceola County (See Appendix E).

First, a pre-notice letter (See Appendix A) was sent by United States Mail to the 600 people selected to participate in the study, advising them that they were selected, and that a questionnaire and a token of appreciation would be arriving soon. Approximately five days after the pre-notice was sent, the questionnaire (See Appendix B) was also sent by United States Mail. Included in the envelope were the questionnaire, a letter which contained informed consent and explained the questionnaire (See Appendix C), a one dollar bill offered as a token of appreciation (Dillman, 2000), and a stamped and addressed return envelope. Participants were advised that their responses were to be kept confidential, and except for an envelope numbering system that was used to keep track of

non-responses, no individually identifiable record would be recorded. Approximately ten days after the researcher mailed the questionnaires, a third mailing was sent to the sample population who had not yet responded, or did not have their mailing returned from the post office with an "unable to deliver" sticker affixed to the envelope. This mailing consisted of a postcard explaining how important their response was (See Appendix D). Included on the postcard was the researcher's offer to replace the questionnaire.

When the questionnaires were returned, the numbers inside the envelope flap, which were identifiers, were used to eliminate respondents from further contact during the study, when their envelopes were returned as undeliverable. Respondents who returned the questionnaire, were also identified by the number inside the envelope flap, and were not sent the third contact. The responses to the items, including the education level of the respondent, were entered into a spreadsheet as they arrived via the United States Mail. When the time for accepting responses ended in early February, 2005, the data were entered in SPSS (2003) for analysis. Since there was a provision in the questionnaire for the respondents to offer further

suggestions, many respondents chose to use the opportunity to offer their opinions (See Appendix F).

### Data Analysis

For the purpose of calculating a true mean, the four interventions that had a range of five responses, had each of those responses weighted at a .2, then added together to accurately reflect the mean response to all of the items in the range, such that each of the 13 interventions was afforded equal weight. The 29 individual response items were thus reduced to 13 interventions.

To answer the first research question, the data were entered into SPSS (2003), and the mean effectiveness rating for each of the interventions was calculated. This was done by adding up the responses for an intervention, and dividing by the number of responses. For the second research question, the cost of an intervention was calculated based on available information. Often the data came from Florida Information Resource Network (FIRN), from information gathered from the budget of the School District of Osceola County, or by contacting employees in various departments of the Osceola District, including Finance,

Career and Technical Education, Research Evaluation and Accountability, Secondary Education, Elementary Education, and Student Services.

For the third research question, the cost of an intervention was divided by the mean effectiveness rating for that intervention. The lowest number would yield the highest cost-utility, and therefore should be implemented first, if there were limited resources for implementation of the interventions. Of the four questions that had a range of responses, only the response that had the highest cost utility would be included in the implementation schedule, because all of the choices in that range were mutually exclusive.

To determine whether or not the first null hypothesis was disproved, the researcher ran a matched pairs t-test in SPSS that compared the mean response of an intervention to the grand mean of all interventions, minus the mean of the item being investigated for statistical significance, in order to determine if a significantly different response existed for each intervention at a level of significance of  $p < .05$ .

To determine whether or not the second null hypothesis was disproved, profile analyses for the three groups were

run by the researcher utilizing SPSS at a level of significance of  $p < .05$ , compared across all 13 interventions, in order to determine if significantly different responses existed for each of the interventions, based on the education level of the respondents.

## CHAPTER IV ANALYSIS OF DATA

### Introduction

This chapter provides an analysis of the data that were derived through the methodology and statistical procedures previously described. The data were used to answer the research questions, and test the null hypotheses. The data were gathered from respondent answers, after an introductory letter, questionnaire, and follow up contact were made. A returned letter, indicating that it had been mailed to an invalid address for the potential respondent terminated further contact with that respondent.

### Analysis of Questionnaire Returns

All surveys were returned directly to the researcher by United States Mail. Table 1 summarized the surveys sent and returned.

Table 1. Number of Questionnaires Sent and Returned.

Respondent Status	Total Sent	Total Returned	Percent Returned
Current Students	200	81	40.50
Former Students	400	73	18.25
Total:	600	154	25.67

However, the numbers in Table 1 above may actually be somewhat misleading with regard to the return rate. While those are the correct numbers and rates for surveys sent and returned, the United States Mail returned 67 of the surveys as undeliverable, based on the addresses on the envelopes. Of these 67 undeliverable surveys, 63 of them were sent to people on the former student list, and four of them were listed on the current student list. The researcher adjusted the return rate for surveys that were not returned filled out because they were undeliverable, the return rate for students increased to 41.33 percent, the return rate for former students increased to 21.66 percent, and the overall return rate increased to 28.89 percent (see Table 2).

Table 2. Questionnaire Return Rate Adjusted for Undeliverable Mail.

Respondent Status	Total Sent	Returned as Undeliverable	Percent of Good Addresses Returned
Current Students	200	4	41.33
Former Students	400	63	21.66
Total:	600	67	28.89

In eleven cases, respondents returned the dollar bill that was offered as token compensation for filling out and returning the survey instrument. In three cases a student returned the dollar bill, and in the other eight cases, a graduate returned the dollar bill. The education level of the respondents in the study was self-reported, by answering the demographic question at the end of the questionnaire. Of the 73 former students who returned the questionnaire, 53 reported that they had graduated from high school, and 20 reported that they did not. All 154 of the returned questionnaires contained some usable information, but not all 154 respondents responded to every item on the instrument. The instruction given on the introductory letter was that if the respondent felt that he could not give an accurate answer he was to leave an item unanswered, rather than giving erroneous information. All questionnaires that contained non-responses were eliminated



from the statistical analyses utilized in this study (see Table 3).

Table 3. Questionnaires Utilized and Questionnaires Eliminated for Non-responses.

<u>Respondent Status</u>	<u>Total Sent</u>	<u>Number Returned</u>	<u>Number Containing Non-responses</u>	<u>Number Utilized</u>
Current Students	200	81	12	69
Former Students	400	73	19	54
Graduates*	Unknown	53	17	36
Dropouts*	Unknown	20	2	18
Total:	600	154	31	123

\*Both graduates and dropouts were included in the category of former students.

The percentage of questionnaires eliminated from this study for containing non-responses varied from group to group. Graduates were eliminated at a rate more than twice of those in the other groups. The questionnaires eliminated from the study for non-responses were calculated at 14.81 percent for students, 32.08 percent for graduates, and 10.00 percent for dropouts (see Table 4).

Table 4. Percent of Questionnaires Eliminated for Non-responses.

<u>Respondent Status</u>	<u>Total Sent</u>	<u>Number Returned</u>	<u>Number Containing Non-responses .</u>	<u>Percent Eliminated</u>
Current Students	200	81	12	14.81
Former Students	400	73	19	26.03
Graduates*	Unknown	53	17	32.08
Dropouts*	Unknown	20	2	10.00
Mean:	600	154	31	20.13

\*Both graduates and dropouts were included in the category of former students.

The data from the complete questionnaires was then entered into an Excel (2000) spreadsheet, and then entered into SPSS (Statistical Package for the Social Sciences, 2003), and calculations were performed to answer the research questions and test the null hypotheses.

#### Research Question One

Based on respondent data, how effective were each of the interventions at improving the four-year graduation rate, as perceived by former and current students?

To answer this research question, the mean responses of all 123 respondents that had no non-responses were calculated, and then the means of each of the three groups were also calculated. Although there were thirteen interventions on the questionnaire, four of the

interventions had five responses, for a total of 29 separate responses. For the discussion of the answer to question one, each of the 29 was treated as a separate response.

A five-item Likert scale was utilized to gauge respondent responses. Respondents were told to rate an intervention as a one if they felt that implementation would be completely ineffective, a two if they felt that implementation would be slightly effective, a three if they felt that implementation would be moderately effective, a four if they felt that implementation would be very effective, and a five if they felt that implementation would be extremely effective at increasing the four-year graduation rate. The mean effectiveness rating of all 123 respondents for the 29 items on the questionnaire are represented on table 5 (See Table 5).

Table 5. Mean Responses for the 29 Questionnaire Items for All Respondents.

<u>Item</u>	<u>Mean Effectiveness Rating</u>
Provide free preschool	4.06
Provide more mentors with a ratio of	
100:1	1.99
50:1	2.59
20:1	3.33
10:1	3.80
5:1	4.54
Provide more guidance counselors with a ratio of	
100:1	2.15
50:1	3.02
20:1	3.96
10:1	4.28
5:1	4.27
Reduce class size to 18 in grades k-3	3.93
Reduce class size to 22 in grades 4-8	3.92
Reduce class size to 25 in grades 9-12	4.28
Add three year diploma choices	3.36
Reduce the GPA required for graduation from a 2.0 on a 4 point scale to a	
1.9	2.15
1.8	1.75
1.7	1.71
1.6	1.61
1.5	1.73
Offer a diploma choice with no FCAT	3.76
Offer a diploma choice with no Algebra	2.06
Offer a diploma choice with no FCAT, Algebra, or GPA requirements	2.33
Offer more seats for magnet/academy/vocational programs, with an increase of	
10%	2.31
25%	2.76
50%	2.94
100%	3.45
200%	3.43
Divide schools over 500 students into schools within a school.	3.04

The respondents rated free preschool high, with a very effective 4.06 rating. Mentors varied widely, from a 1.99 rating for a mentor that was assigned to 100 students, to a 4.54 rating for a mentor that had the responsibility of

mentoring only five students. Similar results were found with guidance counselors, with a 2.15 rating when the guidance counselor was responsible for 100 students, but rose to a 4.28 and 4.27 rating when the guidance counselor was only responsible for ten or five students. It is interesting to note that the guidance counselor was assigned virtually the same effectiveness rating whether there were five or ten students to guide, but the mentor was rated highest with only five students to mentor. Guidance counselors were rated as more effective than mentors in each of the ratios except the 5:1, where mentors were rated more effective.

Reducing class size was rated similarly for grade levels from kindergarten to eighth grade, but was rated highest in the high school class with a 4.28 effectiveness rating compared to a 3.93 rating for kindergarten to third grade, and 3.92 effectiveness ratings for grades four to eight. Having three-year diploma options available for high school students was rated moderately effective to very effective with a 3.36 effectiveness rating, but the concept of returning to a lower GPA required for graduation was rated between a 2.15 and a 1.61 effectiveness rating. This rating between the completely ineffective and slightly

effective was the lowest rated intervention on the questionnaire.

Offering a diploma choice that eliminated the FCAT graduation requirement was highly rated, with a 3.76 effectiveness rating, although having a diploma choice that eliminated the Algebra I requirement was rated at a 2.06, slightly effective. When respondents were asked to rate a diploma option that would eliminate the FCAT, GPA, and Algebra I requirements, they gave it a 2.33 mean effectiveness rating, only a little better than slightly effective. When asked to rate the effectiveness of increasing the number of seats in vocational and magnet programs, the effectiveness rating increased with the percent increase in seats, from a 2.31 rating for a ten percent increase, to a 3.45 rating for a 100 percent increase. Curiously, a 200 percent increase in available seats resulted in a 3.43 rating, almost identical to a 100 percent increase in available seats. The intervention that recommended that schools over 500 students be divided into smaller learning units such as schools-within-a-school received a mean effectiveness rating of 3.04, being rated as moderately effective in increasing the four-year graduation rate.

The mean effectiveness ratings for each of the 29 items on the questionnaire were calculated by the education level of the respondent are found in table 6 (see Table 6).

Table 6. Mean Responses for the 29 Questionnaire Items by the Education Level of the Respondent.

<u>Item</u>	<u>Student</u>	<u>Graduate</u>	<u>Dropout</u>
Provide free preschool	3.990	4.470	3.500
Provide more mentors, with a ratio of			
100:1	2.116	2.056	1.389
50:1	2.768	2.722	1.667
20:1	3.290	3.500	3.111
10:1	3.855	4.078	3.111
5:1	4.406	4.917	4.333
Provide more guidance counselors with a ratio of			
100:1	2.000	2.639	1.778
50:1	3.015	3.139	2.778
20:1	3.913	4.111	3.833
10:1	4.275	4.278	4.333
5:1	4.449	4.111	3.889
Reduce class size to 18 in grades k-3	3.860	4.110	3.830
Reduce class size to 22 in grades 4-8	3.610	4.310	4.330
Reduce class size to 25 in grades 9-12	4.040	4.610	4.560
Add three-year diploma choices	3.000	4.190	3.060
Reduce the GPA required for graduation from a 2.0 on a 4 point scale to a			
1.9 GPA	1.899	2.750	1.944
1.8 GPA	1.391	2.444	1.722
1.7 GPA	1.623	1.861	1.722
1.6 GPA	1.652	1.611	1.444
1.5 GPA	1.942	1.472	1.444
Offer a diploma choice with no FCAT requirement	4.450	3.310	2.060
Offer a diploma choice with no Algebra requirement	2.040	2.250	1.720
Offer a diploma choice with no FCAT, Algebra, or GPA requirements	2.700	1.920	1.780
Offer more seats for magnet/academy/vocational programs			
10% increase	2.290	2.639	1.722
25% increase	2.855	3.028	1.889
50% increase	2.870	3.389	2.333
100% increase	3.145	4.389	2.722
200% increase	3.275	4.083	2.722
Divide schools over 500 students into schools within a school.	3.090	2.690	3.560

The researcher noted based on table 6, that of the three groups involved in this study, the least effective rating for an intervention was given by the dropouts 21 out of 29 times, while the dropout only gave an intervention the highest rating three out of 29 times. The three highest rated items of the dropout were a 10:1 student to guidance counselor ratio, a reduction in class size to 22 students per class in grades four to eight, and dividing a school with over 500 students into schools-within-a-school. The mean effectiveness rating of graduates was only the lowest rating once, for the schools-within-a-school intervention that was highest rated by the dropouts in the study.

#### Research Question Two

How much would each of the interventions cost to implement? In order to calculate the cost of an intervention, existing budget data and extrapolations were utilized, since some of these programs or interventions did not exist at the time the study was done.

