A QUANTITATIVE PROGRAM EVALUATION OF THE IMPACT OF A THREE-
TEACHER ACT PREPARATORY MODEL AT A MIDWESTERN SUBURBAN
HIGH SCHOOL

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by
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The undersigned, appointed by the dean of the Graduate School, have examined the
dissertation entitled

A QUANTITATIVE PROGRAM EVALUATION OF THE IMPACT OF A THREE-
TEACHER ACT PREPARATORY MODEL AT A MIDWESTERN SUBURBAN
HIGH SCHOOL

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a candidate for the degree of Doctor of Education
and hereby certify that, in their opinion, it is worthy of their acceptance.

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DEDICATION

This dissertation is dedicated to my family. My loving wife, Christina, supported me throughout this process and never flinched once. From the moment I told her I was going to pursue my doctorate, to the moment I finished the first complete draft of my dissertation, she stood patiently by my side, never questioning those moments—which sometimes turned into full days—in which I had to sequester myself in an effort to complete my work. Thank you, Tina Lynn. I don't know what I would do without you.

It is also dedicated to my three bright and talented children: Morgan, Zachary, and Andrew. They are everything to me, and they are the driving force behind most everything I do, even if they don't often realize it. Much like my wife, my children have pushed me to be a better person. I am so very lucky to be the father of three such unique, intelligent, creative, and funny people.

And finally, this dissertation is dedicated to my grandson, Harper. I sincerely hope the completion of this paper means more time for scrambled eggs on Saturday mornings and toy lightstaber fights in the basement.

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ABSTRACT

The purpose of this study was to determine whether an ACT prep program taught by three teachers at a Midwestern U.S. high school, each with certification in the ACT subtest topic they taught, generated statistically significant results in the ACT scores of its participants. The secondary purpose of this study was also to determine whether the three-teacher ACT prep course effectively served underrepresented students, helping to close multiple ethnic and socioeconomic achievement gaps (Darling-Hammond, 2000). Ultimately, the three-teacher model did not demonstrate statistically significant differences in scores for its participants, including underrepresented students. Using the economics of schooling as a conceptual framework that “views the schooling process as an input-output model, where the inputs are students, teachers, and school resources and the outputs are student learning achievements” (Qiu & Wu, 2011, p. 65), it was revealed that the inputs of the three-teacher model were not worth the outputs, when outputs can be considered statistically significant differences in scores.

Keywords: ACT prep, achievement gap, economics of schooling, three-teacher model, standardized testing, input, output, secondary education

SECTION ONE

INTRODUCTION TO THE DISSERTATION-IN-PRACTICE

The American College Testing Program (ACT) was founded in 1959 to measure college readiness (Conrad-Curry, 2011; Dvorak, 2003). It has since become a fact of life—or a rite of passage of sorts—for college-bound students (Black, 2005; Dvorak, 2003). This is because most colleges and universities require either the SAT or ACT as part of the application process ("ACT/SAT Test Preparation," 2016; Horn, 2005).

The ACT is designed to gauge college readiness (Dvorak, 2003), which, according to Conley (2008), is defined as “the level of preparation a student needs in order to enroll and succeed—without remediation—in a credit-bearing general education course at a post-secondary institution that offers baccalaureate degree or transfer to a baccalaureate program" (p. 24). College admissions tests such as the ACT also provide an objective measure to complement more subjective measures, such as grades or recommendations (Horn, 2005). Finally, colleges and universities may be interested in standardized assessment scores because they may sometimes not be measuring just aptitude, but instead, a person’s opportunity to learn (Horn, 2005).

In the years since its creation, the ACT has reached nearly mythical importance (Black, 2005; Dvorak, 2003; Syverson, 2007) because the emphasis on earning a high score carries significant weight for both individual students, their families, and the high schools they attend (Allensworth, Correa, & Ponisciak, 2008). Thus, the college admissions process is both competitive and stressful (Devine-Eller, 2012). The stress of the college admission process can be consuming; stressful enough, in fact, that it can be detrimental to the well-being of students (Kohn, 2003).

For students, a high score can mean not only admission to their college of choice, but also potential high-dollar scholarships and placement in upper-level courses (Allensworth et al., 2008). For high schools, the stakes are just as high, as ACT averages are seen as an important measurement of student achievement and efficient curriculum implementation (Akerlof & Kranton, 2002).

Access to Private Test Prep

Due to the highly-competitive nature of college admissions (Devine-Eller, 2012), it only makes sense that students and their families seek opportunities to enhance their chances of admission (Buchmann, Condron, & Roscigno, 2010). In order to improve those chances, some students and their families pay thousands of dollars for test preparation services outside of school (Devine-Eller, 2012; "Kaplan Test Prep," n.d.). Families with the financial means can enroll their students in test-prep centers like those run by Kaplan or Princeton Review (Dvorak, 2003).

Kaplan, for example, offers programs ranging from \$899 for online courses to \$2,599 for personal tutoring ("Kaplan Test Prep," n.d.), but this is just one option in a vast and growing landscape of private test preparation purveyors. According to Briggs (2009), "Commercial test preparation services for standardized exams represent a multibillion dollar industry" (p. 23). In some cases, families are willing to take on significant amounts of credit debt just to pay for such programs to give their students an advantage (Adams, 2011). Concerning, though, is the idea that despite the money being spent on test prep, its effectiveness is often in question (Black, 2005; Moss, Chippendale, Mershon & Carney, 2012).

Effectiveness of ACT Preparation

ACT preparation programs charge more than a monetary toll. Test preparation also involves opportunity cost, or the cost of time that could have been spent learning other materials or practicing other skills that might help a student's chances of college admission (Briggs, 2009). Essentially, the time, effort, and money devoted to standardized testing preparation has to come from somewhere (Kohn, 2000). ACT prep programs can be expensive and time consuming, and the results they yield are often “iffy at best” (Black, 2005; Moss, Chippendale, Mershon & Carney, 2012).

In fact, some argue that test prep is actually backfiring, causing ACT scores to drop (Samuels, 2008). If the purpose of the ACT is to assess college readiness (Dvorak, 2003), then college-bound students need a highly effective ACT prep program that reviews key skills, and when necessary, even covers holes in a school's curriculum. Such a program could prove to be a powerful asset to both students and the high schools they attend. However, amidst conflicting research about the effectiveness of ACT preparation programs (Black, 2005; Moss et al., 2012), a recipe for one that is demonstrated to work effectively and with consistency has yet to be revealed. Such a program would not only be beneficial to students and their families, but could also help alleviate the pressure to generate high test scores placed on schools.

ACT Performance Pressure on Schools

School districts have felt the pressure of raising achievement scores for decades, but the implementation of No Child Left Behind (NCLB) in 2001 increased that pressure dramatically, forcing districts to consider new measures for increasing test scores in order to meet their Annual Yearly Progress goals (Bennett, Godfrey, Larson, Lau, & McCoy,

2012). It is interesting to note, though, that non-instructional factors play a larger role in test scores when schools or districts are compared (Kohn, 2000). Still, school districts bear the brunt of the pressure, as they are expected to find ways to overcome these non-instructional factors (Kohn, 2000).

According to Horn, (2005), the relationship between NCLB and standardized assessments has become increasingly close, as “standardized assessments have become a ubiquitous policy tool by which to satisfy many pressing educational needs, including classroom improvement and accountability” (p. 334). This places tremendous pressure on schools and their students. And more importantly, test-driven school reform hurts students who need the most help (Kohn, 2000).

School districts must contend with the role that high-stakes testing (Haertel & Herman, 2005) plays how they are evaluated and in the decisions they make about what and how to teach (Reich & Bally, 2010), and schools have responded to the pressure by focusing on test-taking skills and practicing test questions (Allensworth et al., 2008).

The pressure to demonstrate high test scores is amplified by the fact that culture, ethnicity, and gender gaps in ACT scores must also be addressed (Allensworth et al., 2008; Banks & Eaton, 2014). While the idea behind NCLB was to raise achievement for all students, it will take more than initiatives like NCLB to make racial gaps close (Noguera, 2008).

Ultimately, this results in large amounts of class time being devoted to learning ACT skills, even though test practice during regular classes tends to be ineffective (Allensworth et al., 2008; Black, 2005; Moss et al., 2012). In fact, focusing on test prep

strategies leads to a reliance to direct instruction strategies that may be harmful to students (Kohn, 2000).

The Riverbend School District (RSD) in Riverbend, Missouri, is not immune to the pressures of high-stakes testing (Haertel & Herman, 2005). In the RSD, attempts to raise ACT scores have been, at best, hit and miss. The RSD has learned that spending large amounts of time taking practice tests is ultimately counterproductive (Allensworth et al., 2008).

Problem of Practice

While there have been some promising endeavors, such as the Riverbend ACT Academy—a week-long crash course in ACT skills offered at each of the district’s three high schools right before each national ACT—a lack of consistency in implementation and a lack of program evaluation has left administrators and teachers still grasping for an effective and consistent way to raise ACT scores (Allensworth et al., 2008). Though an ACT prep course exists in the RSD curriculum, central office personnel have traditionally perceived it as a non-essential course in which seniors simply take practice tests without much guided instruction, as it is difficult to find one teacher who can competently teach English, math, science, and reading skills in relation to the ACT. Teacher quality and preparation is of great significance, given that the effect of teacher preparation on student achievement can overcome the potentially negative impact of socioeconomic status and race (Darling-Hammond, 2000).

Statement of Problem

The rise of expensive test prep and coaching companies creates an equity issue when considering college admissions (Devine-Eller, 2012; Horn, 2005). Put simply,

standardized tests can be biased against females, minorities, and economically disadvantaged students (Kohn, 2000), and students who are economically disadvantaged are less likely to use test preparation as those from affluent families (Buchmann et al., 2010; Kohn, 2000). According to a study by Baker and LeTendre (as cited in Buchmann et al., 2010), families are using more forms of “shadow education” (p. 435) to help their children succeed.

Achievement Gap

This creates gaps and represents inequity, as socioeconomic status and race are significantly correlated with student outcomes (Darling-Hammond, 2000). Racial gaps in achievement are not new, but efforts to close racial gaps are indicative of a significant departure from America’s past views on racial disparities (Noguera, 2008). Still, the unintended consequences of high-stakes testing, including increased dropout rates and diminished student learning, disproportionately impact minorities and narrows the field of college applicants (Horn, 2005; Kohn, 2004).

Racial achievement gaps are often the product of the tendency to rationalize the failure of students from minority groups as normal (Noguera, 2008). Educators become used to seeing minority groups underperform (Noguera, 2008). The normalization of failure makes closing racial achievement gaps difficult (Noguera, 2008). Thus, it is necessary to develop an effective, in-house ACT prep program that grants equal access to all students, regardless of socioeconomic standing.

If Riverbend North High School’s ACT prep course generated consistent, statistically significant results, then these problems may seem minor; however, there is a lack of information about the overall effectiveness of the program. Ultimately, it is not

currently known if the output of the program is worth the significant input (Qiu & Wu, 2011), which puts a strain on the rest of the building's resources.

