Running Head: Teacher Salary and IEP Students' Achievement

A STUDY ON TEACHER SALARY AND IEP STUDENT ACHIEVEMENT BASED ON AVERAGE-YEARLY-PROGRESS FOR COMMUNICATION ARTS AND MATHTEMATICS

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ABSTRACT

This study involved students who are on Individual Education Plans (IEP) and their AYP achievement scores for Communication Arts and Mathematics. This study also looked at teacher salary in relation to the achievement scores for students' on IEPs. The research included findings that answer the question, "Is there a difference between IEP student's AYP scores on Communication Arts and Mathematics based on average teacher salary?" The research was conducted using 60 school districts randomly selected in the state of Missouri. The findings were analyzed through Microsoft Excel and A Statistical Program (ASP) software to calculate ANOVA. Findings indicate there is not a difference in AYP scores for students on Individual Education Plans for Communication Arts and Mathematics based on teacher salary. A study which includes the Kansas City School District may need to be conducted. The Kansas City School District's average teacher salary falls in the high category and IEP student's AYP scores in CA and MA are in the low range. Using the Kansas City School District average teacher salary in a study may skew the data results indicating a difference in scores based on teacher salary. Further studies are warranted using different randomly selected groups of school districts in the state of Missouri.

INTRODUCTION

Background, Issues and Concerns

No Child Left Behind (NCLB) is the most recent reauthorization of the Elementary and Secondary Education Act (ESEA). NCLB has dramatically expanded the role of the federal government in education. Since the passage of NCLB, it has demanded accountability of schools, and provided guidelines for meeting accountability standards. The law requires all students to reach proficiency in reading and math by 2014, including students with disabilities who are on Individual Education Plans (IEP). Mandatory testing must be performed each year to measure proficiency until it reaches 100%. The number of IEP students has increased substantially over the last several years and continues to increase. The 1985 federal law called, Individuals with Disabilities Education Act (IDEA), required an IEP be developed for each child with a disability and that they receive special services in the least restrictive environment. This law acknowledges the student's need for individual and small group environment to maximize learning. Students who are on an Individual Education Plan are students who have qualified to receive special education services. This study will involve comparing teacher salary with IEP students' Adequate Yearly Progress in Communication Arts and Mathematics. The results may or may not show a relationship between teacher salary and IEP students' progress.

Practice under Investigation

The practice under investigation is the effect of student-achievement for IEP students based on teacher salary. Teacher salary has been based on years of service and individual teachers' level of education. This single salary schedule that has been used throughout history in

all states is being challenged with the integration of a merit pay or performance pay system in which teacher salary is based on student achievement.

School Policy to be Informed by Study

Special education students are expected to meet AYP for CA and MA each year. In order for students with IEPs to make the necessary improvements, they need individual instruction in a small group setting. It is reasonable to assume that teachers with lower salaries are in lower socio-economic districts. Therefore, they may not have adequate number of special education teachers to meet this need. Historically, teacher salary is based on years of service and the teachers' level of education, not on student achievement. Recently, there is a shift in thinking concerning teacher salary and student achievement. If teacher salary is based on student achievement, would scores on AYP in CA and MA increase too? In Missouri teacher salary remains based on years of service and level of education, a single salary schedule.

Conceptual Underpinning

In order to make AYP, schools must have at least 95% of enrolled students participate in the testing program by the entire student body and in each subgroup, including special education and all students and all subgroups must meet AYP targets for that year. Safe Harbor provisions of NCLB offer a way for a district to make its AYP goals when a particular subgroup, such as special education, does not meet the AYP requirements. Often, low teacher salary and low socioeconomic level, based on free or reduced lunch percentages, go hand in hand with lower student achievement. In addition, teachers who are the lowest paid usually have higher caseloads due to the district's financial strains. Higher caseloads can mean less individual and/or less small group

instruction for special education students; the very students that need this the most. NCLB has had positive effects on special education by bringing enormous attention to the lowest achieving students in the schools. Yet, there are many consequences of the law, some of which work directly counter to these positive developments. This study was conducted to determine whether there is merit to the belief that the higher the teacher salary the higher the student performance. Financial incentives are meant to improve job performance in most business professions by increasing motivation and effort. Theoretically, performance-related pay for teachers may invoke increased motivation and effort of teachers who strive to increase their pay. In the education field, pay for performance evolved from the accountability aspect of NCLB solely based on students' test scores.