The cost of implementation of the 13 interventions was based on student population, budgeted costs, and effectiveness ratings. For the free preschool intervention, data from Georgia was used because there was



no data available from Florida. On February 28, 2005 there were 3,501 students in kindergarten in the School District of Osceola County (Osceola County, 2005). According to Ghazvani and Foster (2004) the participation rate in the Georgia's universal prekindergarten was 70 percent. In order to anticipate the participation rate in Florida, the researcher used this 70 percent participation rate in Georgia, as the basis in calculation. Seventy percent of the 3,501 kindergarten students yielded an anticipated population of 2,451 students in the universal prekindergarten, when rounded to the nearest student. The researcher using the three hour part-day model, which is the current Florida plan, and the anticipated mix of existing credentials in the workforce (Ghazvini and Foster). Based on those parameters, Ghazvini and Foster determined the cost per child would be \$3,649. per 180 day school year. When the researcher multiplied this cost per child by the number of children anticipated, the total expenditure in Osceola County came to \$8,943,699 per year.

In the School District of Osceola County the school volunteer program is called OASIS. This program was funded with an annual budget of \$144,274 (School District, 2004), and during the 2003-2004 school year, 6,789 volunteers

accumulated 167,171 volunteer hours (Florida Department of Education, 2004). During this time there were 397 mentors that volunteered 19,196 hours. The researcher calculated the annual average to be 48.3526 hours per mentor per school year. The researcher then calculated the cost per volunteer hour to the school district by dividing the annual number of hours volunteered per year by the annual budget for the department. The result of this calculation was a cost to the School District of Osceola County of \$0.86 per volunteer hour, including mentors. To minimize expense, the mandatory background checks for the mentors were completed by the Osceola County Sheriff's Department at no charge. The researcher calculated the cost of a mentor by multiplying 48.3526 hours, the current mean annual mentor volunteer time, by \$0.86, the cost per volunteer hour, and determined that each mentor would cost the school district an average of \$41.58 per school year. To determine the cost to the school district for the required mentors, this \$41.58 cost per mentor was multiplied by the additional number of mentors required to meet a given student to mentor ratio.

As of February, 28, 2005 there were 47,157 students enrolled in the School District of Osceola County (2005) in

grades kindergarten through twelve. To determine the number of mentors needed at a specific ratio, the researcher divided the school enrollment by the number of students a mentor would be expected to mentor. To have a mentor for every 100 students, 472 mentors would be required. Since there are already 397 mentors in the OASIS system, an additional 75 mentors would be required at an estimated cost of \$3,118.50 for a 100:1 mentee: mentor ratio. To have mentors available at a 50:1 mentee: mentor ratio, 944 mentors would be required. Since there are 397 mentors in the program, only an additional 547 mentors would be required, at a cost of \$41.58 each, for a total of \$22,744.26 for a 50:1 ratio. To have mentors available at a 20:1 mentee: mentor ratio, 2,358 mentors would be required. Since there are 397 mentors in the program, only an additional 1,961 mentors would be required at a cost of \$41.58 each, for a total of \$81,538.38 for a 20:1 ratio. To have mentors available at a 10:1 mentee: mentor ratio, 4,716 mentors would be needed. Since there are 397 mentors already in the program, an additional 4,319 mentors would be needed, at a cost of \$41.58 each for a total of \$179,584.02 for a 10:1 ratio. For a 5:1 mentee: mentor ratio, 9,431 mentors would be needed. Since there already

are 397 mentors in the program, an additional 9,034 mentors would be needed, at a cost of \$41.58 each, for a total of \$375,633.72, for a 5:1 ratio. An underlying assumption is that an adequate number of mentors can be found.

To determine the cost of lowering the student to guidance counselor ratio, the researcher first determined how many guidance counselors were employed by the School District of Osceola County. The researcher then calculated the number of guidance counselors needed at a specific student to guidance counselor ratio by dividing the student population by the student to guidance counselor ratio, and then subtracted the number of existing guidance counselors. The difference, when multiplied by the cost per year per guidance counselor, would be the staffing cost for those additional guidance counselors. The researcher then addressed the possibility that offices would be needed for these additional counselors. Costs for those offices were based on size and construction costs listed in the Florida Inventory of School Houses (FISH, 2005). There are 93 guidance counselors employed by the School District of Osceola County, according to a senior Osceola County Schools official (personal communication on March 7, 2005), and the guidance counselors are budgeted at \$48,738 per

year per guidance counselor, including fringe benefits (Osceola County, 2004). There were 47,157 students in grades kindergarten through twelve enrolled in the district in February, 2005 (Osceola, 2005).

If the student to guidance counselor ratio were lowered to 100:1 ratio, 472 guidance counselors would be needed, which would require hiring an additional 379 guidance counselors. When multiplying by the budgeted cost of \$48,738 per guidance counselor per year, including fringe benefits, the researcher determined the total to be \$18,471,702 per year. This may also require that a maximum of 379 offices would need to be constructed. An analysis of office utilization would then be conducted to determine the actual number of offices to be built. A 175 square foot office, standard according to the Florida Inventory of School Houses (FISH, 2005) would cost an estimated \$87.13 per square foot to build (FISH), or \$15,246.89 for each office that was needed, for a maximum of \$5,578,781.31. In order to calculate an annual payment for the amortization of these offices, the researcher used the PMMT formula in Excel (2000), which calculated the annual amortization payment for these offices when given an annual percentage rate and time duration. For the interest rate, the

researcher used the interest rate of the February 25, 2005 Florida municipal bond offering (Bond Pool, 2005). For the duration of the amortization, the researcher, after discussing common practice with a senior Osceola County official (personal communication, March 16, 2005) set 30 years as duration for the purpose of amortization, based on the maturity of Capital Outlay Bond Issue (COBI) bonds. If the \$5,578,781.31 maximum expenditure for offices was amortized over 30 years at 4.45 percent annual interest (Bond Pool, 2005), the maximum annual payment for the offices would be \$346,464.52, for a total maximum annual expense of \$18,818,166.52 for the intervention, including both offices and guidance counselors. However, for this study the researcher excluded the potential cost of new offices from the cost of the intervention.

If the student to guidance counselor ratio were lowered to 50:1 ratio, 944 guidance counselors would be needed, which would require hiring an additional 851 guidance counselors. When multiplying by the budgeted cost of \$48,738 per guidance counselor per year including fringe benefits, the researcher determined the total to be \$41,476,083 per year. This may also require that a maximum of 851 offices would need to be constructed. An analysis

of office utilization would then be conducted to determine the actual number of offices to be built. A 175 square foot office, standard according to the Florida Inventory of School Houses (FISH, 2005) would cost an estimated \$87.13 per square foot to build (FISH), or \$15,246.89 for each office that was needed, for a maximum of \$12,975,103.391. In order to calculate an annual payment for the amortization of these offices, the researcher used the PMMT formula in Excel (2000), which calculated the annual amortization payment for these offices when given an annual percentage rate and time duration. For the interest rate, the researcher used the interest rate of the February 15, 2005 municipal bond offering (Bond Pool, 2005). For the duration of the amortization, the researcher, after discussing common practice with a senior Osceola County official (personal communication, March 16, 2005) set 30 years as duration for the purpose of amortization, based on the maturity of Capital Outlay Bond Issue (COBI) bonds. If the \$12,975,103.31 maximum expenditure for offices was amortized over 30 years at 4.45 percent annual interest (Bond Pool, 2005), the maximum annual payment for the offices would be \$777,921.17, for a total maximum annual expense of \$42,254,004.17 for the intervention, including

both offices and guidance counselors. However, for this study the researcher excluded the potential cost of new offices from the cost of the intervention.

If the student to guidance counselor ratio were lowered to 20:1 ratio, 2,358 guidance counselors would be needed, which would require hiring an additional 2,265 guidance counselors. When multiplying by the budgeted cost of \$48,738 per guidance counselor per year including fringe benefits, the researcher determined the total to be \$110,391,570 per year. This may also require that a maximum of 2,265 offices would need to be constructed. An analysis of office utilization would then be conducted to determine the actual number of offices to be built. A 175 square foot office, standard according to the Florida Inventory of School Houses (FISH, 2005) would cost an estimated \$87.13 per square foot to build (FISH), or \$15,246.89 for each office that was needed, for a maximum of \$34,534,205.85. In order to calculate an annual payment for the amortization of these offices, the researcher used the PMMT formula in Excel (2000), which calculated the annual amortization payment for these offices when given an annual percentage rate and time duration. For the interest rate, the researcher used the interest rate of the February



15, 2005 municipal bond offering (Bond Pool, 2005). For the duration of the amortization, the researcher, after discussing common practice with a senior Osceola County official (personal communication, March 16, 2005) set 30 years as duration for the purpose of amortization, based on the maturity of Capital Outlay Bond Issue (COBI) bonds. If the \$34,534,205.85 maximum expenditure for offices was amortized over 30 years at 4.45 percent annual interest (Bond Pool, 2005), the maximum annual payment for the offices would be \$2,070,495.23, for a total maximum annual expense of \$112,462,065.13 for the intervention, including both offices and guidance counselors. However, for this study the researcher excluded the potential cost of new offices from the cost of the intervention.

If the student to guidance counselor ratio were lowered to 10:1 ratio, 4,716 guidance counselors would be needed, which would require hiring an additional 4,623 guidance counselors. When multiplying by the budgeted cost of \$48,738 per guidance counselor per year including fringe benefits, the researcher determined the total to be \$225,315,774 per year. This may also require that a maximum of 4,623 offices would need to be constructed. An analysis of office utilization would then be conducted to

determine the actual number of offices to be built. A 175 square foot office, standard according to the Florida Inventory of School Houses (FISH, 2005) would cost an estimated \$87.13 per square foot to build (FISH), or \$15,246.89 for each office that was needed, for a maximum of \$68,961,683.47. In order to calculate an annual payment for the amortization of these offices, the researcher used the PMMT formula in Excel (2000), which calculated the annual amortization payment for these offices when given an annual percentage rate and time duration. For the interest rate, the researcher used the interest rate of the February 15, 2005 municipal bond offering (Bond Pool, 2005). For the duration of the amortization, the researcher, after discussing common practice with a senior Osceola County official (personal communication, March 16, 2005) set 30 years as duration for the purpose of amortization, based on the maturity of Capital Outlay Bond Issue (COBI) bonds. If the \$68,964,683.47 maximum expenditure for offices was amortized over 30 years at 4.45 percent annual interest (Bond Pool, 2005), the maximum annual payment for the offices would be \$4,134,591.58, for a total maximum annual expense of \$229,450,365.58 for the intervention, including both offices and guidance counselors. However, for this

study the researcher excluded the potential cost of new offices from the cost of the intervention.

If the student to guidance counselor ratio were lowered to 5:1 ratio, 9,431 guidance counselors would be needed, which would require hiring an additional 9,338 guidance counselors. When multiplying by the budgeted cost of \$48,738 per guidance counselor per year including fringe benefits, the researcher determined the total to be \$455,115,444 per year. This may also require that a maximum of 9,338 offices would need to be constructed. An analysis of office utilization would then be conducted to determine the actual number of offices to be built. A 175 square foot office, standard according to the Florida Inventory of School Houses (FISH, 2005) would cost an estimated \$87.13 per square foot to build (FISH), or \$15,246.89 for each office that was needed, for a maximum of \$142,375,458.80. In order to calculate an annual payment for the amortization of these offices, the researcher used the PMMT formula in Excel (2000), which calculated the annual amortization payment for these offices when given an annual percentage rate and time duration. For the interest rate, the researcher used the interest rate of the February 15, 2005 municipal bond

offering (Bond Pool, 2005). For the duration of the amortization, the researcher, after discussing common practice with a senior Osceola County official (personal communication, March 16, 2005) set 30 years as duration for the purpose of amortization, based on the maturity of Capital Outlay Bond Issue (COBI) bonds. If the \$455,115,444 maximum expenditure for offices was amortized over 30 years at 4.45 percent annual interest (Bond Pool, 2005), the maximum annual payment for the offices would be \$8,536,107.93, for a total maximum annual expense of \$463,651,551.93 for the intervention, including both offices and guidance counselors. However, for this study the researcher excluded the potential cost of new offices from the cost of the intervention.

There is a negative cost for the three-year graduation options. The cost saving of the three-year diploma was calculated by determining what the cost would be for one year of high school education. To determine what this cost saving was, the researcher contacted a senior official of the School District of Osceola County to determine if such already existed in the district (personal communication, April 4, 2005). According to this official, the report on the annual cost of a high school student was \$4,791,

excluding transportation, and that transportation expense would need to be allocated per student, in addition to this amount. The researcher discussed finding an equitable manner of calculating the transportation expense per student with this official, and it was determined that overall transportation expense divided by the number of students in the district would yield a reasonable allocation. The researcher then took the district transportation budget (School District, 2004) of \$12,300,006.60 and divided it by the number of students in the School District of Osceola County (2005), 47,157, which yielded an annual transportation expense allocation of \$260.83 per student. When added to the original expense allocation of \$4,791 per year per student, the yearly transportation expense raised the annual cost to \$5,051.83 per student. When this cost saving is multiplied by the number of high school students, in eleventh grade, 3,354 (Osceola, 2005), and multiplied by two percent, which is the approximate enrollment rate of students in the three year diploma options for the 2003-2004 and 2004-2005 school years, according to a senior Osceola District Schools official (personal communication, March 7, 2005), the cost saving calculated to \$338,876.82 per year.

The School District of Osceola County had an average high school class size of 24.31 students per classroom during the 2002-2003 school year, 23.78 students per classroom during the 2003-2004 year, and 24.03 students per classroom during the 2004-2005 school year (FIRN, 2005d). All of these class sizes are within the acceptable standard of 25 students per high school classroom. The State of Florida allocated \$2,322,740 to reduce the class size for the 2003-2004 school year in Osceola County high schools.