Integrating ACT Skills in Curriculum

The sense of urgency for the achievement of higher test scores places tremendous strain on both teachers and administrators (Allensworth et al., 2008; Reich & Bally, 2010). Compounding that strain is this reality: it is difficult to integrate ACT test-taking skills into traditional course instruction (Allensworth et al., 2008). Schools striving for higher test scores are often guilty of curriculum narrowing, which restricts more creative and enriching activities engaged in by teachers and students (Berliner, 2011). Because of this, it is important to have an effective ACT prep class that stands alone, relieving core teachers of the burden of dedicating valuable class time to the test (Berliner, 2011).

Literature Gap

While some research reports there are benefits to taking timed tests to prepare for the ACT (Allensworth et al., 2008), and while test familiarity does generate limited results, specifically with the English subtest (Allensworth et al., 2008), there is no definitive evidence on what makes for a highly-effective ACT prep program (Black, 2005; Moss et al., 2012).

To say there is conflicting research on the effectiveness of ACT prep is an understatement. While some research does indicate that ACT prep can make a positive difference in scores (Allensworth et al., 2008; Briggs, 2009; Parrot 2012), much of that research only touches upon which practice methods, such as coaching or taking practice tests, generate results.

There is a significant gap in the research when it comes to addressing the role of teacher impact on improving ACT results; specifically, there is little to no research on whether or not multiple teachers with experience and certification in content backgrounds that match the subtests of the ACT can make a bigger difference than a traditional one-teacher ACT prep model (Darling-Hammond, 2000). For that reason, the goal of this study is to focus on whether or not a three-teacher ACT prep model makes a significant statistical difference in ACT prep scores.

Shadow Education and Inequity

Ultimately, embedding ACT prep in regular classrooms makes it difficult for teachers to achieve other objectives (Allensworth et al., 2008; Berliner, 2011) and may actually be detrimental to students (Kohn, 2000). This strain can be at least partially alleviated by effective test prep programs that function on their own (without being embedded in and taking time from other classes).

Offering an effective ACT prep class during the day would also eliminate the need for “shadow education” (p. 435) initiatives, which are defined by Buchmann, Condron, and Roscigno (2010) as training outside the formal school day that can be either enrichment or supplemental. Such initiatives are more frequently used by high income families to increase their children's chances of college admission (Buchmann et al., 2010; Devine-Eller, 2012), thus widening the gap for students of economically struggling families (Allensworth et al., 2008; Banks & Eaton, 2014; Devine-Eller, 2012; Horn, 2005).

The Need for Equitable and Effective ACT Prep

With so many individual students seeking test prep, and with so many high schools scrambling to offer some type of ACT prep class (Moss et al., 2012), it is crucial to understand that currently, there is not a benchmark for what makes an effective program (Allensworth et al., 2008; Moss et al., 2012), and to make matters worse, many schools are not even attempting to measure the success of their programs via program evaluation. With so many varieties of test prep available, many that have only yielded mixed results (Moss et al., 2012), including expensive and inequitable tutoring from a variety of test prep centers (Buchmann et al., 2010; Devine-Eller, 2012; Hua, 2010), it is important to identify the most efficient and effective mode of ACT prep available.

In 2008, Riverbend North High School, in the Riverbend School District, set out to create an effective ACT prep class. Riverbend North High School's administrative team wanted to steer away from the established district trend of making ACT prep a "schedule filler." Understanding that teacher preparation can dramatically impact student achievement and can lessen the impact of socioeconomic status and race (Darling-Hammond, 2000), and knowing one teacher could not likely effectively teach skills crucial to success on all subtests of the ACT, it was decided that three experienced, certified teachers would be used to teach one class.

A math teacher, a science teacher, and a teacher with a background in English and reading were selected to teach the class as a team. These teachers are given access to prior assessment data, because when test data is not made available to teachers for diagnostic purposes, it does nothing but measure predictable inequities in achievement (Dianis, Jackson, & Noguera, 2015). Using this prior assessment data, students with low

scores in need of an ACT intervention were hand-picked for the class with the idea that they would complete three-week rotations with each teacher over the course of one semester, with the last three-week rotation designated for the subject in which they struggled most.

While it seems effective to supply students with three experienced and certified teachers (Darling-Hammond, 2000) who can offer them specialized help with each ACT subtest, it can also be problematic. The rising costs and quality of school inputs, defined as school expenditures, teacher-student ratios (Akerlof & Kranton, 2002), along with teacher certification, content knowledge, and experience (Darling-Hammond, 2000), are unmatched to improvement in student achievement (Akerlof & Kranton, 2002; Hanushek, 1986). Outputs have been measured as test scores (Akerlof & Kranton, 2002). Essentially, resources can change educational returns (Akerlof & Kranton, 2002; Darling-Hammond, 2000; Horn, 2005).

Theoretically, increasing the number of resources (in this case, ACT prep teachers at Riverbend North High School), should raise outputs in the form of test scores (Akerlof & Kranton, 2002), but it is very difficult to adjust the schedule so three teachers can teach the same class during one period. And with the Riverbend School District facing financial problems, having three teachers teach a class of approximately 25-30 students a semester does not make good financial sense. Ultimately, it is not known if the output of Riverbend North's ACT prep program is worth the significant input (Qiu & Wu, 2011).

Purpose of Study

The purpose of this study was to determine whether Riverbend North's three-teacher model generates statistically significant results in the ACT scores of its

participants. The purpose of this study was also to determine whether Riverbend North's ACT prep course serves underrepresented students at Riverbend North, helping to close multiple ethnic and socioeconomic achievement gaps (Darling-Hammond, 2000). Ultimately, it was also the purpose of this study to determine whether the significant inputs to this program, which would be teachers, are made worth it by the outputs, which would be an increase in ACT scores (Qiu & Wu, 2011).

According to research by Anastasi, Messick, and Powers (as cited in Arendasy et al., 2016), "there has been renewed interest in the effect of test preparation on test-takers' admission test scores and the extent to which individual differences in test preparation compromise the measurement fairness of admission tests" (p. 44). Researchers have debated the impact of school variables on student achievement (Darling-Hammond, 2000), including motivation, personal study habits; regardless, it is necessary to have special test preparation that focuses on test strategies in order to be successful (Bicak, 2013).

But the research is conflicting. Research indicates that test preparation yields a positive difference on standardized test scores, but it is a small one (Briggs, 2009). ACT Inc. encourages students to prepare for the test through test familiarization, which consists of content review, item practice, and test format orientation (Arendasy et al., 2016; Briggs, 2009).

As opposed to test familiarization, test coaching consists of instructor-driven methods of test preparation (Arendasy, et al., 2016). Test preparation becomes more formal once it becomes coaching, which involves an instructor (Arendasy, et al., 2016; Briggs, 2009); however, there is mixed evidence about the impact of coaching on ACT

scores (Briggs, 2009), which has been described as stress-inducing and a waste of money (Kohn, 2003). In fact, there is conflicting research about many forms of ACT preparation.

For example, according to a recent study by Dale (2013), students at a rural Tennessee high school who received ACT prep did not score significantly higher than those who did not receive the additional preparation. However, according to another recent study by Parrot (2012), juniors who took ACT prep at another Tennessee high school actually did demonstrate statistically significant growth, most notably in math.

Research Questions

Quantitative research questions explore the relationships between two variables, and the questions lend themselves to empirical research (Creswell, 2014; Hoy & Adams, 2016). Ultimately, these questions are used to shape the focus and purpose of a quantitative study (Creswell, 2014).

The research questions guiding this study are as follows:

- Does the three-teacher model generate a significant statistical difference in ACT scores between students who have taken part in Riverbend North High School's ACT prep course and those who did not?
- Does the three-teacher model generate a significant statistical difference in ACT scores between African American and Hispanic students who have taken part in Riverbend North High School's ACT prep course and those who did not?
- Does the three-teacher model generate a significant statistical difference in ACT scores between students on free and reduced lunch who have taken part in Riverbend North High School's ACT prep course and those who did not?

- Does the three-teacher model generate a significant statistical difference in ACT scores between females who have taken part in Riverbend North High School's ACT prep course and those who did not?

Conceptual Framework

The economics of schooling is a conceptual framework that “views the schooling process as an input-output model, where the inputs are students, teachers, and school resources and the outputs are student learning achievements” (Qiu & Wu, 2011, p. 65). Using this overarching framework, it can be shown through the literature that most schools, in terms of ACT prep, are failing to consider this input-output model.

Figure 1. The Economics of Schooling is the conceptual framework for this study. Using this framework, it can be shown through the literature that most schools, in terms of ACT prep, are failing to consider this input-output model.

In essence, many schools offer ACT prep because it is in demand, but they fail to measure the outputs (Akerlof & Kranton, 2002; Hanushek, 1986; Qiu & Wu, 2011); thus, many schools continue to run ACT prep programs that are ineffective. Because of this,

most test prep programs have a minimal positive effect on ACT scores (Adams, 2011). Resources are not being properly utilized, and for that reason, the outputs—student scores—are not reaching their potential. Once the input-output model is put into effect, it is possible to see which ACT programs are getting the most bang for their buck. In this case, the educational outputs are measured as standardized test scores (Akerlof & Kranton, 2002; Hanushek, 1986; Qiu & Wu, 2011).

Figure 2. The Economics of Schooling Framework, as applied to Riverbend North’s ACT Prep Program.

Riverbend North High School has a high-input ACT prep model. Utilizing three certified and experienced core teachers (Darling-Hammond, 2000), which are inputs in the economics of school framework (Qiu & Wu, 2011), can be challenging. Because Riverbend North utilizes one math, one science, and one English Language Arts (ELA) teacher to teach the same class, it reduces the number of math, science, and ELA classes the building can offer. It also creates a very low student-to-teacher ratio, which may seem ideal to teacher, but may not be economically feasible within this framework if

statistically significant results are not generated. Ultimately, using the economics of schooling framework, it is the goal of this study to see if Riverbend North's outputs, in the form of ACT scores, (Akerlof & Kranton, 2002; Hanushek, 1986; Qiu & Wu, 2011) merit the program's high inputs, in the form of scheduling challenges created by using three teachers to teach one class.

Design of Study

Setting

Riverbend is located in Northwest Missouri and has a population of 76,472 ("Census Bureau QuickFacts," 2016). The town is largely blue collar, with a median income of approximately \$43,000, and with only 19.2% of its population having earned a bachelor's degree or higher ("Census Bureau QuickFacts," 2016). For this reason, many of Riverbend's graduates go straight into the workforce, but still, many do attend college and therefore must contend with the ACT.