Statement of the Problem

As teachers' salaries decrease, student achievement for IEP students as measured by AYP for CA and MA decrease.

Purpose of the Study

The purpose of the study is to determine if student achievement decrease as teachers' salaries decrease.

Research Question

RQ1: Is there a difference between IEP student's AYP on CA and MA, based on average teacher salary.

Null Hypothesis

There is not a difference between IEP student's AYP on CA and MA, based on average teacher salary.

Anticipated Benefits of the Study

The anticipated benefits of the study are to inform the community, administrators and school district personnel that IEP students may not be getting what they need in their Individual Education Plan (IEP) due to high caseload numbers and lower teacher salary. Also, to determine if merit pay or pay for performance is really effective in increasing student achievement for students on IEPs as measured by state assessments.

Definition of Terms

IEP, Individual Education Plan: An educational program that has been designed to meet a specific child's unique needs. Each child who receives special education and related services must have an IEP. Each IEP must be designed for one student and must be a truly individualized document. The IEP is the cornerstone of a quality education for each child with a disability.

AYP, Adequate Yearly Progress: AYP measures student performance against specific expectations each year for English language arts/reading and Mathematics. AYP Reports show the progress schools and districts are making toward the goal of having all students reach proficiency by the year 2014.

CA, Communication Arts

MA, Mathematics

IDEA, Individual with Disabilities Education Act: The 1985 federal law called,
Individuals with Disabilities Education Act (IDEA), required an IEP be developed for each child
with a disability and that they receive special services in the least restrictive environment.

DESE, Department of Elementary and Secondary Education

HQT, Highly Qualified Teacher: The federal No Child Left Behind Act (NLCB), reauthorized in 2001, requires that all teachers be highly qualified in the core academic content area(s) they teach. Highly qualified is generally defined as; a) full certification b) holds bachelor's degree, and c) demonstrated competence in subject knowledge and teaching.

Summary

This study determined the relationship between student achievement for IEP students and teacher salary. Students with IEPs require individual and small group instruction. The students qualified to receive special education services for specific disabilities. Teachers with lower salaries often have a higher caseload due to financial restrictions based on socio-economic level of the district. The research looked at if there is merit to the movement of pay-for- performance for teachers. The benefit of this study will determine if teacher salary impacts student achievement on AYP scores for IEP students.

REVIEW OF LITERATURE

Special Education Law or the Individuals with Disabilities Education Act (IDEA) (1997), lists 13 categories of special education each with its own detailed requirement. Special education law includes students aged 3-22. To qualify, a student must be diagnosed as having one of the identified disabilities and it must negatively affect their educational performance. Every school district has the legal responsibility to identify and evaluate children who are in need of special education services.

The Individuals with Disabilities Education Act of 2004 (IDEA) stipulates children with disabilities are included in general state and district-wide assessment programs with accommodations, when necessary.

Reauthorization of IDEA in 2004 modified the Highly Qualified Teacher requirement (HQT) for teachers of special education. Under IDEA, special education teachers are "highly qualified" if they are certified by the state as special education, or by taking specific generalist exams. According to author, Lorna Idol (2009), "One key concern with the HQT mandate is that, even if teachers meet the statutory requirements, it doesn't mean they are effective in practice. Teacher certification does not appear to be a strong predictor of student success" (Idol, p.33). Idol states, "Like student proficiency and school-level accountability requirements, HQT has allowed states to create the illusion of improving the caliber of their teachers, when the reality is that many teachers have been rushed through a meaningless bureaucratic exercise to get the HQT stamp of approval, or even worse, that states have lowered licensing standards" (Idol, 2009, p. 33).

In order to address these concerns the administration and other organizations have proposed education reform and redefining highly qualified teacher to encompass teacher effectiveness, using measures of student growth linked to individual teachers.

No Child Left Behind (NCLB) is the most recent reauthorization of the Elementary and Secondary Education Act (ESEA). Since its passage, it has dramatically expanded the role of the federal government in education. The law demands accountability of schools and provides guidelines for meeting accountability standards. The law requires all students including those receiving special education services to reach proficiency in reading and math by 2014.