The School District of Osceola County had an average class size in grades four to eight of 25.56 students per classroom during the 2002-2003 school year, 21.68 students per classroom during the 2003-2004 school year, and 21.18 students per classroom during the 2004-2005 school year. Class size was in compliance for the 2003-2004, and 2004-2005 school years (FIRN, 2005d). The State of Florida allocated \$2,946,587 to reduce class size in grades four to eight in Osceola schools (FIRN). Funds from the Classrooms for Kids program, the name given to the capital outlay component of the class size reduction amendment, were being used to finance class size reduction. The researcher contacted a senior Osceola County official (personal communication, March 30, 2005) to determine how much of the

district's Classrooms for Kids appropriation was allocated to grades four to eight. For the 2004-2005 school year \$4,650,000 was appropriated for an expansion to St. Cloud Middle School (Osceola, 2005a). In addition, a new elementary school, "E", was planned, with funds from the Class for Kids program from both the 2003-2004 and 2004-2005 fiscal years (Osceola, 2005a). Elementary "E" is planned to have 49,020 instructional square feet, and 57 classrooms, of which 21 are planned for use by four and fifth grade classes (personal communication, April 1, 2005). Each classroom averages 860 square feet (personal communication, March 30, 2005). The funds allocated to this school are \$14,330,134.94 (Osceola, 2005a). When the researcher divided the instructional square feet by the allocated cost, he determined that the new school cost \$292.33 per instructional square foot to build. Since a classroom has an average of 860 square feet, a classroom costs \$251,406.93 to build. Since 21 classrooms will be used by students in grades four and five, the researcher calculated the cost of those classrooms to be \$5,279,545.50 by multiplying the cost per classroom by the number of classrooms allocated for grades four and five. The total cost to add classrooms in grades four to eight was the

total of the grades four and five classroom in elementary "E", and the St. Cloud Middle School expansion, for a total of \$9,929,545.50. The opportunity cost of not having that money to spend on other projects needed to be factored in, in order to most accurately calculate annual costs.

Amortized over a 30 year period at 4.45 percent (Bond Pool, 2005), the annual payment calculated in Excel (2000) would be \$580,190.59 for the increase in classrooms. The total annual expense for both additional staff and the construction of new classrooms would therefore be \$3,526,777.59.

The School District of Osceola County had an average class size in grades kindergarten to three of 24.45 students per classroom during the 2002-2003 school year, 20.04 students per classroom during the 2003-2004 school year, and 19.04 students per classroom during the 2004-2005 school year. Class size was not yet in compliance with the 2010-2011 levels, but had decreased by 5.41 students per classroom over the two year period. The State of Florida allocated \$2,425,179 to reduce class size in grades kindergarten to three in Osceola schools (FIRN, 2005c).

In order to calculate the additional cost of further reducing the students per classroom to below the 2010-2011



standard of 18 students per classroom, the researcher had to calculate the cost of the additional teachers that needed to be hired, and the additional classrooms that needed be built. The researcher first determined how many additional classrooms needed be built. To do this he divided the number of students per classroom, which was 19.04 (FIRN), by the number of students in grades kindergarten to three which was 14,291 (Osceola, 2005), and determined that 19.04 students per classroom required 751 classrooms, while the 18 students per classroom standard required 795 classrooms, which is an additional 44 classrooms. The researcher found that an elementary student is not with their teacher all of the time, and therefore additional teachers would need to be hired, in excess of the 44 that would be required for the added classrooms. The researcher contacted a senior Osceola County official (personal communication, March, 2005), who explained that there is a 300-minute per day instruction requirement, and a 45-minute block of time each day when the students are with a teacher other than their regular teacher, to give planning time to the regular teacher. The researcher then divided this 45-minute block of time by the 300 minutes of instruction required daily, to determine how

many additional teachers would have to be hired, in addition to those needed for the 44 classrooms. The researcher calculated that an additional 15 percent of teachers would have to be hired, above the 44 teachers in the additional classrooms. This 15 percent equaled 6.6 teaching positions. The total number of teaching positions added would be 50.6. At a cost of \$48,738 per teacher per year including fringe benefits (Osceola, 2004), there would be a total annual cost of \$2,466,142.80 for the extra teaching positions.

In addition, 44 new classrooms would need to be built. Funds from the Classrooms for Kids program were being used to finance a new elementary school, "E", and to add new wings to four existing elementary schools, Reedy Creek, Boggy Creek, Deerwood, and Poinciana. The researcher discussed the addition of these four wings with a senior Osceola County official (personal communication, March 30, 2005) and discovered that the thought of the school board when approving the four wings was that they would be used for class size reduction for kindergarten through third grade, and allocated a total of \$8,367,036.41 for these wings (Osceola, 2005a).

Elementary school, "E", was planned, with funds from the Classrooms for Kids program from both the 2003-2004 and 2004-2005 fiscal years (Osceola, 2005a). Elementary "E" is planned to have 49,020 instructional square feet, and 57 classrooms, of which 36 are planned for use by kindergarten through third grade classes (personal communication, April 1, 2005). Each classroom averages 860 square feet (personal communication). The funds allocated to this school are \$14,330,134.94 (Osceola, 2005a). When the researcher divided the instructional square feet by the allocated cost, he determined that the new school cost \$292.33 per instructional square foot to build. Since a classroom has an average of 860 square feet, a classroom costs \$251,406.93 to build. Since 36 of the classrooms will be used by students in grades kindergarten through three, the researcher determined that the cost for those classrooms will be \$9,050,649.48.

The capital outlay funds, appropriated, totaled \$17,417,685.89 as of February 28, 2005 (Osceola, 2005a). However, an additional eight classrooms would still need to be built to bring the school district into compliance with the 18 students per classroom requirement. The researcher used the cost per classroom of the most recently planned

elementary school, "E" as a cost basis for new classrooms that need to be planned for the reduction in class size. The \$251,406.93 cost per classroom, when multiplied by the eight additional classrooms needed was \$2,011,255.44. When added to the allocated Classrooms for Kids capital outlay funds for grades kindergarten to three, the extra cost for all of the classrooms totaled \$19,428,941.33.

When the Classrooms for Kids funds were given to Osceola County by the State of Florida, either a bond was issued, or the opportunity cost of not being able to utilize these same funds for other projects needed to be factored in, in order to best calculate annual costs. Amortized over a 30 year period at 4.45 percent interest (Bond Pool, 2005), the annual payment for these extra classrooms would be \$1,135,247.22. When added together with the annual additional teacher cost of \$2,466,142.80, the total annual expenditure for this reduction in class size was \$3,601,390.02.

To calculate the cost of the diploma choice that removed the FCAT graduation requirement in which the student would still have attempted to pass the FCAT, and be awarded the lower diploma if he did not succeed, the costs involved would be virtually the same. The only exception

would be for an estimated ten-minute analysis of each of the targeted student's grades by his guidance counselor, an estimated 20 minutes to contact the parents and student to set up a meeting, and an estimated one hour meeting with the student and his parent or guardian, for a total of 1.5 hours, all according to a senior Osceola County official (personal conversation, April 5, 2005). Based on the budgeted cost of a guidance counselor with fringe benefits in Osceola County of \$48,738 per 196 day work-year, and a seven hour work day (Osceola, 2004), the hourly cost for a guidance counselor came to \$35.5233 per hour. Since this review and meeting is estimated to use 1.5 hours, it would cost \$53.28 per student. Since there were 669 student FCAT tests that had to be passed in twelfth grade in Osceola County (FIRN, 2005a), and since 401 of these tests were in reading, this intervention would cost at least \$21,365.28 per school year to implement, assuming that all of the students that retook the reading FCAT also had to retake the mathematics FCAT. However, if all of the tests were taken by different students, then the cost to implement this intervention would rise to \$35,644.32. The researcher was unable to ascertain the actual overlap between these

two extreme scenarios, and for a cost basis selected the lower of the two costs of implementation.

To calculate the cost of the diploma choice that removed the Algebra I graduation requirement, the student would still have attempted to pass Algebra I, and be awarded the lower diploma if he did not succeed. The costs involved would be virtually the same, except for an estimated ten minute analysis of the student grades by his guidance counselor, an estimated 20 minutes to contact the parents and student to set up a meeting, and an estimated one hour meeting with the student and his parent or guardian, for a total of 1.5 hours, all according to a senior Osceola County official (personal conversation, April 5, 2005). Based on the budgeted cost of a guidance counselor with fringe benefits in Osceola County of \$48,738 per 196 day work-year, and a seven hour work day, a guidance counselor costs \$35.5233 per hour. Since this review and meeting is expected to use 1.5 hours, it would cost \$53.28 per student. Although there was no failure rate available, the researcher based his calculation on a estimate by an Osceola County employee that was very familiar with the situation, and had studied it extensively prior to my contact (personal communication, March 7,

2005). The researcher used 25 percent of the ninth grade population as the failure rate. When the researcher then applied this rate, 1,150 students were calculated to have failed Algebra I. A review and meetings with those students and their parents would cost an estimated \$61,272 per school year to implement.

To calculate the cost of the diploma choice that removed the requirement that students needed a 2.0 GPA on a four point scale, the student would still have attempted to raise his GPA, and be awarded the lower diploma if he did not succeed. The costs involved would be virtually the same, except for an estimated ten minute analysis of the student grades by his guidance counselor, an estimated 20 minutes to contact the parents and student to set up a meeting, and an estimated one hour meeting with the student and his parent or guardian, for a total of 1.5 hours, all according to an Osceola County official (personal conversation, April 5, 2005). Based on the estimated cost of a guidance counselor with fringe benefits in Osceola County of \$48,738, a 196 day work-year, and a seven hour work day, a guidance counselor's time cost \$35.5233 per hour. This review and meeting were estimated to use 1.5 hours, which would cost \$53.28 per student. Although the

actual number of students below a 2.0 GPA was not available, the researcher relied on estimates by grade level, made by a senior Osceola County official (personal conversation, March 7, 2005), that approximately 33 percent of ninth graders, 16 percent of tenth graders, eight percent of eleventh graders and two percent of twelfth graders had less than a 2.0 GPA. The researcher calculated that there are approximately 2,450 students in Osceola County high schools with below a 2.0 GPA. These reviews and meetings would cost \$53.28 per student for the 2,450 students, at a cost of \$130,536 per school year to implement.

To calculate the cost of the diploma choice that removed the requirements that students needed a 2.0 GPA on a four point scale, pass Algebra I, and the FCAT, the student would still have attempted to raise his GPA, pass the FCAT and Algebra I, and be awarded the lower diploma if he did not succeed. The costs involved would be virtually the same, except for an estimated ten minute analysis of the student grades by his guidance counselor, an estimated 20 minutes to contact the parents and student to set up a meeting, and an estimated one hour meeting with the student and his parents, for a total of 1.5 hours, all according to



a senior Osceola County official (personal conversation, April 5, 2005). Based on the budgeted cost of a guidance counselor with fringe benefits in Osceola County of \$48,738, a 196 day work-year, and a seven hour work day (Osceola, 2004), an hour of guidance counselor time costs \$35.5233. Since the review of records, setting up the meeting, and the meeting would use 1.5 hours, this review and meeting would cost \$53.28 per student. There were approximately 2,450 students in Osceola County with below a 2.0 GPA, according to a formula from a senior Osceola County official (personal conversation, March 7, 2005). Two percent of seniors are below this level, according to this same official, which is of 51 of the 2,549 twelfth graders. Although the number of students overlapping between the 401 students that retook the reading FCAT in twelfth grade in 2004, (FIRN, 2005a) the 268 students that retook the mathematics FCAT in twelfth grade in 2004 (FIRN), and the estimated 51 twelfth graders that have below a 2.0 GPA is not known, a maximum of all 51 students with below a 2.0 GPA may be retaking the FCAT in twelfth grade. Using that scenario the researcher determined that at least another 350 students are in this category, for a total of 2,800 students. This \$53.28 per student review

and meeting would cost \$149,184.00 per school year to implement. If, however, none of the students retaking the FCAT in twelfth grade had below a 2.0 GPA, and they all retook only one part of the FCAT, then an additional 51 students would be impacted by this diploma option with regard to GPA, and an additional 268 students would be impacted by this diploma option with regard to FCAT, for a total of 3,170 students. At \$53.28 per student, for a review and meeting, these 3,170 students would cost \$168,897.60 per school year. Although the true cost lies between these two calculated costs, the researcher was unable to ascertain the actual number of students that this intervention would apply to, and selected the lower cost of these two extreme possibilities.

To calculate the additional cost of adding classes in academy/magnet/vocational programs, the researcher first calculated that difference in funding, based on the difference in program cost. Regular high school classes have a program cost factor of 1.132, and vocational classes have a program cost factor of 1.187, a difference of .055 (FEFP 101, 2005) over a regular high school class. In 2003-2004, 6,998 student seats were occupied in these classes. Of these 6,998 seats, 1,225 were in schools that

had block scheduling, and 5,773 were in schools that did not have block scheduling (School District, 2005). For schools that had block scheduling, the researcher divided the difference in program cost factor by eight, since a student takes eight classes a year. The researcher then multiplied that cost differential by the base student allocation to determine the additional cost of a seat in a school with block scheduling. This was calculated as:  $.055/8 \times \$3,670.26 = \$25.233$  per student. Since there are 1,225 seats used, this would calculate to \$30,910.47 for the year. The remaining 5,773 seats also had a program cost differential of .055, but since students in these schools take twelve classes a year, the program cost differential would be divided by twelve, and then multiplied by the base student allocation. This was calculated as  $.055/12 \times \$3,670.26 = \$16.822$  per student. Since there are 5,773 seats used, this would calculate to \$97,113.55 for the year, for a total of additional cost of \$128,024.02 for the district. Therefore, to add an additional ten percent of available seats, based on the same mix of schedules would cost an additional \$12,802.40 per year. To add an additional 25 percent of seats for these classes, based on the same mix of schedules would

require an additional \$32,006.01 per year. To add an additional 50 percent of seats for these classes, based on the same mix of schedules, would require an additional \$64,012.01 per year. To add an additional 100 percent of seats for these classes, based on the same mix of schedules, would require an additional \$128,024.02 per year. To add an additional 200 percent of seats, based on the same mix of student schedules, would require an additional \$256,048.04 per year. A room utilization review could be conducted to determine if existing classrooms that would no longer be utilized due to the shift in student demand could then be utilized for this change.