The Riverbend School District serves 11,336 total students ("School Report Card," n.d.). Riverbend North High School, one of the RSD's three high schools, has an enrollment that typically stays near approximately 750 ("School Report Card," n.d.). Riverbend North serves one of the more economically disadvantaged areas of the town, with a free and reduced lunch rate of 61.8% and a proportional attendance rate of 69.3 ("School Report Card," n.d.). While considered demographically diverse in terms of Riverbend's total population, which is 87.8% Caucasian ("Census Bureau QuickFacts," 2016), Riverbend North High School is still 77% Caucasian ("School Report Card," n.d.). Of Riverbend's three high school, Riverbend North has the largest African American

population at 12.6%, with only 5.9% of students being Hispanic (“School Report Card,” n.d.).

According to 2016 data (“School Report Card,” n.d.), 38.9% of Riverbend North’s 2016 graduating class enrolled in a four-year school. The composite ACT score for Riverbend North’s graduates has fluctuated from 19.7 in 2013 to 18.5 in 2016. Overall, the Riverbend School District’s ACT scores dropped after the statewide ACT brought census testing to Missouri (“School Report Card,” n.d.), which only emphasizes the need for an effective ACT prep course at the school.

Participants

This study examined senior ACT scores for students who took part in Riverbend North High School’s ACT prep program versus those who did not participate in the ACT preparation class. In 2015, the state of Missouri began census testing all high school juniors with the ACT (Robertson, 2015); thus, this data was used as a baseline (Dianis et al., 2015), contrasted against follow-up results for all seniors at Riverbend North who took the ACT again their senior year.

Data Collection

Using archival data, including class schedules and ACT scores retrieved from Power School, the Riverbend School District’s data management program, a list of students who took the ACT both their junior year and their senior year was created. The key variable in this part of the study was whether the student enrolled in ACT Prep between their baseline score and their second score. Variables such as gender, ethnicity, and free and reduced lunch status were also recorded in an effort to assess whether or not achievement gaps were addressed by the ACT prep program. Also, the results of

previous standardized test scores, such as End of Course Exam scores, which are taken when a student has received instruction on the Missouri Learning Standards for an assessment (“End-of-Course”), were recorded in the data set to ensure that students of similar ability were compared and to help remove statistical outliers from the study (Field, 2013).

Data Analysis

This study relied on archival data. This archival data yielded information necessary to answer whether there was a significant statistical difference in ACT scores for students who took part in Riverbend North High School’s ACT prep course. The archival data also shed light on whether Riverbend North’s ACT prep course helped serve underrepresented populations at Riverbend North by closing ethnic, gender, and socioeconomic achievement gaps (“Achievement Gap,” 2013).

A dataset was created containing pretest and posttest scores for all Riverbend North graduates for the years 2016, 2017, and 2018, who took the ACT their junior year and again their senior year, with the students divided into two groups: those who took ACT prep between the two tests and those who did not. Using an analysis of covariance (ANCOVA) in IBM SPSS Statistics, the scores of the two groups were examined for significant statistical differences. When an ANCOVA analysis is conducted, it examines the relationship between the outcome (dependent variable) and the covariate (Field, 2013).

Limitations, Assumptions, and Design Controls

Limitations

Quantitative research is based on the idea that there is one definable reality and that it can be measured (Merriam & Tisdell, 2016). Furthermore, the paradigm of positivism suggests true knowledge can only be mined from the logical and mathematical treatment of data (Smith, 2014). That said, while quantitative data might not lend itself to the same potential biases as qualitative data, it is not infallible. In the case of this study, it is notable that the researcher served as an ACT prep teacher and thus brings specific biases about modes of ACT preparation into the research study. The researcher also served as a high school administrator and has thus felt the pressure to raise ACT scores in his building.

Merriam and Tisdell (2016) state that quantitative research is predetermined and structured, and less fluid and flexible and qualitative research. While this is certainly true, in the case of this study, there were multiple variables outside of the research structure that could impact the study, such as teacher subject matter knowledge and quality (Darling-Hammond, 2000). In the case of this study, all teachers studied the Focus on Learning model, but could still have varying degrees of content knowledge that could impact student achievement (Darling-Hammond, 2000).

Certified teachers have more of a positive effect on student achievement (Darling-Hammond, 2000). In this study, all teachers were certified in the content area that most closely related to the ACT subtest they helped students to prepare for. For example, a certified math teacher instructed the math portion of the ACT prep course, whereas a

certified English teacher instructed the English and reading portions. Finally, a certified science teacher instructed the science portion of the class.

While this study focused on the effectiveness of the three-teacher ACT prep model in raising ACT scores, many of the participants participated in other activities that could impact their scores, such as private tutoring (Rubenstein, 2004), personal studying, free online practice from a growing field of sources (Adams, 2011), or the Riverbend North ACT Academy.

The ACT Academy is a separate initiative than the ACT prep course that is the focus of this study, and while its effectiveness has never been evaluated in the form of a formal program evaluation, students who have participated in the academy have been known to raise their scores. These test prep variables could be seen as limitations, as they can impact the results of the study.

Another potential limitation of this study could be the sample size. Because it is only centered on students who first took the ACT as a junior, enrolled in ACT prep afterward, and took the ACT again before graduating, the sample size is smaller than the entire population of students who have taken the class. Thus, the sample could be an uncertain representation of the effectiveness of the class for all of its participants (Zyphur & Pierides, 2017).

Finally, the ever-changing content of the ACT could be viewed as a limitation of this study. The test is always evolving, and while the content is typically the same, the manner in which the content is delivered can change significantly. It is possible that some of the participants in this study took the statewide ACT as a baseline, took the ACT prep course and devoted time and energy to learning the strategies, and then were faced

with a type of ACT passage they had never practiced before when taking the test for the second time. It is difficult to prepare for every possible option the test might deliver, especially when new items are being piloted with each test (“ACT Technical Manual Supplement,” 2016).

Assumptions

The ACT prep course at Riverbend North High School is an elective; therefore, it is typically only taken by students who actually want to be in the course, or those who have been encouraged to do so by their families. An assumption of this study, then, was that because students elected to take the course, they genuinely cared about their progress and invested time and attention in the course content, partially because of the tremendous pressure to do well on the ACT (Allensworth et al., 2008; Devine-Eller, 2012).

However, though college-bound teenagers feel tremendous pressure to attain a high score on the ACT (Allensworth et al., 2008; Devine-Eller, 2012), and though the participants elected to take the course, it is entirely possible that some students did not attend regularly or pay close attention to the course work. Though the stakes surrounding the ACT are high (Allensworth et al., 2008; Rubenstein, 2004), ultimately, sometimes the drive and devotion of teenage students can waver.

Design Controls

This study was experimental, as participants were not randomly assigned (Creswell, 2014). In such studies, validity can be challenged by both internal and external threats, and design controls must be put in place to minimize these threats (Creswell, 2014). To ensure validity, the researcher utilized ACT data from the graduating classes of 2016, 2017, and 2018 in an effort to increase the sample size

(Creswell, 2014). The researcher also eliminated statistical outliers (Creswell, 2014) in the form of extreme ACT scores and other background information, such as End-of-Course Exam scores in biology, English II, and government.

Finally, while no two ACT exams are identical, as the ACT is always evolving (“ACT Technical Manual Supplement,” 2016), the researcher eliminated instrumentation issues (Creswell, 2014) by ensuring that an actual ACT—not a practice exam—was utilized as the posttest measure, given under the same timing and security guidelines used during the pretest and set forth by ACT, Inc.

Definition of Key Terms

Achievement Gap: A significant disparity in academic performance between different groups of students, such as different races or socioeconomic groups (“Achievement Gap,” 2013).

ACT Academy: The Riverbend North ACT Academy is a 4-day series of small group tutoring sessions right before each national ACT date. Riverbend North students can take these sessions, which focus on basic test strategies and test familiarity.

ACT Prep Course: Any high school course specifically designed to help students improve ACT scores that involves instructor-driven prep (Arendasy et al., 2016; Briggs, 2009).

ACT Subtest: The ACT is composed of timed, multiple-choice subtests in English, mathematics, reading, science, and an optional writing test (“ACT Technical Manual Supplement,” 2016).

Annual Yearly Progress: Annual Yearly Progress (APR) is the performance measure by which school districts (and states) are held accountable for student achievement (“Adequate Yearly Progress,” 2004).

Census Testing: Census testing offers a snapshot of an entire graduation cohort (“College Career Readiness,” 2016).

College Admissions Process: Most colleges and universities require either the SAT or ACT as part of the application process (“ACT/SAT Test Preparation,” 2016). The process is considered highly competitive (Devine-Eller, 2012) and for students, a strong test score can mean not only admission to their college of choice, but also potential scholarships and placement in upper-level courses (Allensworth et al., 2008).

College Readiness: According to Conley (2008), college readiness is the level of preparation students need to succeed in a general education course at a post-secondary institution. At its core, “college readiness is the development of the cognitive and metacognitive capabilities of incoming students” (Conley, 2008, p. 24).

Core Teacher: In the context of this study, a core teacher is any teacher who teaches English, science, math, or social studies.

Curriculum: According to the Missouri’s Department of Elementary and Secondary Education’s *Developing Curriculum: Considerations and Applications* (2016), a district’s curriculum delineates all items teachers must implement and administrators must purposefully track throughout the school year.

Curriculum Narrowing: Curriculum narrowing can result when test prep strategies are embedded into traditional classes, which can then limit creative and enriching activities engaged in by teachers and students (Berliner, 2011).

End-of-Course Exam: In Missouri, End-of-Course assessments include English I, English II, algebra I, algebra II, geometry, American history, government, biology and physical science, and all are taken when a student has received instruction on the Missouri Learning Standards for an assessment, regardless of grade level (“End-of-Course”).

Free and Reduced Lunch: The free and reduced lunch program allows students to eat lunch for free or at a reduced price based on income or status as a homeless, migrant, runaway, or foster child (“National School Lunch, 2017”).

High School: In the context of this study, high school refers to grades 9-12.

High-Stakes Testing: Achievement tests are considered high-stakes when they are used to hold students and schools accountable (Haertel & Herman, 2005).

No Child Left Behind Act of 2001: The No Child Left Behind Act (NCLB) of 2001 sought to erase socioeconomic and racial achievement gaps (Klein, 2015), thus putting pressure on schools to increase standardized test scores (Bennett et al., 2012).

Opportunity Cost: According to Briggs (2009), opportunity cost is the cost of time that could have been spent learning other materials or practicing other skills that might help a student's chances of college admission.

SAT: Much like the ACT, the SAT is a multiple-choice exam used by many colleges and universities to gauge college readiness (Conley, 2008) and to help with admission decisions (“What is the SAT,” 2018).

School Input: In the context of this study, school inputs in viewed in terms of expenditures, teacher-student ratios, and teacher quality (Akerlof & Kranton, 2002; Hanushek, 1986; Qiu & Wu, 2011).

Shadow Education: Shadow education is defined as expensive supplemental training outside the formal school day (Buchmann et al., 2010, p. 435). In the context of this study, shadow education refers to private tutoring or test prep that takes place outside of the regular school day.

Standardized Test: A standardized test is any test requiring all testers to answer the same questions in the same way, and that is scored in a “standard” manner, making it possible to compare the performance of individual students or groups of students (“Standardized Test,” 2015).