Mandatory testing to measure proficiency must be performed until 100% proficiency is required. NCLB focuses on increasing the academic achievement of all public school students and improving the performance of low-performing schools. This is to be accomplished by requiring states to measure the progress of students and groups of students every year.

In order to meet NCLB's goals of 100% student proficiency by 2014, NCLB requires adequate yearly progress (AYP) toward that goal. In order to make AYP, schools must have 1) at least 95% enrolled students participation in the testing 2) all students and subgroups like special education meet AYP targets for that year, and 3) all students and subgroups like special education meet AYP targets for graduation or attendance (Yell, Katsiyannas, & Shiner, 2006). Statewide assessments are the primary way that NCLB holds schools accountable for student achievement.

Safe Harbor provisions of NCLB are a way for a district to make AYP goals when a subgroup, such as special education, does not meet its AYP requirements. The Safe Harbor

provisions require specific qualifications. NCLB makes it clear the role of the IEP team, an IDEA requirement, is to fulfill the accountability and assessment mandates of NCLB.

Traditionally, teachers are paid on a scale that takes only years on the job, and degrees earned, into account. According to Podgursky and Springer (2010), "the most important determinant of a teacher's pay is the salary schedule in the school district. Historically, district salary schedules have been the basis for teacher compensation" (Podgursky & Springer, 2010, p. 3). Podgursky and Springer stated, "During the 2003-04 school year, about 96% of public school districts accounting for nearly 100 percent of all public school teachers reported use of a single salary schedule" (Podgursky & Springer, 2010, p. 3). This single salary schedule provides higher salaries to teachers with higher-levels of formal education and for each additional year of teaching experience.

Current proponents of education reform are presently seeking to change the system of teacher compensation by eliminating the traditional single salary schedule and incorporating a merit pay system that directly links teacher pay to student achievement. Both the NEA and the American Federation of Teachers (AFT) have made it clear they do not outright oppose to modifications in the traditional salary system, but insist it be done at the local level with the input and support of teachers, and in states with collective bargaining, as part of the union contract (Miner, 1). In Barbara Miner's report, Monty Neil, executive director of Fair Test, a national advocacy group exposing the misuse of standardized testing states,

If it's merit pay or performance pay and it's a bad idea based on the history of its use or its use in other areas, then it's a bad idea and should be rejected and you're not required to have an alternative...Coming out of the Duncan Department of Ed is the assumption that this differential pay or other variations

is going to improve learning outcomes. We don't know that. We are being asked to make all these changes with no evidence that it is going to improve student learning, which according to Duncan, is the point of it all. (Miner, 2012).

According to others in the debate on merit pay, teachers are so important to student achievement that according to one estimate, a child in poverty who has a good teacher for five years in a row would have learning gains large enough, on average, to completely close the achievement gap with higher-income students. Improving the quality of teachers is thus crucial to efforts to raise student achievement, narrow achievement gaps, and reduce economic inequality (Excellence in the Classroom, 2007). According to the article, Restructuring Teacher Pay to Reward Excellence (NCTQ, 2011) prudent districts-those looking for long-term solutions to budget problems as well as those seeking to more fairly compensate the most effective teachers- are reconsidering the traditional salary schedule, which rewards teachers for years of experience and graduate credits. What is significant is that the current salary schedule does not consider teacher effectiveness. According to the National Council on Teacher Quality (2011) this has led to "wage compression," meaning that teachers with the most aptitude earn no more that teachers with the lowest aptitude. According to Elizabeth Green, the 2007 New York \$75 million experiment in teacher incentive pay-did not increase student achievement at all (Green, 2011). A new study by Harvard economist Roland Fryer adds to research literature on teacher incentive pay that is decidedly more lukewarm than much of the popular conversation about teacher pay (Green, 2011). Fryer, an early advocate of financial incentives to improve student achievement, calls the literature "ambivalent" (Green, 2011).

Salary schedules would not be as costly if the factors rewarded, teacher experience, and graduate education, were strong indicators of teacher productivity. However, surveys of the education production function literature find little support for a master degree positively impacting student achievement and teacher experience has little effect beyond the first few years (Podgursky & Springer, 2010). Hanuskek (2003) reports 41 "value-added" estimates of the effects of a teacher's education level on her effectiveness (primarily MA's) that not a single study found a statistically significant positive effect. In fact, ten of the studies found statistically meaningful negative effects.