To make schools over 500 students into schools-within a school would require an administrator and secretary for each of these smaller school units, as in Garden City High School (Garden City, 2005). After the researcher investigated the current staffing levels in the School District of Osceola County, he determined the increases in staff were necessary to meet that standard. Twelve elementary assistant principals would need to be hired, at an annual cost including fringe benefits of \$75,618. each (Osceola, 2004). Four middle school assistant principals would need to be hired at an annual cost including fringe

benefits of \$78,397 each (Osceola). Eleven high school assistant principals would need to be hired at an annual cost including fringe benefits of \$81,349 each (Osceola). In addition, twenty-seven secretaries would need to be hired at an annual cost of \$38,572 each including fringe benefits. The annual cost for operating the school district as schools within a school would be \$3,157,287.

### Research Question Three

How would the implementation of each of the interventions be prioritized, based on Levin's Cost Utility of Outcomes analysis?

To respond to this research question, the first step that the researcher performed was to determine which response in each of the four range items would yield the highest cost utility, based on respondent rated effectiveness. To do this, the cost calculated for an intervention was divided by the estimated effectiveness rating to determine the cost utility of the intervention. The cost utility to effectiveness ratio with the lowest number would then be selected as the optimal intervention within that category (see Table 7).

Table 7. Mean Responses for the Four Range Interventions for All Respondents.

The Cost-utility column indicates the cost of an intervention divided by the utility (mean effectiveness rating) of that intervention. Therefore, a lower cost-utility indicates that an intervention is superior to an intervention with a higher cost-utility number, per cost unit.

Item	Mean Effectiveness Rating	Cost	Cost Utility
Provide more mentors with a ratio of			
100:1	1.99	\$3,118.50	1,567
50:1	2.59	\$22,744.26	8,781
20:1	3.33	\$81,538.38	24,486
10:1	3.80	\$179,584.02	47,259
5:1	4.54	\$375,633.72	83,739
Provide more guidance counselors with a ratio of			
100:1	2.15	\$18,471,702.00	8,591,489
50:1	3.02	\$41,476,083.00	13,733,802
20:1	3.96	\$110,391,570.00	27,876,659
10:1	4.28	\$225,315,774.00	52,643,872
5:1	4.27	\$455,115,444.00	106,584,413
Reduce the GPA required for graduation from a 2.0 on a 4 point scale to a			
1.9	2.15	\$130,536.00	47,222
1.8	1.75	\$130,536.00	58,016
1.7	1.71	\$130,536.00	59,373
1.6	1.61	\$130,536.00	63,060
1.5	1.73	\$130,536.00	58,686
Offer more seats for magnet/academy/vocational programs, with an increase of			
10%	2.31	\$12,802.40	5,542
25%	2.76	\$32,006.01	11,596
50%	2.94	\$64,012.01	21,776
100%	3.45	\$128,024.02	37,108
200%	3.43	\$256,048.04	74,650

Based on the cost utility results in table seven, the researcher determined that a 100:1 ratio would be used for mentors and guidance counselors, that a 1.9 GPA would be used, as would a ten percent increase in the number of seats available for magnet/academy/vocational programs. Once that was determined, the researcher then proceeded to

calculate cost utility for the interventions that remained (see Table 8).

Table 8. Cost Utilities for the 13 Interventions.

Item	Mean Effectiveness Rating	Cost	Cost Utility
Provide free preschool	4.06	\$8,943,699.00	2,202,881
Provide more mentors with a ratio of 100:1	1.99	\$3,118.50	1,567
Provide more guidance counselors with a ratio of 100:1	2.15	\$18,471,702.00	8,591,489
Reduce class size to 18 in grades k-3	3.93	\$3,601,390.02	916,384
Reduce class size to 22 in grades 4-8	3.92	\$3,526,777.59	899,688
Reduce class size to 25 in grades 9-12	4.28	\$2,946,587.00	688,454
Add three-year diploma choices	3.36	(\$338,876.82)	(100,856)
Reduce the GPA required for graduation from 2.0 on a 4 point scale to a 1.9 GPA.	2.15	\$130,536	60,714
Offer a diploma choice with no FCAT requirement.	3.76	\$21,365.28	5,682
Offer a diploma choice with no Algebra requirement.	2.06	\$61,272.00	29,744
Offer a diploma choice with no FCAT, Algebra, or GPA requirements	2.33	\$149,184.00	64,027
Offer more seats for magnet/academy/vocational programs, with an increase of 10%	2.31	\$12,802.40	5,542
Divide schools over 500 students into schools within a school.	3.04	\$3,157,287.00	1,038,581

Based on the results indicated in table 8, the researcher prioritized implementation of these 13 interventions (see Table 9).

Table 9. Prioritization of Interventions by Cost Utility for Implementation.

Item	Cost-Utility	Implementation Priority
Provide free preschool	2,202,881	12
Provide more mentors with a ratio of 100:1	1,567	2
Provide more guidance counselors with a ratio of 100:1	8,591,489	13
Reduce class size to 18 in grades k-3	916,394	10
Reduce class size to 22 in grades 4-8	899,688	9
Reduce class size to 25 in grades 9-12	688,454	8
Add three year diploma choices	(100,856)	1
Reduce the GPA required for graduation from a 2.0 on a 4 point scale to a 1.9	60,714	6
Offer a diploma choice with no FCAT requirement.	5,682	4
Offer a diploma choice with no Algebra requirement.	29,744	5
Offer a diploma choice with no FCAT, Algebra, or GPA requirements.	64,027	7
Offer more seats for magnet/academy/vocational programs, with an increase of 10%	5,542	3
Divide schools over 500 students into schools-within-a-school.	1,038,581	11

Based on these results the researcher decided to keep a running total of the costs of implementation, so that they could be compared to budgetary constraints and only those that were affordable would be utilized (see Table 10).



Table 10. Cumulative Annual Cost of Implementation of Interventions.

Rank	Implementation	Annual Cost	Cumulative Annual Cost
1	3 year diploma	(\$338,876.82)	(\$338,876.82)
2	100:1 mentors	\$3,118.50	(\$335,758.32)
3	10% more voc. seats	\$12,802.40	(\$322,955.92)
4*	No FCAT	\$21,365.28	(\$301,590.64)
5*	No Algebra	\$61,272.00	(\$240,318.64)
6*	1.9 GPA	\$130,536.00	(\$109,782.64)
7*	No FCAT, GPA, Algebra	\$149,184.00	\$39,401.36
8	25 max in HS	\$2,946,587.00	\$2,985,988.36
9	22 max in 4-8	\$3,526,777.59	\$6,512,765.95
10	18 max in k-3	\$3,601,390.02	\$10,114,155.97
11	School in a school	\$3,157,287.00	\$13,271,442.97
12	Free preschool	\$8,943,699.00	\$22,215,141.97
13	100:1 Guidance	\$18,471,702.00	\$40,686,843.97

\*=Requires change in existing statutes to implement.

## Results of the Hypotheses

### Null Hypothesis One

No difference existed between the dropout prevention interventions mean effectiveness rating, and the mean effectiveness rating of each of the interventions.

To test this hypothesis, first the researcher calculated the grand mean of all of the interventions. Then the researcher calculated the means of each of the interventions, including the mean of all of the items in the four range questions. The mean of the intervention was then removed from the grand mean, and then the mean of the intervention was compared to this adjusted grand mean in a paired samples t-test, in SPSS (see Table 11). In the four

range questions, all interventions in that range were removed from the grand mean. For other questions, the four range questions were averaged, and then weighted as one question, so as to equally weight each of the thirteen interventions.

Table 11. Paired Samples t-tests Between the 29 Interventions, and their Adjusted Grand Means.

Intervention	t-Value	Significance (2-tail)
Free Preschool	11.298	.000
100:1 Mentors	-9.754	.000
50:1 Mentors	-5.083	.000
20:1 Mentors	.626	.533
10:1 Mentors	5.822	.000
5:1 Mentors	14.505	.000
100:1 Guidance Counselors	-8.624	.000
50:1 Guidance Counselors	-1.845	.067
20:1 Guidance Counselors	8.184	.000
10:1 Guidance Counselors	12.606	.000
5:1 Guidance Counselors	9.267	.000
18 Max. in K-3 Classes	7.878	.000
22 Max. in 4-8 Classes	6.678	.000
25 Max in High School	10.220	.000
Three Year Diploma Option	.909	.365
1.9 GPA Diploma Option	-10.216	.000
1.8 GPA Diploma Option	-18.089	.000
1.7 GPA Diploma Option	-21.796	.000
1.6 GPA Diploma Option	-23.835	.000
1.5 GPA Diploma Option	-16.374	.000
No FCAT Diploma Option	4.164	.000
No Algebra Diploma Option	-10.734	.000
No FCAT, Algebra, and GPA Diploma Option	-6.949	.000
10% More Voc. Seats	-7.721	.000
25% More Voc. Seats	-4.879	.000
50% More Voc. Seats	-3.786	.000
100% More Voc. Seats	1.400	.512
200% More Voc. Seats	1.198	.455
Schools-Within-a School	-2.055	.042
All of the above paired samples had 122 degrees of freedom		

The researcher found that only five of the 29 interventions were not statistically significant in the difference between their mean responses, and the mean response of the other interventions, at a level of significance of  $p < .05$ . The ratio of 50 students per guidance counselor was not statistically significant at  $p < .05$ , with a .067 significance level, and a t-value of -1.845, although the other ratios in the range of responses were rated statistically significant at the  $p < .05$  level. The ratio of 50 students per mentor was not statistically significant at the  $p < .05$  level, with a .533 significance level, and a t value of -5.083, although the other ratios in the range of responses were rated statistically significant at the  $p < .05$  level. The three year diploma option was not statistically significant at the  $p < .05$  level, with a .365 level of significance, and a t-value of .909. The increase of seats in academy/magnet/vocational programs was rated as not statistically significant at the 100 percent and 200 percent increase in available seats with a  $p < .05$ . The 100 percent increase was found to have a .512 level of significance, and a t-value of 1.400. The 200 percent increase was found to have a .455 level of significance, and a t-value of 1.198, although the other

responses in the range were statistically significant at the  $p < .05$  level. The researcher accepted null hypothesis one for the five interventions noted above that were not statistically significant, and rejected null hypothesis one that no difference existed between the dropout prevention interventions mean effectiveness rating, and the mean effectiveness rating of each of the interventions in all of the other cases.

The three most negative t-values indicated interventions that were the most negatively rated interventions. The lowest rated intervention was a reduction in the required graduation GPA from a 2.0 to a 1.6 on a four point scale, and had a t-value of -23.835. The second lowest rated intervention was a reduction in required graduation GPA from a 2.0 to a 1.7 on a four point scale, and had a t-value of -21.796. The third lowest rated intervention was a reduction in graduation GPA required from a 2.0 to a 1.8 on a four point scale, and had a t-value of -18.089. The respondents indicated that they did not feel that having the GPA requirement lowered would be an effective intervention that would increase the four-year graduation rate.

The three most positive t-values indicated interventions that were the most positive rated interventions. The highest rated intervention was a 5:1 mentee: mentor ratio, with a t-value of 14.505. The second highest rated intervention was a 10:1 student to guidance counselor ratio, with a t-value of 12.606. The third highest rated intervention was free preschool, with a t-value of 11.298.

#### Null Hypothesis Two

No difference existed among current high school students, high school graduates and dropouts with respect to each intervention's mean effectiveness rating.

In order to test the hypothesis, the mean effectiveness ratings of the thirteen interventions were entered into SPSS. Statistical profiles were then created and analyzed based on the education level of the respondents.

The purpose of the statistical profile analysis was to summarize the efficiency rating of free preschool, as assessed by dropouts, high school graduates, and high school students. It was hypothesized that there was no

statistically significant difference in the mean response rating, based on the education level of the respondent.

A review of Box's test for the equality of covariances revealed that the covariance matrices of the groups were not different to a statistically significant degree, so that sphericity may be assumed.

To determine whether the mean responses demonstrated a difference based on education level, the focus of this analysis is placed on the interaction between the intervention and education level. A review of this result revealed that no statistically significant interaction between education level and free preschool exists.  $F(2,120)=3.001, p>.05$  (See Table 12). Each of the three groups rated this intervention higher than their respective means for the other interventions. The interaction of education level and free preschool accounted for 4.8% of the change that occurred in the rating for free preschool. The between subject effect was statistically significant  $F(2,120)=11.304, p<.05$ , and accounted for 15.9 percent of the change in the response rating (see Table 12). The researcher accepts null hypothesis two for this intervention.

Table 12. Free Preschool: Statistical Contrasts and Significance.

Test of Within-Subjects Contrasts						
Source	Type III Sum of Squares	df	Mean Sq.	F	Sig.	Partial Eta Squared
Preschool	32.835	1	32.835	92.922	.000	.436
Preschool*						
Ed Level	2.121	2	1.061	3.001	.053	.048
Error	42.404	120	.353			
Test of Between-Subject Effects						
Intercept	2336.494	1	2336.494	4315.377	.000	.973
Ed Level	12.241	2	6.120	11.304	.000	.159
Error__	42.404	120	.541			

The purpose of the statistical profile analysis was to summarize the efficiency rating of mentoring, as assessed by dropouts, high school graduates, and high school students. It was hypothesized that there was no statistically significant difference in the mean response rating, based on the education level of the respondent.

A review of Box's test for the equality of covariances revealed that the covariance matrices of the groups were not different to a statistically significant degree, so that sphericity may be assumed.