Test Coaching: Test coaching consists of more formal, instructor-driven methods of test preparation (Arendasy et al., 2016; Briggs, 2009).

Test Familiarity: Test familiarity or familiarization is the process of exposing students to a test to better prepare for it; the goal of test familiarization is to help test-takers get used to the mechanics and format of a test (Arendasy et al., 2016).

Test Preparation: Test preparation is any mode of preparing for a standardized test, including learning the format of the test in the form of test familiarity (Arendasy et al., 2016) instructor-driven test coaching (Arendasy et al., 2016; Briggs, 2009), or individual tutoring or studying.

The American College Testing Program (ACT): The American College Testing Program (ACT) was founded in 1959 (Conrad-Curry, 2011) and is designed to gauge college readiness (Dvorak, 2003). The ACT is composed of subtests in English, mathematics, reading, science, and an optional writing test (“ACT Technical Manual Supplement,” 2016). Most colleges and universities require either the SAT or ACT as part of the application process (“ACT/SAT Test Preparation,” 2016).

Three-Teacher Model: In the context of this study, the three-teacher model is the model Riverbend North High School utilizes for its ACT prep course. In the three-teacher model, three teachers—one English and reading, one science, and one math teacher—teach the ACT prep course together. ACT prep students rotate to each teacher every 3 weeks over the course of one semester so they can learn specific strategies for each ACT subtest.

Significance of Study

Contribution to Practice

Determining if the three-teacher ACT prep model utilized by Riverbend North High School generated a statistical difference in improving ACT scores could make a substantial contribution to the efforts of the Riverbend School District (and other districts) to improve ACT scores across all high schools. If, in fact, the program does generate a statistically significant improvement in ACT scores, then it could be implemented in other high schools.

Difference Made at Institution

This study could make significant differences at Riverbend North High School. Currently, many resources are utilized across multiple initiatives to raise ACT scores. If the results of this study show that the three-teacher ACT prep model does make a significant statistical difference in ACT scores, then some of the resources devoted to other ACT initiatives could be potentially freed in an effort to put a laser focus on the ACT prep course.

On the other hand, if this study suggests that the three-teacher model does not make a significant difference in ACT scores, then the resources devoted to the class

(specifically the three teachers who have been freed to teach the class together at the expense of the rest of the school's schedule), could be reallocated and used in ways that are more beneficial to the students, following the economics of schooling framework (Qiu & Wu, 2011).

Contributions to Existing Literature

Currently, there is a gap in the literature when it comes to determining what mode of test prep is most effective (Moss et al., 2012; Rubenstein, 2004). This study could provide more information to help gauge the impact that the three-teacher model makes in generating a statistical difference in test scores.

Summary

The ACT has been a crucial aspect of the college admissions process (Black, 2005; Dvorak, 2003; Horn, 2005) since its inception in 1959 (Conrad-Curry, 2011). The emphasis placed on earning a high ACT score is of serious significance (Allensworth et al., 2008), making the college admissions process for high school students intensely competitive (Devine-Eller, 2012).

Because the admissions process is so intense, and because the ACT carries so much weight, many students and their families seek ways to raise ACT scores (Buchmann et al., 2010). Private test prep firms can charge thousands of dollars (Devine-Eller, 2012; Dvorak, 2003), and embedding ACT skills into a standard curriculum can result in curriculum narrowing (Berliner, 2011).

Because of this, college-bound public high school students need an effective form of ACT prep that is not only free, but a separate class with its own curriculum as to not narrow the scope of other classes (Berliner, 2011). Unfortunately, there is a knowledge

gap when it comes to understanding just what could make such an ACT prep class successful in demonstrating a significant statistical improvement in scores (Black, 2005; Moss et al., 2012).

With so much pressure on school districts, administrators, and teachers to raise test scores (Akerlof & Kranton, 2002), and with so much on the line for students who need higher ACT scores to fulfill college admission requirements, it is essential to evaluate which programs truly make a statistically significant difference in students' ACT scores. Ultimately, this study aims to do just that.

SECTION TWO

PRACTIONER SETTING FOR THE STUDY

The setting for this quantitative study was Riverbend North High School, one of three high schools in the Riverbend School District. The Riverbend School District, located in a suburban city located in Northwest Missouri, serves approximately 11,500 students (“School Report Card,” n.d.) in a town with a population of 76,000 (“Census Bureau QuickFacts,” 2016).

In an effort to understand the organization’s background, this section will first examine the history of the Riverbend School District. The focus will then narrow to Riverbend North High School, its ACT initiatives, and then finally to Riverbend North’s ACT prep course, which is the focus of this study.

History of the Riverbend School District

The Riverbend School District’s history dates back to 1860, when citizens of Riverbend obtained a charter from the Missouri General Assembly that incorporated the Riverbend Board of Public Schools (Foley, Johnson, & Lentz, 2017). The district began as three simple, brick buildings that could each house 120 students (Foley et al., 2017). All three buildings were elementary schools (Foley et al., 2017).

In 1861, significant student progress in the elementary schools created a reasonable demand for a public high school (Foley et al., 2017). The operation of the initial Riverbend High School, however, was short lived, as it was closed in April of 1861 with the eruption of the Civil War (Foley et al., 2017).

In contrast, private schools in Riverbend, Missouri continued to flourish during this time, and it was clear that once the state could stabilize, the demand for education

would lead to the reestablishment of public education in Riverbend (Foley et al., 2017).

This came to fruition in 1864, and the modern Riverbend School District was born (Foley et al., 2017).

As Riverbend, Missouri grew in the Reconstruction era, the Riverbend School District had to expand as well, but more importantly, it evolved. A variety of elective programs were added, along with a three-tiered structure incorporating elementary, middle, and high schools (Foley et al., 2017). Multiple new school buildings were erected, the leadership structure grew in accordance with national and state standards, and the Riverbend School District, through the passage of many tax initiatives, grew into the district it is today (Foley et al., 2017).

Riverbend High Schools

Once Riverbend High School reestablished itself at the end of the end of the Civil War, the need for other high schools in Riverbend became apparent (Foley et al., 2017). The superintendent during the Reconstruction era in Riverbend hailed the American high school as the single most important feature of the public school system (Foley et al., 2017), and as city-wide growth created overpopulation problems in the Riverbend School District, the need for more high schools only increased.

As the city contemplated the need for more high schools, dramatic changes to Riverbend High School's curriculum were made. The element of choice was added, allowing students to select a classical or college preparatory track (Foley et al., 2017). New courses were added and the practice of promotional exams was abolished (Foley et al., 2017).

In 1890, the Riverbend School Board approved the construction of the Colored High School (Foley et al., 2017). This school also housed grammar and primary grades for African American students (Foley et al., 2017). Unfortunately, there were still massive overcrowding issues within the existing schools, including Riverbend High School, and after renting various pre-existing buildings throughout the city, ultimately, the district had to expand again (Foley et al., 2017). After much civic discussion, new high schools were constructed, and these buildings would become the precursors of Riverbend's three current high schools: Riverbend East, Riverbend South, and the site of this study, Riverbend North.

History of Riverbend North High School

The modern Riverbend North High School was formally dedicated in front of approximately 600 enthusiastic onlookers in November of 1917 ("Riverbend Dedicated," 1917). Riverbend North High School was heralded at the time of its opening for its modern features, such as classrooms that were equipped for multiple subjects ("Riverbend Dedicated," 1917). Not long after opening, Riverbend North High School expanded, taking on the Riverbend School District's Boys Vocational School in 1918 ("Boys Vocational," 1918).

Initially, Riverbend North High School also housed grades one through 12, but in 1939, it was decided that Riverbend North would house only grades eight through 12 ("History of Riverbend"). In 1968, the formation of middle schools in the Riverbend School District reduced Riverbend North's student population even further, making Riverbend North exclusively grades nine through 12 ("History of Riverbend").

While Riverbend North High School has gone through many upgrades and additions, including a major construction project in 1961 that saw the addition of a new cafeteria and gymnasium, along with another project in 1970 that added a four-story annex of classes (“History of Riverbend”), the original building erected in 1917 is still used today. In September of 2017, Riverbend North celebrated its 100th anniversary as a key institution in the Riverbend School District.

Riverbend North High School Today

Since its first graduating class of fewer than 20 students in 1920 (“History of Riverbend”), Riverbend North High School has grown dramatically. According to the Missouri Comprehensive Data System, Riverbend North High School’s enrollment was 809 in 2017 (“Building Demographic Data,” 2018). Riverbend North is also more diverse than it when it first opened, as its demographics mirror the changing demographics of Riverbend, Missouri.

The Missouri Comprehensive Data System reported that in 2017, Riverbend North High School was 75% Caucasian, 12.2% African American, and 6.3% Hispanic (“Building Demographic Data,” 2018). Riverbend North High School also serves a community that struggles with poverty, as 61.5% of its students qualify for free and/or reduced-price lunch (“Building Demographic Data,” 2018).

Achievement and Test Scores in the Riverbend School District

1983’s *A Nation at Risk: The Imperative for Educational Reform*, a report from the National Commission on Excellence in Education, presented a foreboding picture of the course of education in America. This picture was largely painted with data suggesting negative trends in American standardized testing scores (“Nation at Risk,”

1983). Specifically, it revealed that American students were rarely first or second, when compared with other industrialized nations, on a variety of achievement tests (“Nation at Risk,” 1983). The report also suggested that standardized test scores had dropped since the 1960’s (“Nation at Risk,” 1983).

The spotlight placed on standardized tests *A Nation at Risk: The Imperative for Educational Reform* (1983) placed a significant amount of pressure on schools to improve scores (Akerlof & Kranton, 2002; Graham, 2013; Hanushek, 1986). In fact, the new spotlight on standardized tests may have created a curriculum-narrowing obsession with improving scores (Berliner, 2011; Graham, 2013).

The Riverbend School District, along with its three high schools, has not been immune to the pressure of performing on the standardized tests emphasized in *A Nation at Risk: The Imperative for Educational Reform* (1983), especially since student achievement is often measured as test scores (Akerlof & Kranton, 2002; Hanushek, 1986). Riverbend, Missouri’s ever-changing demographics compound the pressure, as both resources and sociological variables impact achievement (Akerlof & Kranton, 2002; Darling-Hammond, 2000; Horn, 2005).

With the advent of No Child Left Behind (NCLB) in 2001, school districts began feeling even more pressure to increase test scores (Bennett et al., 2012; Horn, 2005). In response to NCLB, the Riverbend School District, after analyzing assessment data at the high school level, concluded that a special emphasis should be placed on raising ACT scores at all three Riverbend high schools (Bennett et al., 2012). Not only does the ACT play a significant role in the Riverbend School District’s Annual Yearly Progress (AYP),

but it has significant real-world implications for college-bound students (Allensworth, Correa, & Ponisciak, 2008), making it a worthy focus for necessary score improvement.