According to Ramirez (2010), "The uniform salary schedule proved to be a popular innovation because people found it fair, transparent, easy to understand, and predictable. Teachers and taxpayers liked it. Educators and those responsible for administering school district compensation programs highly value these qualities to this day" (p.55). However, critics argue that the present system is unfair because it fails to recognize outstanding achievement on the job. Advocates for merit-pay system also contend that the uniform salary schedule ignores the basic purpose of education-student learning. Ramirez states (2010), "They adhere to a simplistic "input-output" model of education that denies the complex realities of schooling. These realities are among the very reasons that efforts to establish merit-pay systems fail" (p.56). Ramirez discusses various pay systems that are sometimes passed off as merit pay. He uses the term *merit-pay system* to refer solely to pay systems that tie salary bonuses to student learning, usually as measured by a test. According to Ramirez (2010), "Merit-pay programs that are solely based on student achievement don't last because they don't work. Even the highly touted Denver Public Schools pays out most of the extra compensation for things other than test score results" (Ramirez, 2010, p.55).

In a paper authored by Hanushek (2010) he describes the central importance of teachers. There have been many research studies focusing on the importance of teachers for student achievement. According to Hanushek (2010), two key findings have emerged from these studies. Hanushek states, "First, teachers are very important, no other measured aspect of schools is nearly as important in determining student achievement. Second, it has not been possible to identify any specific characteristics of teachers that are reliably related to student outcomes" (p.3). The general finding about the importance of teachers comes from the fact that the average gains in learning across classrooms, even within the same school, are very different. It is clear some teachers produce bigger gains in student learning than other teachers. Hanushek (1993) found the magnitude of the differences to be significant. In other words, two students who start the year on the same level of achievement can gain vastly different amounts of knowledge due solely to the teacher they've had. He states, "No other attribute of schools comes close to having this much influence on student achievement" (Hanushek, 2010, p.3).

The question and related issue is what makes for an effective and ineffective teacher. The extensive research addressing this issue has found very little consistent basis for effective and ineffective teachers. According to Hanushek and Rivkin (2004, 2006) most documented research has been finding that master degrees bear no consistent relationship with student achievement. Furthermore, the amount of experience in the classroom, with the exception of the first 1-3 years, also bears no relationship to performance.

District Awards for Teacher Excellence (D.A.T.E.) is a state-funded program that provides grants to school districts in Texas for the implementation of locally-designed pay plans. The National Center on Performance Incentives at Vanderbilt University has found student achievement improved and teacher turnover declined in schools participating in the D.A.T.E.

program (Lewis, 2010). Jessica Lewis, research associate at NCPI and co-author of the report said, "Our findings suggest that, more often than not, participants in the D.A.T.E. program had a positive experience, student achievement gains, and teacher turnover moved in a generally desirable direction and teachers had favorable attitudes towards D.A.T.E." (Lewis, 2010, p.1) The report's authors point out that while the overall outcomes related to student achievement, teacher turnover, and teacher attitudes were desirable in D.A.T.E. schools, there was notable variation in those outcomes between D.A.T.E. schools, at least in part was attributed to the design of incentive pay plan (Lewis, 2010).

"Rewarding teachers with bonus pay, in the absence of any other support programs, does not raise student test scores, according to a study issued by the National Center on Performance Incentives at Vanderbilt University's Peabody College of education and human development in partnership with the RAND Corporation" (Moran, 2010, p.2) This and other findings from a three-year experiment were released at a conference hosted by the NCPI at Vanderbilt.

According to Matthew Springer, executive director of the NCPI, if teachers know they will be rewarded for an increase in their student's test scores, will test scores go up? Springer found that the answer to that question is no (Moran, 2010). However, he says, "This by no means implies that some other incentive plan would not be successful" (Moran, 2010, p.2)

As states, districts and schools work to develop new compensation systems, teachers are raising a plethora of questions about how their performance will be measured. Research indicates trying to implement performance pay in an isolated, thus ineffective manner, others are implementing whole-school reform systems that have real promise of developing talented teachers and increasing student achievement (Stark & Hanson, 2007).