To determine whether the mean responses demonstrated a difference based on education level, the focus of this analysis is placed on the interaction between the intervention and education level. A review of this result revealed that no statistically significant interaction between mentoring and education level exists,

F(2,120)=.984,  $p>.05$  (see Table 13). All groups rated this intervention at the 100:1 ratio lower than their mean response for the other interventions. However, education level accounted for 1.6 percent of the change in the effectiveness rating for mentoring. The tests of between-subjects effects was statistically significant F(2,120)=10.595,  $p<.001.$ , and accounted for 15.0 percent of the change in response. The researcher accepts null hypothesis two for this intervention.

Table 13. Mentors, 100:1: Statistical Contrasts and Significance.

Test of Within-Subjects Contrasts						
Source	Type III Sum of Squares	df	Mean Sq.	F	Sig.	Partial Eta Squared
Mentor	.162	1	.162	.501	.481	.004
Mentor*						
Ed Level	.638	2	.319	.984	.377	.016
Error	38.897	120	.324			
Test of Between-Subjects Effects						
Intercept	1861.736	1	1861.736	4756.731	.000	.975
Ed Level	8.294	2	4.147	10.595	.000	.150
Error	46.967	120	.391			

The purpose of the statistical profile analysis was to summarize the efficiency rating of guidance counselors, as assessed by dropouts, high school graduates, and high school students. It was hypothesized that there was no statistically significant difference in the mean response rating, based on the education level of the respondent.



A review of Box's test for the equality of covariances revealed that the covariance matrices of the groups were not different to a statistically significant degree, so that sphericity may be assumed.

To determine whether the mean responses demonstrated a difference based on education level, the focus of this analysis is placed on the interaction between the intervention and education level. A review of this result revealed that there is no statistically significant interaction between guidance counselor effectiveness and the education level of the respondent,  $F(2,120)=.222, p>.05$  (see Table 14). All three groups rated this intervention at a 100:1 ratio lower than their mean response to the other interventions. Education level accounted for 0.4 percent of the change in ratings over education level. A test for the between-subjects effects revealed that there was a statistically significant relationship between education level and guidance counselors  $F(2,120)=5.979, p<.01$ . Education level accounted for 9.1 percent of the responses. The researcher accepts the null hypothesis two for this intervention.

Table 14. Guidance Counselors, 100:1: Statistical Contrasts and Significance.

Test of Within-Subjects Contrasts						
Source	Type III Sum of Squares	df	Mean Sq.	F	Sig.	Partial Eta Squared
Guid Coun.	4.753	1	4.753	15.614	.000	.115
Guid Coun*	.135	2	.068	.222	.801	.004
Ed Level						
Error	36.528	120	.304			
Test of Between-Subjects Effects						
Intercept	2055.113	1	2055.113	6118.424	.000	.981
Ed Level	4.017	2	2.008	5.979	.003	.091
Error	407.120	120	.336			

The purpose of the statistical profile analysis was to summarize the efficiency rating of reducing the class size in grades from kindergarten to three to a maximum of 18 students per class, as assessed by dropouts, high school graduates, and high school students. It was hypothesized that there was no statistically significant difference in the mean response rating, based on the education level of the respondent.

A review of Box's test for the equality of covariances revealed that the covariance matrices of the groups were not different to a statistically significant degree, so that sphericity may be assumed.

To determine whether the mean responses demonstrated a difference based on education level, the focus of this analysis is placed on the interaction between the

intervention and education level. A review of this result revealed that there is no statistically significant interaction between education level and a maximum class size of 18 in grades kindergarten to three  $F(2,120)=.587$ ,  $p>.05$  (see Table 15). However, education level can account for 1.0 percent of the change that occurred in the effectiveness rating. A test of between-subjects effects was also found to not be statistically significant  $F(2,120)=2.613$ ,  $p>.05$ . Education level accounted for 4.2 percent of the response for class size in grades kindergarten to three. The researcher accepts null hypothesis two for this intervention.

Table 15. K-3 Class Size Maximum of 18: Statistical Contrasts and Significance.

Test of Within-Subjects Contrasts						
Source	Type III Sum of Squares	df	Mean Sq.	F	Sig.	Partial Eta Squared
K-3 Size	28.545	1	28.545	53.783	.000	.309
K-3 Size*						
Ed Level	.623	2	.311	.587	.558	.010
Error 63	.689	120	.531			
Tests of Between-Subjects Contrasts						
Intercept	2304.905	1	2304.905	3036.167	.000	.962
Ed Level	3.967	2	1.984	2.613	.077	.042
Error	91.098	120	.759			

The purpose of the statistical profile analysis was to summarize the efficiency rating of reducing class size in

grades four to eight to a maximum of 22 students per classroom, as assessed by dropouts, high school graduates, and high school students. It was hypothesized that there was no statistically significant difference in the mean response rating, based on the education level of the respondent.

A review of Box's test for the equality of covariances revealed that the covariance matrices of the groups were not different to a statistically significant degree, so that sphericity may be assumed.

To determine whether the mean responses demonstrated a difference based on education level, the focus of this analysis is placed on the interaction between the intervention and education level. A review of this result revealed that a statistically significant interaction between education level and reduced class size in grades four to eight exists  $F(2,120)=7.833, p<.05$  (see Table 16). The plotted means demonstrated visually what is seen numerically above (see Figure 1). The researcher rejects null hypothesis two for this intervention.

Table 16. Grades 4-8 Class Size Maximum of 22: Statistical Contrasts and Significance.

Test of Within-Subjects Contrasts						
Source	Type III Sum of Squares	df	Mean Sq.	F	Sig.	Partial Eta Squared
4-8 Size	41.475	1	41.475	64.403	.000	.349
4-8 Size*						
Ed Level	10.089	2	5.044	7.833	.001	.115
Error	77.279	120	.644			

The purpose of the statistical profile analysis was to summarize the efficiency rating of reducing class size in high school to a maximum of 25 students per class, as assessed by dropouts, high school graduates, and high school students. It was hypothesized that there was no statistically significant difference in the mean response rating, based on the education level of the respondent.

A review of Box's test for the equality of covariances revealed that the covariance matrices of the groups were not different to a statistically significant degree, so that sphericity may be assumed.

To determine whether the mean responses demonstrated a difference based on education level, the focus of this analysis is placed on the interaction between the intervention and education level. A review of this result revealed that a statistically significant interaction between high school class size and education level exists,

$F(2,120)=4.435, p<.01$  (see Table 17). The plotted means demonstrated visually what is seen numerically above (see Figure 2). The researcher rejects null hypothesis two for this intervention.

Table 17. High School Maximum Class Size of 25: Statistical Contrasts and Significance.

Test of Within-Subjects Contrasts						
Source	Type III Sum of Squares	df	Mean Sq.	F	Sig.	Partial Eta Squared
HS Size	77.398	1	77.398	111.291	.000	.481
HS Size*						
Ed Level	6.168	2	3.084	4.435	.014	.069
Error	83.454	120	.695			

The purpose of the statistical profile analysis was to summarize the efficiency rating of offering three year diploma options, as assessed by dropouts, high school graduates, and high school students. It was hypothesized that there was no statistically significant difference in the mean response rating, based on the education level of the respondent.

A review of Box's test for the equality of covariances revealed that the covariance matrices of the groups were not different to a statistically significant degree, so that sphericity may be assumed.

To determine whether the mean responses demonstrated a difference based on education level, the focus of this analysis is placed on the interaction between the intervention and education level. A review of this result revealed that a statistically significant interaction exists between the education level of the respondent and offering three year diploma options  $F(2,120)=8.481, p<.001$  (see Table 18). The plotted means demonstrated visually what is seen numerically above (see Figure 3). The researcher rejects null hypothesis two for this intervention.

Table 18. Three year Diploma Options: Statistical Contrasts and Significance.

Test of Within-Subjects Contrasts						
Source	Type III Sum of Squares	df	Mean Sq.	F	Sig.	Partial Eta Squared
3 Year	2.395	1	2.395	2.836	.095	.023
3 Year*						
Ed Level	14.328	2	7.164	8.481	.000	.124
Error	101.365	120	.845			

The purpose of the statistical profile analysis was to summarize the efficiency rating of a diploma option that removes the FCAT requirement, as assessed by dropouts, high school graduates, and high school students. It was hypothesized that there was no statistically significant

difference in the mean response rating, based on the education level of the respondent.

A review of Box's test for the equality of covariances revealed that the covariance matrices of the groups were not different to a statistically significant degree, so that sphericity may be assumed.

To determine whether the mean responses demonstrated a difference based on education level, the focus of this analysis is placed on the interaction between the intervention and education level. A review of this result revealed that a statistically significant interaction between the education level of the respondent and a diploma option that does not require passing the FCAT exists,  $F(2,120)=34.949$ ,  $p<.001$  (see Table 19). The plotted means demonstrated visually what is seen numerically above (see Figure 4). The researcher rejects null hypothesis two for this intervention.

Table 19. Diploma Option with no FCAT Requirement: Statistical Contrasts and Significance.

Test of Within-Subjects Contrasts							
Source	Type III Sum of Squares	df	Mean Sq.	F	Sig.	Partial Eta Squared	
No FCAT	.222	1	.222	.318	.574	.003	
No FCAT*							
Ed Level	48.744	2	24.372	34.949	.000	.368	
Error	83.683	120	.697				



The purpose of the statistical profile analysis was to summarize the efficiency rating of having a diploma option with no Algebra requirement, as assessed by dropouts, high school graduates, and high school students. It was hypothesized that there was no statistically significant difference in the mean response rating, based on the education level of the respondent.

A review of Box's test for the equality of covariances revealed that the covariance matrices of the groups were not different to a statistically significant degree, so that sphericity may be assumed.

To determine whether the mean responses demonstrated a difference based on education level, the focus of this analysis is placed on the interaction between the intervention and education level. A review of this result revealed that no statistically significant interaction exists between the education level of the respondents and the diploma option that would not require Algebra,  $F(2,120)=.013, p>.05$  (see Table 20). In all three groups, the mean response for this intervention was lower than the mean of the other interventions. However, the education level of the respondents accounted for 0.00 percent of the change in the effectiveness rating. A test of the between-

subjects effects revealed no statistically significant relationship between education level and the intervention that would have eliminated algebra as a graduation requirement  $F(2,120)=2.303, p>.05$ . This effect accounted for 3.7 percent of the response for this intervention. The researcher accepts null hypothesis two for this intervention.

Table 20. Diploma Option with no Algebra Requirement: Statistical Contrasts and Significance.

Test of Within-Subjects Contrasts						
Source	Type III Sum of Squares	df	Mean Sq.	F	Sig.	Partial Eta Squared
No Alg.	77.843	1	77.843	85.377	.000	.416
No Alg.*						
Ed Level	.024	2	.012	.013	.987	.000
Error	.411	120	.912			
Tests of Between-Subjects Effects						
Intercept	1297.668	1	1297.668	1000.456	.000	.893
Ed Level	5.973	2	2.987	2.303	.104	.037
Error	155.649	120	1.297			

The purpose of the statistical profile analysis was to summarize the efficiency rating of offering a diploma option with a reduced GPA required for graduation, as assessed by dropouts, high school graduates, and high school students. It was hypothesized that there was no statistically significant difference in the mean response rating, based on the education level of the respondent.

A review of Box's test for the equality of covariances revealed that the covariance matrices of the groups were not different to a statistically significant degree, so that sphericity may be assumed.

To determine whether the mean responses demonstrated a difference based on education level, the focus of this analysis is placed on the interaction between the intervention and education level. A review of this result revealed that no statistically significant interaction exists between the education level of the respondents and offering a diploma option with a lower GPA required for graduation,  $F(2,120)=1.117$ ,  $p>.05$  (see Table 21). The mean response for this intervention was lower in all three groups than the mean response to the other interventions. However, the interaction between the education level of the respondents and the diploma option with a reduced GPA accounted for 1.8 percent of the change that occurred in the effectiveness rating. A test of the between-subjects effects revealed a statistically significant relationship between the education level of the respondent, and the lowering of the GPA required for graduation from a 2.0 to a 1.9 on a four point scale  $F(2,120)=4.442$ ,  $p<.05$ . This effect accounts for 6.9 percent of the response for this

intervention. The researcher accepts null hypothesis two for this intervention.

Table 21. Diploma Option with 1.9 GPA Requirement: Statistical Contrasts and Significance.

Test of Within-Subjects Contrasts						
Source	Type III Sum of Squares	df	Mean Sq.	F	Sig.	Partial Eta Squared
Low GPA	107.497	1	107.497	369.167	.000	.755
Low GPA*						
Ed Level	.651	2	.325	1.117	.330	.018
Error	34.943	120	.291			
Tests of Between-Subjects Effects						
Intercept	1354.170	1	1354.170	1136.400	.000	.904
Ed Level	10.588	2	5.294	4.442	.014	.069
Error	142.996	120	1.192			

The purpose of the statistical profile analysis was to summarize the efficiency rating of a diploma option that would eliminate the FCAT, GPA, and Algebra requirements, as assessed by dropouts, high school graduates, and high school students. It was hypothesized that there was no statistically significant difference in the mean response rating, based on the education level of the respondent.

A review of Box's test for the equality of covariances revealed that the covariance matrices of the groups were not different to a statistically significant degree, so that sphericity may be assumed.

To determine whether the mean responses demonstrated a difference based on education level, the focus of this analysis is placed on the interaction between the intervention and education level. A review of this result revealed that a statistically significant interaction exists between the education level of the respondents, and a diploma option that would eliminate the FCAT, GPA, and Algebra requirements,  $F(2,120)=5.759, p<.01$  (see Table 22). The plotted means demonstrates visually what is seen numerically above (see Figure 5). The researcher rejects null hypothesis two for this intervention.

Table 22. Diploma Option with no FCAT, Algebra, or GPA Requirements: Statistical Contrasts and Significance.