Riverbend School District ACT Initiatives

The weight of the ACT is felt in many ways for school districts and students: it is an important factor in the competitive and stressful college admission process (Devine- Eller, 2012; Kohn, 2003), it is linked to a significant number of scholarships ("ACT/SAT Test Preparation," 2016; Allensworth et al., 2008), and it an important measure of a high school's overall level of achievement (Allensworth et al., 2008; Devine-Eller, 2012). On top of that, the number of students taking the ACT has increased significantly since 2011 (Gewertz, 2016), and it is reasonable that these students would seek out opportunities to improve their admission potential (Buchmann et al., 2010).

Test preparation can yield a statistically significant positive difference on standardized test scores, but it is typically a small improvement (Briggs, 2009). While ACT Inc. encourages students to prepare for the test through test familiarization (Arendasy et al., 2016; Briggs, 2009), which can be done individually, the Riverbend School District recognized the need for better, coaching-based (Arendasy et al., 2016; Briggs, 2009) ACT prep opportunities throughout the district's three high schools.

In February of 2007, teachers and administrators from the Riverbend School District attended the statewide ACT conference in Columbia, Missouri (Bennett et al., 2012). As a result of information gleaned at the conference, and in response to increasing pressures to raise ACT scores (Allensworth et al., 2008; Bennett et al., 2012; Devine-Eller, 2012), the Riverbend School District decided to hire consultants from the

Columbia, Missouri-based Focus on Learning Group to train teachers in test-taking strategies meant to increase student scores (Bennett et al., 2012).

The Focus on Learning Group demonstrated the importance of a multi-teacher approach to ACT prep (Bennett et al., 2012). Student participants were selected, and teachers watched as one instructor from the Focus on Learning Group taught math and science strategies, while another taught English and reading strategies in what was referred to as the ACT Academy (Bennett et al., 2012). Student participants rotated between the two teachers during a week of instruction, and Riverbend School District teachers observed, took notes, and learned strategies and how to deliver them to potential ACT-takers (Bennett et al., 2012).

The ultimate goal of bringing in the Focus on Learning Group was to create a consistent, district-wide ACT prep initiative (Bennett et al., 2012). After much discussion following the consultations with the Focus on Learning Group, it was revealed that there was a “fragmented focus” across the district’s three high schools (Bennett et al., 2012, p. 2). While the Focus on Learning consultants helped bring the three Riverbend School District high schools closer to the same focus, it was ultimately decided that each high school would implement the strategies learned from the consultants in a way that best suited each school’s needs (Bennett et al., 2012).

It was decided that each high school would run an ACT Academy similar to the Focus on Learning Group’s in their own building during the weeks before scheduled national ACT administrations. Beyond that, the three high schools were given autonomy to implement the Focus on Learning Group’s strategies in other ways as well, including during core classes and in a separate ACT prep course (Bennett et al., 2012).

Even though the Riverbend School District had an ACT prep course written into its curriculum, only one of the high schools—Riverbend North—offered the class, and it was decided by the administration and School Improvement Planning (SIP) team at Riverbend North that the class would continue, but would be given an overhaul based on what was learned from the Focus on Learning Group.

History of Riverbend North High School’s ACT Prep Course

Much like other high schools, Riverbend North High School, feeling the need to raise its ACT scores, developed a focus on test-taking skills and practicing test questions in all core classes (Allensworth et al., 2008). Higher ACT scores were even celebrated in the form of an “Academic Hall of Fame” wall, featuring photos of students who earned an ACT composite score above 25, one of many strategies used to promote and motivate students for the ACT (Allensworth et al., 2008).

Despite Riverbend North’s emphasis on increasing ACT scores, administrators and the SIP team realized that core teachers were being bound by rigid time constraints associated with ACT deadlines (Jones, 2010). The leadership team also realized that a focus on test-taking strategies leads to shallow content coverage in high school classes (Allensworth et al., 2008), and that more crucial components of learning could be explored in classes that were not obligated to engage in test prep (Jones, 2010). And with the pressure of improving test scores put squarely on their plates, teachers felt forced to reduce regular instruction in favor of test preparation (Phelps, 2016).

Because there is at least some evidence that an ACT prep course can have a significant positive impact on student scores (Parrot, 2012), and because the majority of Riverbend North’s students could not afford more expensive test prep (Briggs, 2009;

Dvorak, 2003; “Kaplan Test Prep,” n.d.; Kohn, 2000), administrators and teachers at Riverbend North High School added an ACT prep course offering.

The class, which was initially taught by only one teacher, focused on test familiarization (Arendasy et al., 2016). Like many test prep programs, the Riverbend North ACT prep course generally familiarized students with test format by emphasizing skill drill activities (“ACT/SAT Test Preparation,” 2016).

Because the initial Riverbend North ACT prep teacher was an English teacher, most of the focus was on the ACT English test, and instruction largely came in the form of taking practice tests (Arendasy et al., 2016). While there was some test coaching, which is more formal, instructor-driven prep (Arendasy et al., 2016; Briggs, 2009), the focus of the class was centered too much on test experience as opposed to effective strategies (Bicak, 2013), and learning test-taking skills is not conducive to producing significant improvement in ACT scores (Allensworth et al., 2008).

The Riverbend North administrative and SIP teams realized that their ACT prep course was not as effective as it could potentially be, but they also understood that it was necessary to have special test preparation that focused on test strategies in order to be successful (Bicak, 2013). In 2007, though, after meeting with the Focus on Learning Group as part of the Riverbend School District’s initiative to raise ACT scores, administrators and teachers at Riverbend North decided to modify the ACT prep course.

Riverbend North’s Current ACT Prep Course

While many believe that test preparation can work, whether or not a particular course of is truly effective is quite often contested (Rubenstein, 2004). While there is no benchmark for what generates an effective program (Allensworth et al., 2008), the

administration and teacher leadership team at Riverbend North, based on what was modeled by the Focus on Learning Group, felt they could create an effective ACT prep course in the same style.

The leadership team abandoned the traditional one-teacher model the school had been using in favor of an ACT prep class that utilized multiple teachers who possessed expertise in different content areas. The first design for the new ACT prep course at Riverbend North featured a class taught by an English teacher and a math teacher.

Each teacher had approximately 20-25 students in their class, and those students rotated between the two teachers every three weeks (which coincided with Riverbend North's progress reporting period). While the English teacher was capable of teaching both reading and English skills, the math teacher focused solely on test-taking strategies for the math test. It was quickly realized that a third teacher would need to be utilized to address the science subtest of the ACT.

Supplying the new course with three ACT prep teachers who could offer students specialized help with each ACT subtest seemed like a logical expansion of the Focus on Learning Group's model. However, it created some problems in Riverbend North's master schedule, as it limited the number of core teachers who were available to teach during the ACT prep course's assigned period. In the case of Riverbend North's new ACT prep course, the ACT prep teachers were a valuable input, as inputs can be viewed in terms of school expenditures, teacher-student ratios, and teacher quality (Akerlof & Kranton, 2002; Hanushek, 1986; Qiu & Wu, 2011).

With outcomes, in this case, measured as test scores (Akerlof & Kranton, 2002; Hanushek, 1986; Qiu & Wu, 2011), the administration and teacher leadership team at

Riverbend North held hope that using these resources would change the school's educational returns in the form of higher ACT scores (Akerlof & Kranton, 2002).

Utilizing such valuable school inputs (Akerlof & Kranton, 2002; Hanushek, 1986; Qiu & Wu, 2011) also seemed like a worthy investment in light of one of Riverbend North's desired outcomes: to close the multiple ACT achievement gaps. The pressure to perform is amplified by the fact that culture, ethnicity, and gender gaps in ACT scores must also be addressed (Allensworth et al., 2008; Banks & Eaton, 2014). Since Riverbend North serves an economically disadvantaged area of the city, with a free and reduced lunch rate of 61.8% ("School Report Card," n.d.), providing free and effective ACT prep only makes sense, as students from poverty are not likely to utilize expensive test prep sources outside of school (Buchmann et al., 2010; Kohn, 2000).

Ultimately, Riverbend North's current ACT prep course utilizes three core teachers, which are valuable inputs in the economics of school framework (Akerlof & Kranton, 2002; Hanushek, 1986; Qiu & Wu, 2011). It also creates a low student-to-teacher ratio, which may not be economically feasible within the economics of school framework (Qiu & Wu, 2011) if equally-valuable outputs—in this case, statistically significant increases in ACT scores—are not generated.

Organizational Analysis

An efficient organizational framework assists coordinating diverse efforts of complex organizations, and these frameworks are designed with goals in mind (Bolman & Deal, 2013). For some, the structure does not support decision making at lower levels, and this can lead to failure (Northouse, 2016). Riverbend North High School's leadership structure, however, is centered on making decisions at lower levels;

specifically, the school's SIP team, a teacher leadership team composed of department chairpersons and master teachers, works with the administration, and the SIP team's input was key to the development of Riverbend North's ACT prep course.

Riverbend North Administrative Structure

Riverbend North High School is led by three administrators: one principal and two vice principals. The primary responsibility for the principal is to oversee instruction at all levels and to manage personnel, while the vice principals focus primarily on discipline and grade-specific issues ("Administrative Responsibilities," 2017). Beyond that, though, each administrator has several responsibilities within the administrative structure.

The principal oversees both student and teacher attendance, develops and presents professional development to the staff, and also oversees the master schedule ("Administrative Responsibilities," 2017). The principal also oversees public relations for the school, utilizing social media and local media outlets in an effort to disseminate relevant information to all of the school community's stakeholders ("Administrative Responsibilities," 2017). Finally, the principal is responsible for general supervision duties ("Administrative Responsibilities," 2017).

One vice principal focuses on discipline for 9th and 11th graders ("Administrative Responsibilities," 2017). The same vice principal oversees revisions and additions to the school handbook, and the vice principal in charge of 9th and 11th graders is also in charge of attendance incentives and oversees ACT testing for all Riverbend North students ("Administrative Responsibilities," 2017).

Riverbend North's second vice principal oversees discipline for 10th and 12th grade students ("Administrative Responsibilities," 2017). This vice principal oversees building maintenance issues, safety drills, and End of Course (EOC) exams for all tested classes ("Administrative Responsibilities," 2017). Finally, as the administrator assigned to seniors, this vice principal oversees graduation ("Administrative Responsibilities," 2017).

The three administrators at Riverbend North work as a team to create action plans that guide the decision-making process (Bresciani, 2010; Drucker, 2004/2011). However, many of the key concepts within those action plans are generated by the SIP team.

Riverbend North School Improvement Planning Team

Riverbend North High School's SIP team focuses on understanding what Riverbend North does well and what needs to be improved (Gill, 2010). Composed of department chairpersons and veteran, influential teachers with symbolic power within the organization (Bolman & Deal, 2013), the team works with Riverbend North's administrators to diagnose and remedy problems at the school.