RESEARCH METHODS

Research Design

Data collected for teacher salary and IEP students' AYP- CA and MA scores serve as the research design. The Alpha level was set at 0.25. The independent variable was teacher salary. The dependent variable was AYP for IEP students in CA and MA. The study will compare teacher salary to the scores of students with IEP's in Communication Arts and Mathematics as measured by AYP.

Study Group Description

The study included average teacher salary in 60 suburban Missouri districts. The 60 districts were randomly selected using a Quantum Origin. Adequate Yearly Progress scores for CA and MA for students with IEP's was recorded from 2010-2011 district report cards through DESE.

Data Collection and Instrumentation

Data collected for teacher salary and AYP scores was gathered from the DESE website.

Data was recorded in an Excel spreadsheet.

Statistical Analysis Methods

A statistical package (ASP) software was used to complete the statistical calculation in this study. The data was tested using an ANOVA analysis.

FINDINGS

To determine if teacher salary impacts AYP for CA and MA for IEP students 60 school districts from Missouri were randomly selected using a Quantum Origin. The 60 districts were categorized into three groups according to average teacher salary. There was a low, middle, and high group. Scores for students on IEPs on AYP for CA and MA were documented using information from Department of Elementary and Secondary Education (DESE) in Missouri.

ANOVA Analysis – Communication Arts

Table 1

Communication Arts (AYP)

Summary of Descriptive Statistics for CA for IEP Students (AYP)

Avg. Teacher			
Salary	N	Mean	SD
1	20	25.14	3.314
2	20	27.16	3.314
3	20	26.09	3.314

Sixty Missouri school Districts were randomly selected for a study to determine if there is a difference in IEP student's AYP in Communication Arts and Mathematics based on average

teacher salary. The selected districts were divided into three equal groups based on average teacher salary. Group 1 of the sample included the 20 districts with the lowest average teacher salary from \$28,468 to \$34,152. Group 2 of the sample included 20 districts with the middle average teacher salary range from \$34,435 to \$37,786. Group 3 of the sample included the 20 districts with the highest average teacher salary from \$38,632 to \$61,722. The mean, or average score of CA, from the low range of average teacher salary schools (group 1) was 25.14, the mean score for CA of the middle group (group2) of average teacher salary was 27.16, and the mean score of CA from the highest average teacher salary schools (group 3) was 26.09. The standard deviation (SD) was 3.314 for all 3 groups. The null hypothesis states there is not a significant difference between Missouri average teacher salary and IEP students' AYP scores in Communication Arts and Mathematics. The groups were analyzed and broken down using the ANOVA test to identify if there was enough of a significant difference to propose that a school's average teacher salary directly impacted the districts AYP scores on Communication Arts for students with an Individual Education Plan (IEP).

Table 2
Summary of ANOVA Test of Significance Results CA (AYP)

Source	SS	df	MS	F	p-value
CA	12523.8	57	219.716		
Avg. Teacher					
Salary	40.860	2	20.430	.092	.911

Note: Significance = < 0.25

After dividing the sixty Missouri school districts into three categories based on average teacher salary, an ANOVA test was completed to test the null hypothesis. The null hypothesis states there is no difference in IEP students' AYP scores in CA and MA based on average teacher salary. The data collected for IEP students' scores on CA for AYP renders the SS, sum of squares, at 12523.8; the df, standard error of freedom, was 57; the MS, mean squared, was 219.716. The data collected for average teacher salary shows the SS, sum of squares, as 40.860; the df, standard error of freedom, was 2; and the MS, mean squared, was 20.430. The F, Fisher Ratio, was found to be .092. The p-value is .911 which is higher than the alpha level of 0.25; therefore, the null hypothesis is not rejected. This suggests that school districts' average teacher salary does not impact IEP students' AYP scores in Communication Arts.