Test of Within-Subjects Contrasts						
Source	Type III Sum of Squares	df	Mean Sq.	F	Sig.	Partial Eta Squared
No GP,AL,FC	62.503	1	62.503	1	.000	.307
No GP,AL,FC*						
Ed Level	13.521	2	6.760	5.759	.004	.088
Error	140.874	120	1.174			

The purpose of the statistical profile analysis was to summarize the efficiency rating of increasing the number of seats available in magnet/academy/vocational classes, as assessed by dropouts, high school graduates, and high school students. It was hypothesized that there was no

statistically significant difference in the mean response rating, based on the education level of the respondent.

A review of Box's test for the equality of covariances revealed that the covariance matrices of the groups were not different to a statistically significant degree, so that sphericity may be assumed.

To determine whether the mean responses demonstrated a difference based on education level, the focus of this analysis is placed on the interaction between the intervention and education level. A review of this result revealed that a statistically significant interaction between the education level of the respondents and increasing seats in magnet/academy/vocational programs,  $F(2,120)=8.501$ ,  $P<.001$  (see Table 23). The plotted means indicate visually, what is seen numerically above (see Figure 6). The researcher rejects null hypothesis two for this intervention.

Table 23. Increase seats in magnet/academy/vocational programs by ten percent: Statistical Contrasts and Significance.

Test of Within-Subjects Contrasts						
Source	Type III Sum of Squares	df	Mean Sq.	F	Sig.	Partial Eta Squared
Voc Seats	5.388	1	5.388	19.763	.000	.141
Voc Seats*						
Ed Level	4.657	2	2.328	8.501	.000	.124
Error	32.869	120	.274			

The purpose of the statistical profile analysis was to summarize the efficiency rating of dividing schools with over 500 students into smaller learning units, such as schools-within-a-school, as assessed by dropouts, high school graduates, and high school students. It was hypothesized that there was no statistically significant difference in the mean response rating, based on the education level of the respondent.

A review of Box's test for the equality of covariances revealed that the covariance matrices of the groups were not different to a statistically significant degree, so that sphericity may be assumed.

To determine whether the mean responses demonstrated a difference based on education level, the focus of this analysis is placed on the interaction between the intervention and education level. A review of this result revealed that a statistically significant interaction

exists between the education level of the respondents, and dividing schools of over 500 students into schools-within-a-school,  $F(2,120)=9.394$ ,  $p<.001$  (see Table 24). The plotted means indicate visually, what is seen numerically above (see Figure 7). The researcher rejects null hypothesis two for this intervention.

Table 24. Divide schools of over 500 students into schools-within-a-school: Statistical Contrasts and Significance.

Test of Within-Subjects Contrasts						
Source	Type III Sum of Squares	df	Mean Sq .	F	Sig.	Partial Eta Squared
Schl WAS	.474	1	.474	.696	.406	.006
Schl WAS*						
Ed Level	12.789	2	6.394	9.394	.000	.135
Error	81.685	120	.681			

Thirteen interventions were tested to determine if they varied significantly based upon the education level of the respondent. Six of the thirteen interventions did not have a statistically significant difference between their mean response, and the mean of the responses of the other interventions. Seven of the interventions had a statistically different mean response than the mean of the responses of the other interventions.



## CHAPTER V DISCUSSIONS, CONCLUSIONS, AND RECOMMENDATIONS

### Summary

Since Osceola County, Florida students have been graduating high school in four years at a rate that is lower than it used to be, the researcher decided to study interventions that could be utilized to reverse that trend. This study was designed to analyze the perceived effectiveness of thirteen interventions that could be utilized to increase the four-year graduation rate, and calculate cost of those interventions. With those figures available, the cost utility of those interventions could then be calculated, and implementation of the interventions prioritized.

The researcher anticipated that the compiled data would provide information that could then be utilized by the School District of Osceola County to increase the four-year graduation rate. Additionally, the researcher sought to determine if there were significant differences in the perceptions of the respondents, based on their education

level. High school students, high school graduates, and dropouts participated in the study.

Dropouts had the most negative ratings for the interventions, rating them lower than the other groups in almost all cases. The interventions that rated above the mean effectiveness rating were:

- a. Provide free, quality preschool
- b. Reduce class size in kindergarten to third grade, to a maximum of 18 students per class.
- c. Reduce class size in grades four to eight to a maximum of 22 students per class.
- d. Reduce class size in high school to a maximum of 25 students per class.

The interventions that were rated approximately as effective as the mean of the responses were:

- a. Offer three year diploma options.
- b. Offer a diploma option that eliminates the FCAT requirement.
- c. Divide schools over 500 students into smaller learning environments, such as schools-within-a-school.

The interventions that were rated less effective than the mean of the responses were:

- a. Offer a diploma option that reduces the GPA required for high school graduation.
- b. Offer a diploma option that removes the Algebra requirement.
- c. Offer a diploma option that removes the FCAT, Algebra, and GPA requirements for graduation.

Some interventions were offered with a range of possible choices, and those choices substantially altered the effectiveness rating of the intervention. Those interventions were:

- a. Provide more mentors.
- b. Provide more guidance counselors
- c. Provide more seats in academy/ magnet/ vocational programs.

Mentors for students were offered in various ratios, from a 100:1 ratio to a 5:1 ratio. The dropout group rated a 100:1 mentee: mentor ratio as being only slightly effective, while all groups rated a 5:1 ratio as being very effective.

Similarly, guidance counselors had the same ratios offered, and as the student to counselor ratio decreased, the effectiveness rating increased from slightly effective to very effective.

For academy/ magnet/ vocational classes, a range of increase in seats was offered. As the percent of increase of available seats increased in academy/ magnet/ vocational classes, the perceived effectiveness rating also increased from slightly effective to very effective.

### Discussion

The response rate for the questionnaire was sufficiently high that statistical analyses could be performed on the data. Of the 600 questionnaires that were sent to former and current students of the School District of Osceola County, 154 were returned by the respondents in the study. Of the 154 questionnaires in the study, 31 contained one or more non-responses, and were eliminated from the study. Of the remaining 123 questionnaires, 69 of them were from current students, 36 of them were from high school graduates, and 18 of them were from dropouts. The majority of potential respondents did not return the questionnaire, even after the researcher initiated a third contact. The researcher gathered data about the perceived effectiveness of the 13 interventions from the

questionnaires, and gathered cost and rate information from various sources including the Florida Information Resource Network (FIRN), Florida Inventory of School Houses (FISH), and many departments within the School District of Osceola County. In the study the researcher was unable to determine actual numbers, and had to rely on estimates. Unknowns were the percent of students in high school with less than a 2.0 GPA, the percent of students failing Algebra I, and the number of students in twelfth grade that overlapped between having a GPA less than a 2.0 and having to retake the FCAT. In these cases, estimates were provided and utilized in further calculations.

### Conclusions

The findings of the study determined the order in which to implement the thirteen interventions, based upon Levin's cost-utility analysis. As the researcher implemented the cost-utility calculation process, he applied the process twice. The first time was to determine which response in the range of response questions would be utilized. The second time was to determine the order in which the interventions would be prioritized.

Ultimately the determination was made to implement the interventions in the following order:

1. Offer three-year diploma options.
2. Offer more mentors, with one for every 100 students.
3. Add ten percent more seats in academy/ magnet/ vocational programs.
4. Offer a diploma option that does not require that the student pass the FCAT (Subject to statute revision).
5. Offer a diploma option that does not require that the student pass Algebra (Subject to statute revision).
6. Offer a diploma option that lowers the GPA for graduation to a 1.9 (Subject to statute revision).
7. Offer a diploma option that removes the FCAT, Algebra, and GPA requirements for graduation (Subject to statute revision).
8. Reduce class size in high school to a maximum of 25 students per class.
9. Reduce class size in grades four to eight to a maximum of 22 students per class.

10. Reduce class size in kindergarten to third grade to a maximum of 18 students per class.
11. Reduce schools over 500 students into smaller learning units, such as schools-within-a-school.
12. Provide free, quality preschool.
13. Provide additional guidance counselors so that there is a guidance counselor available for every 100 students.

#### Recommendations

The researcher determined that some things that were done or discovered in the study could be improved upon. First, in determining which choice to use when given a range of choices about the same intervention, Levin's cost-utility analysis does not seem to work as well as it does when comparing items that are not related. Although the researcher would not change the order of implementation, he would change which choice to apply in two of the four range questions. A 100:1 mentor: mentee ratio would be replaced with a 5:1 mentor : mentee ratio.

Second, a ten percent increase in seats for academy/ magnet/ vocational seats would be replaced with a 100

percent increase in those seats. These changes would cost little in absolute dollars, but greatly increase the effectiveness of these interventions.

Third, since student records are kept in the School District of Osceola County database, and since there is a screen that has all graduation data on it, a records check for a student based on one or all of the graduation requirements would take virtually the same amount of time. Therefore if all thirteen of the interventions were applied, some time could be saved by doing the records check for all of the parameters at the same time. By doing so other duplication could be avoided. For example, the diploma option that eliminated the FCAT, GPA, and Algebra I requirements would have a maximum effect on the 51 twelfth grades that had less than a 2.0 GPA on a four point scale. Since some of those students would likely have a GPA between a 1.9 and a 2.0, they would be able to use the 1.9 GPA option. Similarly, since this intervention came after both the FCAT and Algebra I interventions, all of those potential students for this intervention would be able to use other diploma options to graduate. Therefore this diploma option would be used by very few people, and incur



a much lower cost than budgeted for as a stand alone intervention.

Fourth, the researcher was unable to discover anyone in the School District of Osceola County that knew exactly how many students were failing Algebra I, how many students in high school had dropped below the 2.0 GPA required for graduation, or knew where or if this data were available. These data need to be monitored if the school district is to keep students from the feeling of alienation or not belonging, which many researchers cited as one of the leading indicators of students dropping out of school. It can then adapt as needed to the needs of these students at the district level, instead of permitting students to get lost in the system.

The researcher noted in the NCES (2002) report that the dropout rate for foreign born Hispanics, including those from Puerto Rico was 44.2 percent, and that for foreign born youth 62.5 percent did not enroll in school in the United States when they arrived. Clearly these statistics show a tremendous education gap that needs to be filled if we truly want all Americans to be safe and successful. Perhaps a new resident orientation program, offered in the native language of the new arrival would

alleviate this situation. If it works, the taxpayer wins, as does the recent immigrant. This is of special concern for this district because Hispanic students outnumber all other groups of students in the School District of Osceola County ((Osceola, 2005).

Finally, four of the interventions in the study cannot be implemented due to conflicts between the intervention and existing Florida statutes. States other than Florida have employed more than one type of diploma during the same school year, linked to academic success, and Florida should as well. The three-year diploma options may be but a start of many other diploma options. The researcher feels that since this is a capitalistic society, the marketplace should determine the value of each of the diploma options, which in turn may help students make wiser choices, rather than have legislators make this decision for both them and us.

Dropouts in the study made it clear that they did not want students similar to them to get lost in the mix of students. They returned the questionnaires with the lowest rate of nonresponses to an intervention of all the groups. Although they tended to rank interventions lower than the other two groups in the study, several responses indicated

to the researcher that they want people to know that they are have strong feelings about what could be effective in increasing the four-year graduation rate. The dropouts rated reduced class size in grades 4-8 to a maximum of 22 students per class higher than any other group. In addition, they had the greatest increase in effectiveness ratings from the mean of all of the other interventions for reducing class size to a maximum of 25 students in high school. The dropouts ranked lowest the intervention that removed structure by allowing a student to graduate high school without passing the FCAT, Algebra, or have a minimum GPA. Although dividing large schools into smaller learning units met with significantly different responses from the three groups in the study, the dropout group was the only group to rate this intervention higher than their mean response for all of the other interventions. Additionally, the dropout group rated it higher than the other groups in the study. This "Do not forget about me." showed in these responses, and needs to be incorporated into future program design.

Mentoring was the highest rated intervention of all those that cost money. A limitation noted was the possible lack of mentors. To be more effective, mentors need to be

actively recruited, and have a structured mentoring program. However, this may entail a budget larger than the current one.

### Recommendations for Further Study

Research needs to be done about what can minimize the vast numbers of youth that enter the United States and bypass our educational system entirely. Until the research was underway, the researcher had no idea that approximately half of foreign youth that enter the United States do not attend our schools at all.

Second, the researcher discovered that minority students perceived inequities in the system, and therefore had diminished expectations of their success. This in turn may have led to diminished outcomes. A longitudinal study should be attempted where a group of minority students were repeatedly taught about equal opportunity each semester, and have it reinforced, which may in turn yield equal outcomes for them. If that is the case, this practice could then be expanded Florida-wide. This study may benefit the taxpayer in the long run, by improving the

four-year graduation rate, as well as the lives of those directly changed by the implementation of effective programs.

**APPENDIX A: PRE-LETTER SENT TO RESPONDENTS**

**The University of Central Florida  
College of Education  
Department of Educational Research, Technology, and Leadership  
Orlando, FL. 32826**

January 4, 2005

Joe Sample  
123 Any St.  
Kissimmee, FL., 34744

In a few days you will receive a short questionnaire in the mail. It is for an important research project being done by the University of Central Florida. It is about ways of increasing the four-year graduation rate in the School District of Osceola County.

I am writing in advance because we have found that people like to know in advance that they will be contacted. The study is an important one that will be used to improve programs in Osceola District Schools, which may result in increasing the four-year graduation rate of high school students.

Thank you for your time and participation. It is only with the participation of people like you that we can have successful research information applied to improving our educational system.