After participating in the Focus on Learning Group's demonstration of the importance of a multi-teacher approach to ACT prep in 2007 (Bennett et al., 2012), the Riverbend North SIP team, working with the administrative team, modified Riverbend North's ACT prep class so that it resembled the Focus on Learning Group's multi-teacher model. Because teams need authority to be effective (Levi, 2013), the administrative team then made the necessary logistic adjustments to bring the class to life. This specifically included modifying the schedule so that three core teachers would be

available to teach the same class. These three core teachers would then become the Riverbend North ACT prep teaching team.

Riverbend North ACT Prep Teaching Team

Following the Focus on Learning Group's model (Bennett et al., 2012), administrators, working with the SIP team, decided to assign multiple teachers to Riverbend North's ACT prep course. The teachers were not just selected at random to teach the course; instead, the ACT prep course teacher team was built from teachers who were able to witness the Focus on Learning Group's model firsthand when they demonstrated their ACT prep style for the Riverbend District (Bennett et al., 2012).

Leadership Analysis

Leaders who are adept with human skills create a culture of trust where employees are encouraged to participate in planning (Northouse, 2016). Effective leaders understand that leadership is not necessarily synonymous with power, and that leaders can actually empower others (and generate results) by actually wielding less power (Northouse, 2016). Effective leaders also understand that organizations benefit from the use of effective and efficient teams (Levi, 2013). The administrative team at Riverbend North tried to embrace these ideas in the creation of its SIP team, which in turn, helped create Riverbend North's ACT prep course.

Administrative Leadership

According to Levi (2013), "The shared values, beliefs, and norms of a team, organization, or nation are known as its culture" (p. 263), and the administrative team at Riverbend North focuses on the creation and management of culture (Schein 1993/2005). The administrative team looks at school issues through multiple frames to diagnose areas

of improvement (Bolman & Deal, 2013). They also embrace the idea that employees are more committed to ideas in which they have input, and they are more likely to support the implementation of those ideas (Levi, 2013).

Ultimately, the administrative team at Riverbend North understands that philosophical barriers can hinder school reform initiatives (Nellis, 2012). By working with and empowering the SIP team, they help break through those barriers and establish a culture of fairness, which improves the climate and motivates workers (Burns & DiPaolo, 2013). And by engaging teachers at Riverbend North, the administrative team is seeking out and empowering those with leadership potential (Kotter 1990/2011).

School Improvement Team Leadership

The administration at Riverbend North is aware that forming positive working relationships with teachers is key to sustaining student achievement (Burns & DiPaolo, 2013), and they also understand that teachers are more invested in decisions they have helped make (Levi, 2013). Thus, the SIP team is empowered to make decisions about the daily operations at Riverbend North High school and their input helped form Riverbend North's ACT course. The teachers that compose the SIP team are encouraged to challenge each other (and the administrators) in order to avoid Groupthink (Janis, 1971/2005).

The SIP team at Riverbend North filters out what issues it needs to tackle by focusing on data that is relevant and has the potential to be analyzed for a solution (Bardach & Patashnik, 2016). This includes frequently surveying the staff and using the resulting data as a guide for what can be improved (Fink, 2017).

One key aspect of Riverbend North's SIP team is that one of the team members always assumes the role of devil's advocate when discussing school issues, which prevents groupthink (Janis, 1971/2005). Groupthink can occur when members of decision-making teams become worried about offering constructive criticism to teammates (Janis, 1971/2005). Preventing groupthink (Janis 1971/2005) allows for the free flow of ideas and potential solutions.

The team works to arrive at these solutions, then communicates them to the administrative team with the understanding that they will need the backing and authority of the administrative team to be effective (Levi, 2013). This process was used by the Riverbend North SIP team in the creation of Riverbend North's ACT prep course, and subsequently, the formation of the ACT prep teaching team.

ACT Prep Teaching Team Leadership

The Riverbend North ACT prep team, composed of the three core teachers who teach the class and the vice principal in charge of ACT, meet every summer to discuss the ACT data for incoming seniors. They use that data to develop a strategic plan for placing students in ACT prep (Bresciani, 2010). They are selective in their process, looking not only at ACT data, but also college and career readiness plans, attendance data, and other factors.

The ultimate goal of the class is to serve those students who truly plan on going to college and have scores in need of improvement, but who also have a strong attendance history so that limited class slots are not used on students who will not regularly attend. Once the field of students is narrowed, the ACT prep team then surveys those students to

see who actually wants to take part in the class, understanding they will get the best results from willing participants.

The ACT prep team monitors practice ACT scores for all students in the course, then makes results-oriented decisions for the course (Gill, 2010), including modifying the pace and content of the course. The team also determines the rotation schedule for students, which is typically on a 3-week cycle that coincides with Riverbend North's progress reporting period. The ACT prep team exudes a coaching approach to leadership, focusing on communication and goals (Northouse, 2016). Ultimately, with so much at stake for the students who wish to improve their ACT scores (Allensworth et al, 2008; Buchmann et al., 2010; Devine-Eller, 2012; Rubenstein, 2004), the goal of the team is to create a course that can do just that.

Implications for Research in the Practitioner Setting

Implications for Students and Families

The ACT is a momentous gateway to college acceptance (Black, 2005). Earning a high score has serious ramifications on admissions and potential scholarships ("ACT/SAT Test Preparation," 2016; Allensworth et al., 2008; Horn, 2005). Thus, students and families will seek a multitude of avenues to enhance the chances of college admission, including—when financial resources are available--paying for test preparation (Buchmann, Condrón, & Roscigno, 2010; Devine-Eller, 2012).

Families have demonstrated that they are more than willing to pay significant sums to ACT preparation companies (Adams, 2011; Dvorak, 2003; "Kaplan Test Prep," n.d.), but this is not fair or equitable (Bensimon, 2004). If the purpose of the ACT is to assess college readiness, then students need a highly effective and free ACT prep

program that can generate statistically significant positive results for students, regardless of socioeconomic status, race, or gender.

Implications for Educators

ACT averages are seen as an important measurement of student achievement (Allensworth et al., 2008). Low ACT averages reflect poorly on schools, thus amplifying the immense pressure to perform in an environment where student achievement is already linked to test scores (Akerlof & Kranton, 2002; Hanushek, 1986). And with even more students taking the ACT, the emphasis on schools to help students to prepare for it will only continue to grow (Allensworth et al., 2008). Riverbend, Missouri's ever-changing demographics compound the pressure, as sociological variables can significantly impact achievement (Akerlof & Kranton, 2002).

The ACT plays a significant role in the Riverbend School District's AYP (Bennett et al., 2012). Having an ACT prep course that generates statistically significant results could help ease the strain put on schools (and school leaders) by stringent state and national standards.

Implications for Subgroups

Part of alleviating the strain put on schools by state and national standards is closing the achievement gap. The black-white test score gap is not inevitable (Jencks & Phillips, 1998). "An institution's success (or failure) in reducing educational inequities—conditions that severely restrict opportunity and upward mobility for students of color—is rarely used as an explicit measure of its effectiveness" (Bensimon, 2004, p. 46). With that in mind, we must destroy barriers in the path to equity (Bensimon, 2004). It is essential to a school like Riverbend North, with a diverse student population, to offer

effective ACT prep during the day, because if ACT skills are only learned outside of school, minority students are likely to perform at a lower level (Allensworth et al., 2008).

Ultimately, closing the racial achievement gap goes beyond test scores: “If racial equality is America’s goal, reducing the black-white test score gap would probably do more to promote this goal than any other strategy that commands broad political support” (Jencks & Phillips, 1998, p. 4). Closing the racial test score gap is key to reducing racial inequality (Jencks & Phillips, 1998).

Test prep is more frequently used by high income families to increase their children's chances of college admission (Devine-Eller, 2012; Buchmann et al., 2010). Students who are economically disadvantaged are less likely to use test preparation (Buchmann et al., 2010). College-bound students should prepare for the ACT, but financial considerations must be made (Briggs, 2009).

Financial inequities, though, are not the only major concern when it comes to high-stakes testing (Haertel & Herman, 2005). High-stakes testing disproportionately also impacts minorities (Horn, 2005) and according to a study by McNeish, Radnunzel, and Sanchez (2015) female students scored 1.1 to 1.2 points lower on ACT mathematics and science than their male counterparts. African American and Hispanic students scored lower than white students across all tests by 1.7 to 2.3 points and 1.1 to 2.0 points, respectively (McNeish et al., 2015). An effective and efficient ACT prep course open (and free) to students of all ethnicities and genders could play a major role in closing these gaps.

Summary

Riverbend North High School, an instrumental part of the Riverbend School District, has grown dramatically since its doors opened in 1917 (“Riverbend Dedicated,” 1917), and its demographics have shifted alongside the changing demographics of Riverbend, Missouri itself, compounding the pressure to perform on standardized tests (Akerlof & Kranton, 2002; Allensworth et al., 2008; Bennett et al., 2012; Devine-Eller, 2012; Hanushek, 1986).

In response to this pressure, Riverbend North adapted the Focus on Learning Group’s model (Bennett et al., 2012) for its own ACT prep course. Riverbend North was able to make this happen through its organizational structure and leadership structure, as the school’s SIP team was empowered by the administration to create the class, even at the expense of valuable school inputs in the form of a multi-teacher approach (Akerlof & Kranton, 2002; Hanushek, 1986; Qiu & Wu, 2011).

The impact of the class could be significant. If the class yields statistically significant results, it could alleviate the pressure for college-bound students who wish to attain a high ACT score (Allensworth et al, 2008; Buchmann et al., 2010; Devine-Eller, 2012; Rubenstein, 2004). At the same time, the class could relieve pressure for educators, as higher ACT scores could improve the perception of student achievement at Riverbend North (Akerlof & Kranton, 2002; Hanushek, 1986). Finally, an effective and efficient ACT prep course could make in closing the school’s socioeconomic, gender, and race-related achievement gaps (Allensworth et al., 2008; Buchmann et al., 2010; Darling-Hammond, 2000; Devine-Eller, 2012).

SECTION THREE

SCHOLARLY REVIEW FOR THE STUDY

History and Purpose of the ACT

College readiness is the cognitive skill level students need to succeed in general education courses at post-secondary institutions (Conley, 2008, p. 24). The American College Testing Program (ACT) was founded in 1959 to gauge that readiness ("ACT/SAT Test Preparation," 2016; Conrad-Curry, 2011; Dvorak, 2003). The ACT measures college readiness by focusing on key skills deemed necessary by college professors (Allensworth, Correa, & Ponisciak, 2008). The Scholastic Aptitude Test (SAT) also measures college readiness, but while there has been a recent decline in SAT testing, approximately 1.9 million students in the class of 2015 took the ACT, which is a 19 percent increase from 2011 (Gewertz, 2016). It is no wonder, then, that such an emphasis has been placed on preparing for the ACT.

Since its inception, taking the ACT has evolved into milestone moment for college-bound students (Black, 2005). The ACT, now taken by almost two million students every year, consists of four subtests: English, mathematics, reading, and science, along with an optional writing test (McNeish, Radunzel, & Sanchez, 2015). The importance of earning a high score carries significant weight for individual students because ACT scores have significant, real-world implications and are used to make critical decisions about college admissions and potential scholarships ("ACT/SAT Test Preparation," 2016; Allensworth et al., 2008; Horn, 2005). That said, individual students are not the only ones focused on raising ACT Scores.