ANOVA Analysis - Mathematics

Table 1

Mathematics (AYP)

Summary of Descriptive Statistics for MA for IEP Students (AYP)

Avg. Teacher			
Salary	N	Mean	SD
1	20	28.54	3.483
2	20	30.71	3.483
3	20	28.71	3.483

Sixty Missouri school Districts were randomly selected for a study to determine if there is a difference in IEP student's AYP in Communication Arts and Mathematics based on average teacher salary. The selected districts were divided into three equal groups based on average teacher salary. Group 1 of the sample included the 20 districts with the lowest average teacher salary from \$28,468 to \$34,152. Group 2 of the sample included 20 districts with the middle average teacher salary range from \$34,435 to \$37,786. Group 3 of the sample included the 20 districts with the highest average teacher salary from \$38,632 to \$61,722. The mean, or average score of MA, from the low range of average teacher salary schools (group 1) was 28.54, the

mean score for MA of the middle group (group2) of average teacher salary was 30.71, and the mean score of MA from the highest average teacher salary schools (group 3) was 28.71. The standard deviation (SD) was 3.483 for all 3 groups. The null hypothesis states there is not a significant difference between Missouri average teacher salary and IEP students' AYP scores in Communication Arts and Mathematics. The groups were analyzed and broken down using the ANOVA test to identify if there was enough of a significant difference to propose that a school's average teacher salary directly impacted the districts AYP scores on Mathematics for students with an individual education plan (IEP).

Table 2
Summary of ANOVA Test of Significance Results MA (AYP)

Source	SS	df	MS	F	p-value
MA	13829.7	57	242.626		
Avg. Teacher					
Salary	58.374	2	29.1872	.120	.887

Note: Significance = < 0.25

After dividing the sixty Missouri school districts into three categories based on average teacher salary, an ANOVA test was completed to test the null hypothesis. The null hypothesis states there is no difference in IEP students' AYP scores in CA and MA based on average teacher salary. The data collected for IEP students' scores on MA for AYP renders the SS, sum of squares, at 13829.7; the df, standard error of freedom, was 57; the MS, mean squared, was

242.626. The data collected for average teacher salary shows the SS, sum of squares, as 58.374; the df, standard error of freedom, was 2; and the MS, mean squared, was 29.1872. The F, Fisher Ratio, was found to be .120. The p-value is .887 which is higher than the alpha level of 0.25; therefore, the null hypothesis is not rejected. This suggests that school districts' average teacher salary does not impact IEP students' AYP scores in Mathematics.

CONCLUSIONS AND RECOMMENDATIONS

The null hypothesis stated there is no difference between IEP student's AYP in CA and MA based on average teacher salary. The results of this study indicate teacher salary does not have an impact on IEP student achievement as measured by AYP in Communication Arts and Mathematics. The alpha level of .25 was used for this study. The p-value for CA was .911 and the p-value for MA was .887. Since both p-values were greater than the alpha level of .25, the null was not rejected. By not rejecting the null hypothesis it was concluded there was not a difference between IEP student's AYP on CA and MA, based on average teacher salary.

The findings of this study refute the idea that teacher's salary impact student achievement on test scores. Although, some research indicates some form of "performance pay" does make a difference, it depends on the type of system implemented.

The school districts considering the implementation of performance pay should conduct more studies to determine the best design model for performance pay. Policy makers and education stakeholders at all levels would benefit from more assessments of teacher compensation reform programs and policies as well as the effect of their design components. For example, should individual teacher or teams of teachers be awarded, or maybe a combination of both? Should it be measured on student growth or specific attainment? What criteria should be used? We must take the results of these evaluations and continue to evaluate to define and refine programs to maximize their effectiveness. Research indicates student achievement increases based on the design of an incentive program system. The effect of performance-based pay depends critically on how it is designed, implemented, evaluated and how it is linked to teacher performance (Vegas, 2007). An increasing body of evidence shows that merit pay systems do work-if they're done right (Garrett). Considerable amount of information is available in efforts

to change compensation over the past decade or so. We can learn much from both the successes and failures in regards to what it takes to make pay-for-performance systems work in schools. Recommendations include: 1) Systems cannot be a sorting process or a management tool. 2) Systems that have a clear purpose. 3) Teachers must buy-in to the system, not be forced and must be involved in all aspects of the design, 4) The redesigned system not viewed as an event, but a work in progress that must be adjusted as the system grows (Baratz-Snowden, 2007).

For performance pay to work, it needs to be developed as a system that honors the great work of all teachers in a building and encourages cooperation and collaboration, rather than competition.

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