Sincerely,

Isaac Berger

Principal Researcher

P. S. A small token of appreciation will be enclosed with the questionnaire as our way of saying thank you.

**APPENDIX B: QUESTIONNAIRE SENT TO RESPONDENTS**



## Graduation Rate Questionnaire

Please rate how effective you feel each of the choices below would be at increasing the number of students graduating from high school in four years or less. Your answers will be kept confidential.  
Using the rating scale below, please circle your answers:

**1=Completely Ineffective 2=Slightly Effective 3=Moderately Effective 4=Very Effective 5=Extremely Effective**

### START HERE:

- Offer a free, quality preschool for all four year olds.....1.....2.....3.....4.....5
- Provide more volunteers to help guide (mentor) students in schools, with 1 volunteer for every:
- 100 students.....1.....2.....3.....4.....5
  - 50 students.....1.....2.....3.....4.....5
  - 20 students.....1.....2.....3.....4.....5
  - 10 students.....1.....2.....3.....4.....5
  - 5 students.....1.....2.....3.....4.....5
- Provide more school guidance counselors to help guide (mentor) students in schools, with 1 counselor available for every:
- 100 students.....1.....2.....3.....4.....5
  - 50 students.....1.....2.....3.....4.....5
  - 20 students.....1.....2.....3.....4.....5
  - 10 students.....1.....2.....3.....4.....5
  - 5 students.....1.....2.....3.....4.....5
- Include three-year graduation choices for high school students.....1.....2.....3.....4.....5
- Lower the class size in Kindergarten to third grade to a maximum of 18 students per class.....1.....2.....3.....4.....5
- Lower the class size in fourth to eighth grade to a maximum of 22 students per class .....1.....2.....3.....4.....5
- Lower the class size in high school to a maximum of 25 students per class.....1.....2.....3.....4.....5

**Please continue on the other side of this questionnaire.**

## Graduation Rate Questionnaire

**Please start on the other side of this page, and continue on this side. Please circle your answers using the rating scale below:**

**1=Completely Ineffective 2=Slightly Effective 3=Moderately Effective 4=Very Effective 5=Extremely Effective:**

Add a diploma choice that would reduce the minimum Grade Point Average (GPA) required for high school graduation from a 2.0 (C) average on a 4 point scale to a

- 1.9 GPA.....1.....2.....3.....4.....5:
- 1.8 GPA.....1.....2.....3.....4.....5:
- 1.7 GPA.....1.....2.....3.....4.....5:
- 1.6 GPA.....1.....2.....3.....4.....5:
- 1.5 GPA.....1.....2.....3.....4.....5:

Add another diploma choice that would:

- Eliminate the current graduation requirement that the student pass the FCAT.....1.....2.....3.....4.....5
- Eliminate the current graduation requirement that the student pass Algebra.....1.....2.....3.....4.....5
- Eliminate the current graduation requirements about GPA, FCAT, and Algebra.....1.....2.....3.....4.....5

Increase the number of available seats in special (magnet/academy/vocational) programs currently in our high schools by:

- 10 percent.....1.....2.....3.....4.....5
- 25 percent.....1.....2.....3.....4.....5.
- 50 percent.....1.....2.....3.....4.....5.
- 100 percent.....1.....2.....3.....4.....5.
- 200 percent.....1.....2.....3.....4.....5.

Divide schools with over 500 students into smaller learning units, such as schools within a school....1.....2.....3.....4.....5.

Other (Please specify both the item and the effectiveness rating) \_\_\_\_\_1.....2.....3.....4.....5.

**Now please circle the letter choice that best describes you now.** .....(A) A high school student.

(B) A high school graduate..... (C) Not in high school, and did not get a diploma. ....(D) Never went to high school.

**Thank you for your participation.**

**Please return this questionnaire in the stamped and addressed envelope provided.**

**APPENDIX C: SECOND CONTACT LETTER**

**The University of Central Florida**  
**College of Education**  
**Department of Educational Research, Technology, and Leadership**  
**Orlando, FL. 32826**

Joe Sample  
123 Any St.  
Kissimmee, FL., 34744

I am writing you to ask your help in a study of the effectiveness of different methods that could be used to increase the four-year graduation rate in high schools. This study is part of an effort to determine the best way to spend taxpayer dollars on education.

I am asking people like you in Osceola County, selected at random, to complete a brief questionnaire about what you believe is the effectiveness of various possible ways of increasing this four-year graduation rate. I would appreciate it if you would take a few minutes to answer questions on the enclosed questionnaire. I believe the study offers important, useful choices, the effectiveness of which may improve future education in Osceola County. If you cannot accurately provide an answer, or you do not feel confident about any question, please leave that question unanswered, rather than give erroneous information. There are no known risks, and your participation is voluntary.

All responses to questions will remain confidential. A numbering system on the envelope flap is used only to identify those people that respond, and to remove their names from the mailing list. The responses of individuals will only be used in summaries, and will not be used to identify individual responses in any way.

The results of this study will be shared with Osceola District Schools, in order to help them increase their four-year graduation rate. This rate is the percent of students graduating from high school in four or less years, based on those starting ninth grade in a Florida public school. Please disregard the cost of any of the interventions in the survey, and rate only their effectiveness.

I have enclosed a small token of appreciation as a way of saying thanks for your help. If you have any questions about this research, please contact me, Isaac Berger at (321) 287-3288, or my faculty supervisor, Dr. B. Murray, at (407) 823-1473. Questions or concerns about research participants' rights may be directed to the UCFIRB Office, University of Central Florida Office of Research, Orlando Tech Center, 12443 Research Parkway, Suite 207, Orlando, FL 32826. Their phone number is (407) 823-2901.

I realize this questionnaire will take about five minutes of your valuable time, but the result should be worth the effort. Enclosed please find an addressed and postage paid envelope in which to return the questionnaire to me. To be useful, your response must be received by February 1, 2005. Thank you very much for helping with this important study.

Sincerely,

Isaac Berger  
Principal Researcher

**APPENDIX D: THIRD CONTACT POSTCARD**

January 21, 2005

Last week a questionnaire was sent to you, seeking your opinion on how to increase the four-year high school graduation rate in Osceola County schools. You were randomly selected from a list of current and former high school students in Osceola County.

If you have already completed and returned the questionnaire, please accept our thanks. If you have not, please do so today. We are especially thankful, because the responses of people like you help decide how to improve education in our community.

If you did not receive a questionnaire, or would like a replacement, please call me at 321-287-3288, and another one will be mailed to you today.

Isaac Berger, Principal Researcher  
The University of Central Florida  
Orlando, FL 32826

**APPENDIX E: INSTITUTIONAL REVIEW BOARD APPROVAL**



Office of Research and Commercialization

January 3, 2005

Isaac Berger  
Technology Teacher  
Denn-John Middle School  
2004 Denn John Lane  
Kissimmee, FL 34744

Dear Mr. Berger:

With reference to your protocol entitled, "A Study of the Cost of Outcomes of Various Methods of Increasing the Four-Year Graduation Rate in Osceola County Public Schools" I am enclosing for your records the approved, expedited document of the UCFIRB Form you had submitted to our office.

Please be advised that this approval is given for one year. Should there be any addendums or administrative changes to the already approved protocol, they must also be submitted to the Board. Changes should not be initiated until written IRB approval is received. Adverse events should be reported to the IRB as they occur. Further, should there be a need to extend this protocol, a renewal form must be submitted for approval at least one month prior to the anniversary date of the most recent approval and is the responsibility of the investigator (UCF).

Should you have any questions, please do not hesitate to call me at 407-823-2901.

Please accept our best wishes for the success of your endeavors.

Cordially,

A handwritten signature in cursive script that reads 'Barbara Ward'.

Barbara Ward, CIM  
IRB Coordinator

Copies: IRB File



**APPENDIX F: RESPONDENT WRITE-IN SUGGESTIONS**

Suggestions for improving the four-year graduation rate that were made by students were:

Remove the lab science requirement

Lower diversity

Require a 2.0 to graduate

Monthly guidance conferences

Eliminate the requirement that to pass a course you need to pass the final exam if you had more than ten days of absence

Block scheduling increases learning

Raise the minimum GPA

Educational incentives for students and teachers

Suggestions for improving the four-year graduation rate that were made by dropouts were:

Encourage parent participation

Offer more elective classes

Suggestions for improving the four-year graduation rate that were made by graduates were:

Require Algebra and GPA to graduate

Better teacher training

Build more schools

Get caring teachers

Increase counseling for at-risk students

Require English to be spoken at all times

Have schools within schools for schools over 1,000  
students

Eliminate the P.E. requirement

Smaller schools

Require two years of science

### Reduce Class Size to 22 Students in Grades 4-8

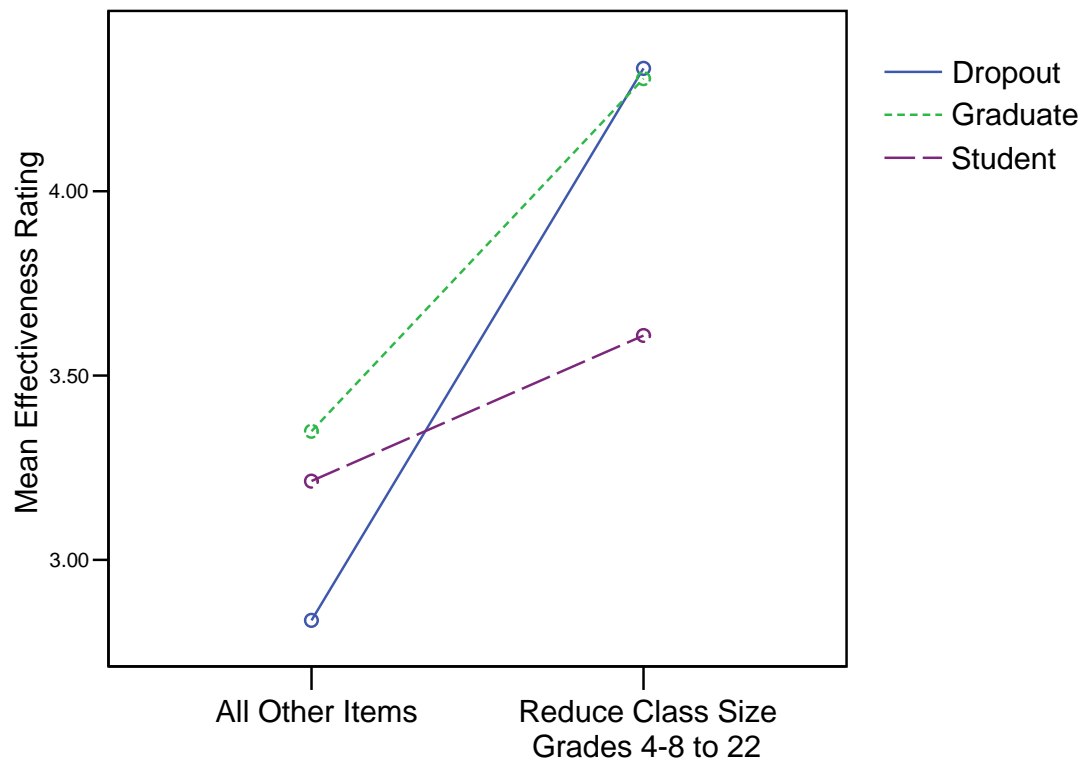


Figure 1.  
Reduce class size to a maximum of 22 students per class in grades 4-8.

### Reduce Class Size to 25 Students for Grades 9-12

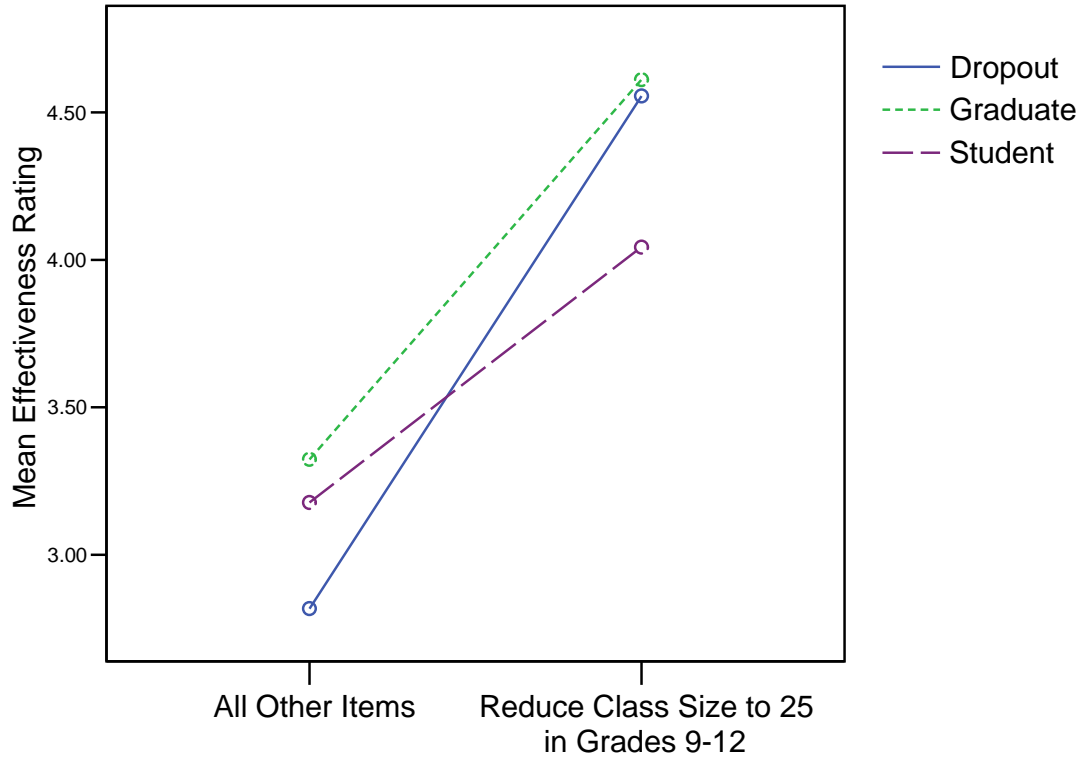


Figure 2.  
Reduce class size to a maximum of 25 students per class in grades 9-12.