For public high schools and their districts, the stakes are just as high, as ACT composite averages are seen as an important measurement of student achievement. Due

to the pressure put on schools to raise ACT scores, there has been a renewed focus on test-taking skills and practicing sample test questions, resulting in large amounts of class time being devoted to ACT preparation (Allensworth et al., 2008). Low ACT averages can reflect poorly on schools, administrators, and teachers, and thus the pressure to perform is always present. And now, with even more students considering college than ever before, the significance of the ACT—and the emphasis to prepare for it—will only continue to grow (Allensworth et al., 2008).

ACT Preparation

Preparation methods.

Due to the rise of high-stakes testing (Haertel & Herman, 2005), the effectiveness of test preparation initiatives is often questioned, both private and school-sponsored (Rubenstein, 2004). There are different methods and modes of ACT preparation, and their effectiveness is the subject of much debate. In many cases, test preparation is primarily composed of sample problems and the practice of specific test strategies (Allensworth et al., 2008).

This form of preparation, known as test familiarization, involves the completion of sample tests in order to help test-takers get used to the mechanics and format of the ACT while emphasizing skills over content (Arendasy et al., 2016; ("ACT/SAT Test Preparation," 2016). The process of test familiarization can take place in a formal setting, such as classroom, or can be done independently by motivated students, as many students are self-motivated to prepare for the ACT because of its high stakes (Allensworth et al., 2008; Haertel & Herman, 2005).

As opposed to test familiarization, which can be done independently, the process of test coaching consists of more formal, instructor-driven prep (Arendasy et al., 2016; Briggs, 2009). There is a large variety of test preparation companies that are eager to coach college-bound students, but it should come as no surprise that this service comes at a cost (Kohn, 2000).

In fact, test coaching is known for being incredibly expensive (Adams, 2011; Dvorak, 2003; Kohn, 2000). Ultimately, whether it comes in the form of test familiarization, coaching, or even school-embedded ACT prep, 25% of all college-bound high school students utilize some sort of test preparation resources (Devine-Eller, 2012).

Expense.

Students and families will naturally seek opportunities to enhance the chances of college admission, including paying for test preparation (Buchmann, Condrón, & Roscigno, 2010; Devine-Eller, 2012). Even though there are a growing number of free web-based test prep programs (Adams, 2011), families are willing to pay top dollar to ACT preparation companies, especially when some, like Kaplan, make guarantees about gains in test scores (Adams, 2011; Dvorak, 2003; "Kaplan Test Prep," n.d.). Kaplan's online courses start at \$899, but personal coaching from Kaplan experts can cost as much as \$2599 ("Kaplan Test Prep," n.d.).

The Princeton Review also offers a guarantee on better ACT scores and a variety of online resources ("Princeton Review," n.d.), and it is just one company in a list of many that promises that ever-so-coveted boost in scores needed for students to step to the front of the college admission line. While test preparation is a multibillion dollar industry (Briggs, 2009), there is more than just money being invested into ACT prep:

families and students also spend the valuable commodity of time—time that could be spent enhancing other skills that might be valuable for college admission (Briggs, 2009). Ultimately, college-bound students should prepare before taking the ACT, but the time, effort, money devoted to test preparation can take a toll (Kohn, 2000), and financial and opportunity costs must be weighed (Briggs, 2009).

ACT Prep in the Riverbend School District.

The Riverbend School District (RSD) in Riverbend, Missouri, serves 11,336 total students (“School Report Card,” n.d.) in a town with a population of 76,472 (“Census Bureau QuickFacts,” 2016). The RSD has also felt the pressure to improve ACT scores, but attempts to do so have been inconsistent. An ACT prep course exists in the RSD curriculum, but it has traditionally relied only on test familiarization practices without much guided instruction, as it is difficult to find one teacher who can effectively teach English, math, science, and reading skills.

ACT prep at Riverbend North High School.

In 2007, Riverbend North High School, in the Riverbend School District, decided to break away from the traditional RSD ACT prep course. Knowing one teacher could not effectively teach skills crucial to success on all subtests of the ACT, three teachers were selected to teach one ACT prep class: a math teacher, a science teacher, and a teacher with a background in both English and reading. Students enrolled in the three-teacher course would complete subject-intensive three-week rotations with each teacher over the course of the semester, with the last three-week rotation designated for the subject in which they struggled most.

While this has elevated the course beyond basic test familiarization, it is difficult to maintain a schedule in which three teachers are devoted to one class, especially when viewed through the framework of the economics of schooling (Akerlof & Kranton, 2002; Hanushek, 1986). Studies have viewed school inputs in terms of expenditures, teacher-student ratios, and teacher quality (Akerlof & Kranton, 2002), while outcomes have been measured as test scores (Akerlof & Kranton, 2002). Essentially, resources can change educational returns (Akerlof & Kranton, 2002; Horn, 2005). In the case of Riverbend North High School, the resources are the three teachers being utilized for one class, but will that input generate a significant output in terms of ACT achievement?

While raising the inputs (in this case, ACT prep teachers at Riverbend North High School), should raise the outputs, having three teachers teach a class of approximately 25-30 students a semester does not make good financial sense and ultimately might not be worth it. If Riverbend North's ACT prep course generated consistent, statistically significant results, the expenditure would be validated; however, it is not currently known if the output of the program is worth the input (Qiu & Wu, 2011). This problem is only magnified by how much is at stake when assessing college readiness.

Problem of Practice

ACT Preparation in the Core Classroom

Because of the emphasis put on ACT scores, preparing for the test has become a controversial topic. ACT prep programs can be expensive and time consuming, and the results they yield are often inconsistent (Black, 2005; Moss, Chippendale, Mershon, & Carney, 2012). In fact, some argue that test prep is actually backfiring, causing ACT scores to drop (Samuels, 2008). The purpose of the ACT is to assess college readiness,

and college-bound students need a highly effective ACT prep program that reviews key skills, and when necessary, even covers holes in a school's curriculum.

Unfortunately, research shows there are many adverse effects of some types of test prep. For example, a focus on test-taking strategies leads to shallow content coverage in high school classes because time devoted to prepping for the ACT interferes with meaningful learning experiences (Allensworth et al., 2008). With the shadow of raising test scores looming over them, teachers are inclined to reduce time devoted to regular instruction in favor of content-free test preparation (Phelps, 2016).

This ultimately hurts students, but it is happening because the test is not aligned to their school curriculum (Rubenstein, 2004). Ultimately, schools believe students need the practice, but since the ACT does not match a traditional curriculum, it is difficult to integrate specific ACT prep skills directly into core course instruction without sacrificing other content (Allensworth et al., 2008).

Without the pressures of standardized testing, schools could focus on teaching creativity across all disciplines, as they would not be bound by rigid time constraints brought about by testing deadlines (Jones, 2010). Schools in which standardized test prep is not emphasized in core classes feel as if they can teach the process of failure, which is a crucial component of learning (Jones, 2010). So why effective test prep may be necessary, this only supports the notion that it should be self-contained and not forced into other classes.

Access and Equity Issues

High-income families have more access to effective test prep, which gives their children an advantage in the college admissions process; this raises serious questions

about the equity of higher education access (Buchmann et al., 2010; Devine-Eller, 2012; Kohn, 2000; Park & Becks, 2015). This expensive supplemental training outside the formal school day is called “shadow education” (Buchmann et al., 2010, p. 435), and according to Baker and LeTendre (as cited in Buchmann et al., 2010), families are using more forms of it to help their children succeed at all costs. Students who do not have the financial means for such training, put simply, are left behind (Kohn, 2000).

Financial inequities are not the only concern when it comes to high-stakes testing (Haertel & Herman, 2005). According to a study by McNeish, Radnunzel, and Sanchez (2015) female students tended to score 1.1 to 1.2 points lower on ACT mathematics and science than their male counterparts. African American and Hispanic students scored lower than white students across all tests by 1.7 to 2.3 points and 1.1 to 2.0 points, respectively (McNeish et al., 2015).

A 2010 study by Deil-Amen and Tevis (as cited in Park & Becks, 2015) demonstrated that African American and Latino students from poverty had little understanding of the ACT, despite their plans to go to college, because their schools provided little information on preparation and test strategies. According to Amy Liu (2011), "a college access consequence is that students from low socioeconomic backgrounds, who are not able to afford test preparation and multiple test administrations, are at greater risk of being further disadvantaged in the admission process" (p. 11).

Based on the fact that in-class ACT prep sidelines other important forms of learning, and because there are clear racial, socioeconomic, and gender-based inequities when it comes to standardized testing (Darling-Hammond, 2000), it is important to have a form of ACT prep that grants all high school students equal access and is also proven to

be effective. The preparation should be outside of core classrooms as to not water down vital content (Allensworth et al., 2008; Phelps, 2016). But it should also be free and embedded somewhere in the school day so it does not fall into the realm of “shadow education” (Buchmann et al., 2010, p. 435). Most importantly, it must be something that can be proven to demonstrate statistically significant differences in achievement for participants and non-participants.

Purpose of Study

According to research by Anastasi, Messick, and Powers (as cited in Arendasy et al., 2016), there is rising interest in the impact of preparation on test scores. There are many variables that impact student success, including teacher subject knowledge (Darling-Hammond, 2000), along with motivation and personal study habits; regardless, it is necessary to have special test preparation outside of core classes that focuses on test strategies in order to be successful (Bicak, 2013).

Some research indicates that test preparation generates a noticeable, albeit small, difference on standardized test scores (Briggs, 2009). It is important to remember that the practical significance of test prep can be powerful. Even a small gain in scores can be important to college admissions officers, especially if the increase, however small, pushes a student past a desired point threshold (Liu, 2011). Even ACT Inc. itself encourages students to prepare for the ACT through the process of test familiarization, via content review, item practice, and test format orientation activities (Arendasy et al., 2016; Briggs, 2009). Other studies focus on more formal, instructor-driven methods of test preparation, such as coaching (Arendasy et al., 2016). While test prep becomes more formal once it become coaching (Briggs, 2009), there is mixed evidence about the impact of coaching

on ACT scores (Briggs, 2009). In fact, to say there is conflicting and contradictory research about virtually all forms of ACT preparation and their effectiveness is a supreme understatement.

The purpose of this study, then, is to determine whether Riverbend North's three-teacher model generates statistically significant differences in the ACT scores for participants and non-participants. It is also the purpose of this study to determine whether Riverbend North's ACT prep course serves underrepresented students at Riverbend North, helping to close multiple ethnic and socioeconomic achievement gaps. Ultimately, it is also the purpose of this study to determine whether the significant inputs to this program are made worth it by the outputs (Qiu & Wu, 2011).

Rationale and Significance

What, then, does a highly effective ACT prep program look like, and how is its value measured? There is a gap in information about what makes an effective program, which is largely because schools are not even attempting to measure the success of their programs. With so many varieties of test prep available, including expensive tutoring and a variety of test prep centers (Hua, 2010), it is important to identify the most efficient and effective mode of ACT prep available.