### Offer Three Year Diploma Options

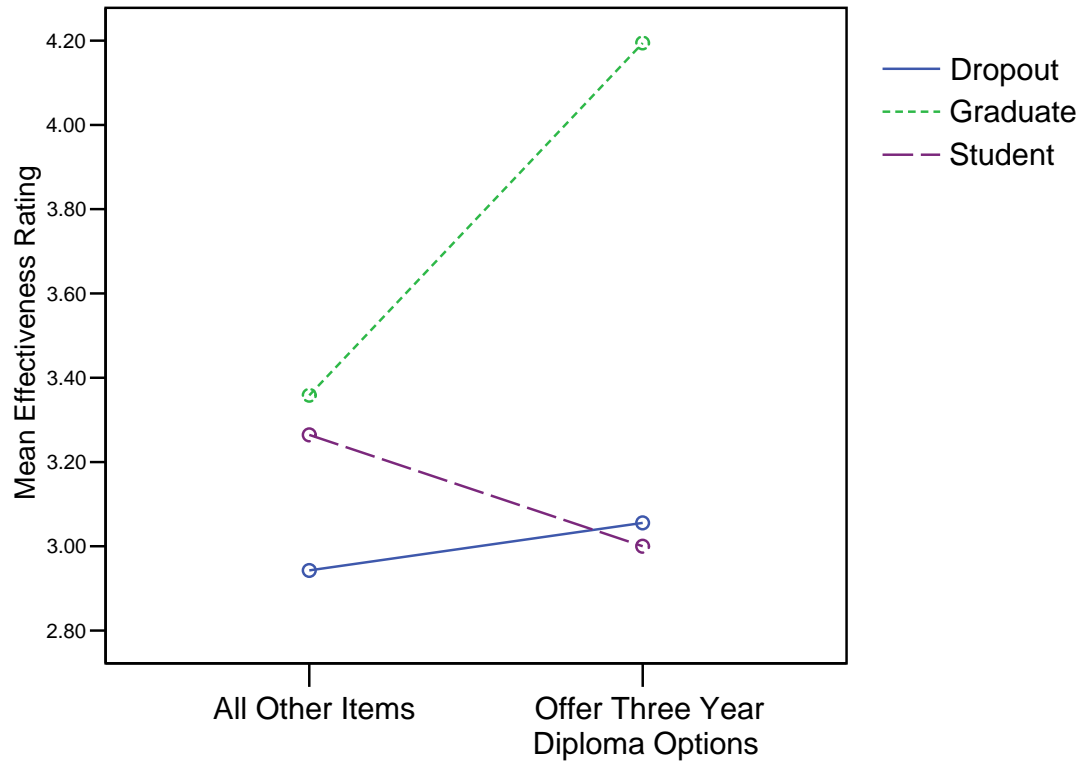


Figure 3.  
Offer three-year diploma options in high school.

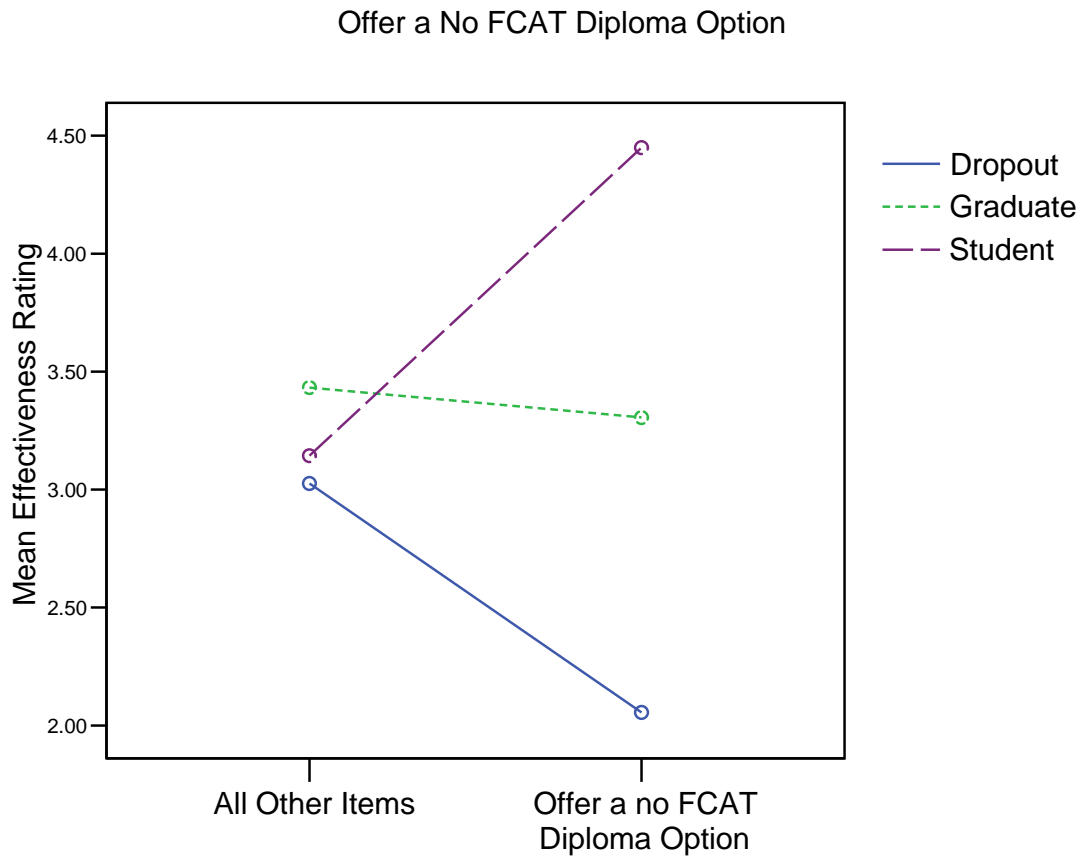


Figure 4.  
Offer a diploma option that does not require passing the FCAT for graduation.

Add a Diploma Option with no FCAT, GPA, and Algebra Requirements

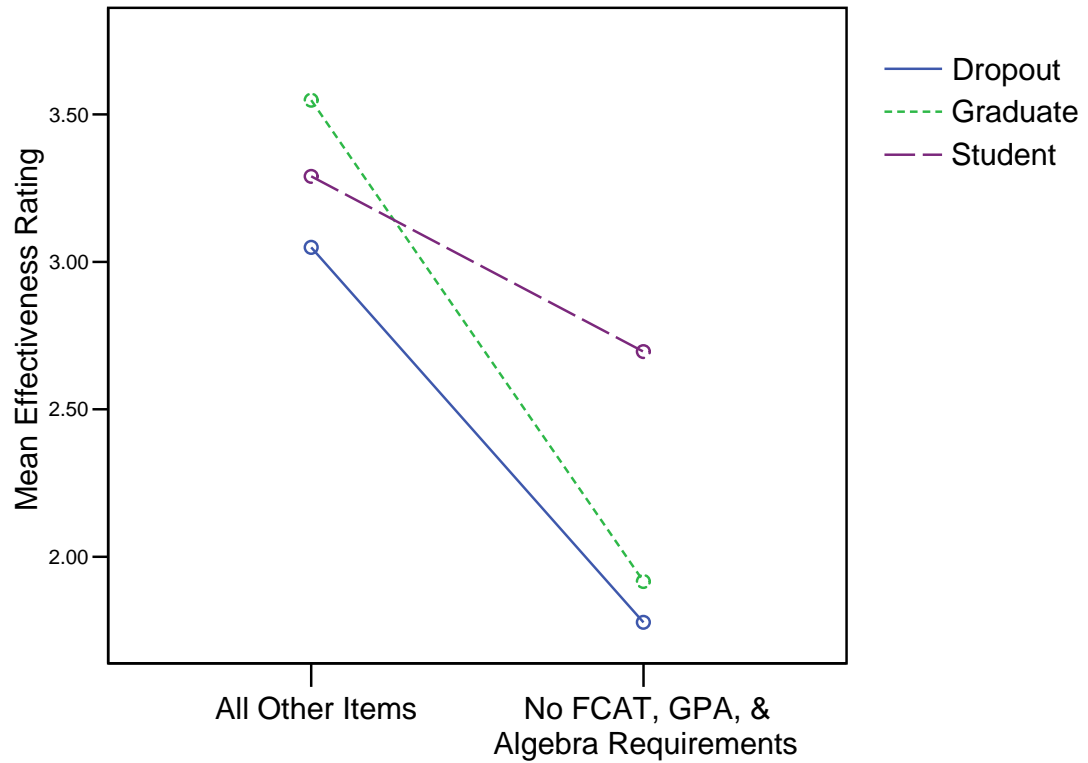


Figure 5.  
Offer a diploma option that eliminates the FCAT, GPA, and Algebra requirements for graduation.



### Add More Seats for Magnet and Vocational Classes

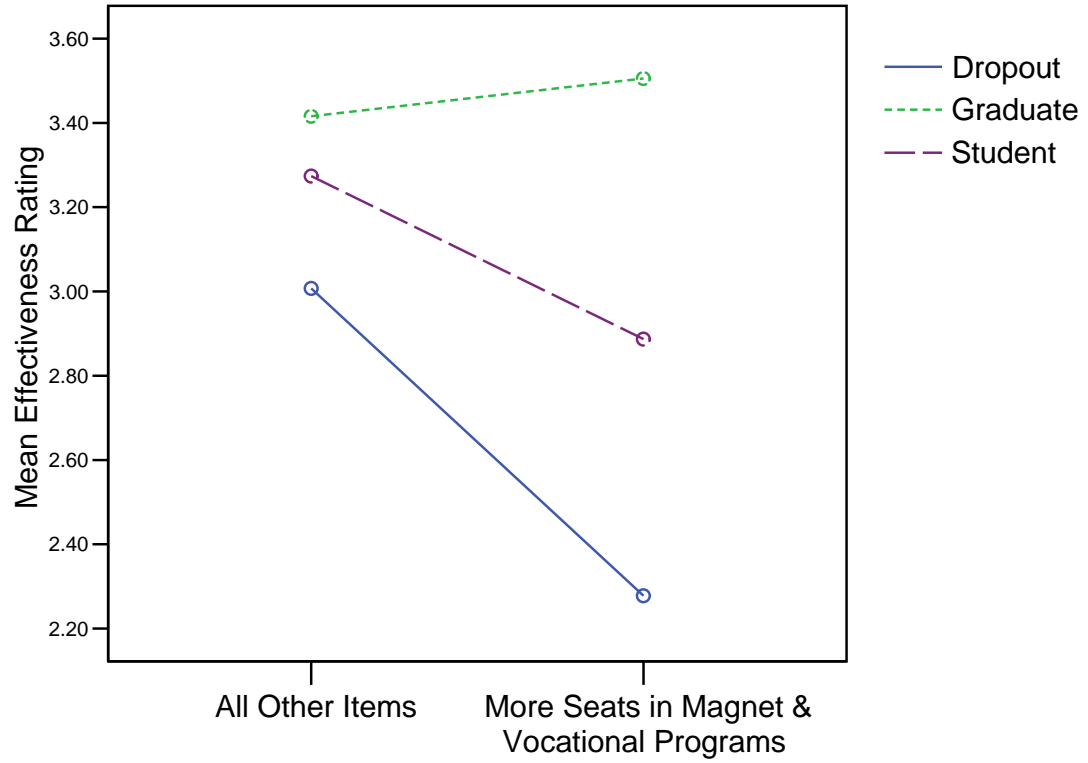


Figure 6.  
Offer ten percent more seats in magnet/ academy/ vocational programs.

### Divide Large Schools into Smaller Learning Units

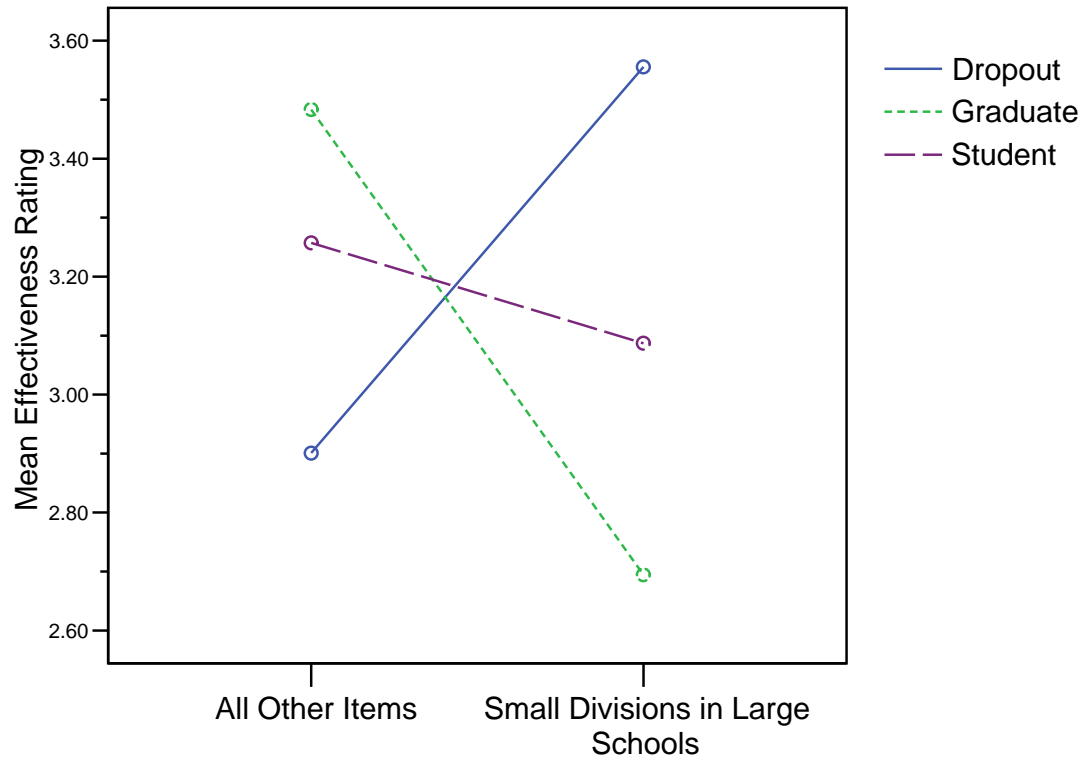


Figure 7.  
Divide schools over 500 students into smaller learning units, such as schools-within-a-school.

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