Conceptual Framework

Economics of Schooling

The rising costs and quality of school inputs are unmatched to educational outputs, which can be measured as standardized test scores (Akerlof & Kranton, 2002; Hanushek, 1986; Qiu & Wu, 2011). Students' sociological variables impact achievement, and resources, viewed in terms of school expenditures, teacher-student

ratios, and teacher quality and experience, can affect education outputs (Akerlof & Kranton, 2002; Darling-Hammond, 2000; Horn, 2005).

Input/Output Model

The input/output model, when applied to education, considers school expenditures, teacher-student ratios, and teacher quality as inputs (Akerlof & Kranton, 2002). In theory, an environment with few educational inputs would lead to low educational returns, or in this case, low ACT scores. In turn, an environment rich in effective educational inputs should generate high returns, or high ACT scores. This model fits the study at Riverbend North High School, in that it will measure if the three-teacher model, which uses significant resources/inputs, yields statistically significant outputs in the form of improved ACT scores.

Argument/Thesis

The economics of schooling is a conceptual framework that “views the schooling process as an input-output model, where the inputs are students, teachers, and school resources and the outputs are student learning achievements” (Qiu & Wu, 2011, p. 65). Using this overarching framework, it can be shown through the literature that most schools, in terms of ACT prep, are failing to consider this input-output model. Schools continue to offer ACT prep because it is in demand from students and their families, and because schools are held accountable for scores, but they fail to analyze results; thus, many schools are spinning their wheels with wasteful programs that do not improve scores. Because of this, most ACT test prep programs have a minimal positive effect on ACT scores (Adams, 2011). Program inputs and not being weighed against outputs, but once the input-output model is put into effect, it is possible to see which ACT programs are functioning within the economics of schools framework.

Summary of Literature

Current Literature

Effectiveness.

As stated previously, the effectiveness of test prep is rigorously debated in the current literature. Much of the research debates whether or not any form of test prep is effective; some research claims ACT prep works, but only in some forms. For example, Allensworth, Correa, & Ponisciak (2009) claim that learning test-taking skills is not likely to produce significant improvement in ACT scores, but there are some limited benefits to utilizing timed tests to prepare for the ACT, especially when it comes to the English section. Ultimately, though, they believe the amount of time spent on time taking practice tests is counterproductive, as it might not be worth the minimal impact on scores (Allensworth et al., 2008; Briggs, 2009).

Some research indicates that a strict, laser focus on strategies will yield higher test performance (Bicak, 2013). A 1986 study by Dolly and Williams (as cited in Bicak, 2013) indicates that response strategies may help students transfer learning to testing, which can be especially helpful for low-achieving students. Likewise, a 2001 study by Samson (as cited in Bicak, 2013), showed that high school students trained for five weeks on test-taking strategies had higher academic success. Briggs (2009) agrees that studying strategies, along with test familiarization techniques, generates a small-but-positive difference in scores (Briggs, 2009).

A 2013 study by Dale (2013), suggests there was not a statistically significant difference in composite scores for rural Tennessee high school students who received ACT preparation and those who did not. However, at least one study shows the contrary: students who received ACT preparation from a similar rural school (ironically, also in

Tennessee) showed growth, especially in math (Parrott, 2012). And despite studies showing the disadvantages of minorities in the world of standardized testing, a 2016 study by Wells, Wolniak, Engberg, and Manly revealed that African American students attending a suburban high school in the Midwest increased their ACT scores an average of two points, which is considered a significant impact, after taking an ACT preparation course.

Synthesis of Current Literature

The literature, though certainly conflicting, shows a pattern. It appears to be a split right down the middle, with one camp suggesting that ACT preparation does not work, and the other camp, of course, suggesting it does. However, it is more complicated than that. Even the “does not work” camp notes that some forms of prep can generate small results, but this is not insignificant. When it comes to a test on which a one point increase can mean the difference between college admission or rejection—or even a scholarship—it is important to explore methods of ACT prep, even if the gains they yield are considered small. As previously stated, even a small gain in scores can be of huge importance to a college admissions office, especially if the increase pushes a student past a desired point range (Liu, 2011).

A synthesis of the literature also reveals a large and important gap in the study of whether or not ACT prep can be effective. While the majority of the literature focuses on what works and what does not work, there is little consideration of the role of the teacher, which, when viewed through the economics of schooling framework and the input/output model, is the most significant input to the ACT preparation equation.

Literature Gap

When researching ACT scores, one thing stands clear: conflicting research places differing levels of value on the effectiveness of ACT prep, and a great deal of the same research also explores achievement gaps. There are studies on gender gaps (Conrad-Curry, 2011) and a host of studies on socioeconomic gaps. So while some studies argue whether test prep works, specifically for underrepresented populations, few—if any—focus on a specific testing program that would benefit all students and address the achievement gaps discussed in so much of the available literature. A study by Moss, Chippendale, Mershon, and Carney (2012) investigates an outside test prep program that was brought into a Midwestern high school, but no literature explores the effectiveness of an ACT prep class embedded directly into a school's schedule that is taught by multiple, highly trained teachers, much like the model at Riverbend North High School that this study aims to explore.

Summary

The conceptual pillars of this study are the ACT, access and equity, and teacher quality. Each pillar represents a variable that dramatically impacts the effectiveness of ACT preparatory programs.

The ACT

There is a high level of importance placed on the ACT (Black, 2005; Dvorak, 2003; Syverson, 2007), brought about by the emphasis on earning a high score (Allensworth, Correa, & Ponisciak, 2008) and the fact that it is seen as an important measurement of student achievement and efficient curriculum implementation (Akerlof & Kranton, 2002).

A high ACT score plays a major factor in college admissions and scholarship rewards for students and their families (Allensworth et al., 2008). Thus, many see test preparation as essential; however, ACT prep programs often consume time that could have been spent learning other materials that would be beneficial to improving a student's chances of college admission (Briggs, 2009). Time and money must be devoted to most ACT preparation programs (Kohn, 2000), which can be problematic, considering they don't often yield consistent results (Black, 2005; Moss, Chippendale, Mershon & Carney, 2012).

Access and Equity

Expensive test prep alone creates an equity issue (Devine-Eller, 2012; Horn, 2005), but the issue is compounded by the fact that standardized tests can be biased (Kohn, 2000). Economically disadvantaged students are less likely to have access to test preparation programs (Buchmann et al., 2010; Kohn, 2000). This, in turn, creates gaps and represents inequity, as socioeconomic status and race are linked to student outcomes (Darling-Hammond, 2000).

Educators often become used to seeing minority groups underperform, thus normalizing failure (Noguera, 2008). But racial test score gaps are not inevitable (Jencks & Phillips, 1998) if barriers in the path to equity are eliminated (Bensimon, 2004).

Teacher Quality

Viewed in terms of school expenditures, teacher-student ratios, and teacher quality and experience, can affect education outputs (Akerlof & Kranton, 2002; Darling-Hammond, 2000; Horn, 2005). The input/output model, when applied to education, considers teacher quality as an important input (Akerlof & Kranton, 2002). In theory, an

environment with few educational inputs would lead to low educational returns, or in this case, low ACT scores.

There are many variables that impact student success, including teacher subject knowledge (Darling-Hammond, 2000); however, much of the literature on ACT prep programs gives little consideration of the role of the teacher, which could be the most significant input to the ACT preparation equation.

Figure 3. The three pillars of this study are ACT & standardized testing, access and equity, and teacher quality.

SECTION FOUR

CONTRIBUTION TO PRACTICE

Plan for Dissemination of Practitioner Contribution

Who: Attendees of annual ACT Conference, Missouri or Kansas

When: 2020 annual conference, proposal submitted by fall 2019

How: Slideshow presentation at annual ACT conference (Missouri or Kansas)

The target for dissemination for practitioner contribution is a PowerPoint presentation given to educators seeking information about ACT prep programs at the annual ACT Conference in either Missouri or Kansas. The presentation will explain the setup and rationale behind Riverbend North's ACT prep program, along with research results. Educators in attendance will also receive an electronic copy of the presentation.

Type of Document(s)

A slideshow presentation with supporting data will be presented to the attendees at the annual ACT conference in 2019 (Missouri or Kansas). The presentation will examine the findings of this study, focusing on the three-teacher ACT prep model and its effect, if any, on student scores.

Rationale for this Contribution Type

The annual statewide ACT conference reaches administrators and teachers at school districts all over the state. Leaders attend this conference to learn about new strategies that can have a positive impact on the students in their buildings and school districts. The findings of this study could help steer districts and buildings toward installing an effective means of ACT prep.

Outline of Proposed Contents

Problem statement:
Purpose of Research:
Conceptual Framework:
Research Questions:
Context/Background:
Research Design:
Design Controls:
Participants:
Findings: Statistical Significance
Collective Findings: Statistical Significance
Collective Findings: Practical Significance
Strengths of Study:
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References:

Presentation

A QUANTITATIVE PROGRAM EVALUATION OF THE IMPACT OF A THREE-TEACHER ACT PREPARATORY MODEL AT A MIDWESTERN SUBURBAN HIGH SCHOOL

by Christopher Early

University of Missouri Educational Leadership and Policy Analysis
Program

Dr. Tim Wall, Dissertation Supervisor

Problem Statement

- There is little research on whether an ACT prep class taught by multiple teachers with experience and certification in subjects matching the subtests of the ACT can make a bigger difference than a traditional one-teacher ACT prep model (Darling-Hammond, 2000).
- Expensive test prep creates equity issues when considering college admissions (Devine-Eller, 2012; Horn, 2005).
- Standardized tests can be biased by race, class, and gender (Kohn, 2000).
- Economically disadvantaged students are less likely to access test preparation (Buchmann et al., 2010; Kohn, 2000).
- ACT prep can be expensive and time consuming and yields inconsistent results (Black, 2005; Moss, Chippendale, Mershon, & Carney, 2012).

There is a significant gap in the research when it comes to addressing the role of teacher impact on improving ACT results; specifically, there is little to no research on whether or not multiple teachers with experience and certification in content backgrounds that match the subtests of the ACT can make a bigger difference than a traditional one-teacher model (Darling-Hammond, 2000).

The rise of expensive test prep and coaching companies creates an equity issue when considering college admissions (Devine-Eller, 2012; Horn, 2005). Standardized tests can be biased (Kohn, 2000), and students who are economically disadvantaged are less likely to use test preparation as those from affluent families (Buchmann et al., 2010; Kohn, 2000).

ACT prep programs can be expensive and time consuming, and the results they yield are often inconsistent (Black, 2005; Moss, Chippendale, Mershon, & Carney, 2012).

Problem Statement

- Focusing on test strategies in core classrooms interferes with meaningful learning (Allensworth et al., 2008; Phelps, 2016).
- Test prep should be free and available in the school day so it does not fall into the realm of “shadow education” (Buchmann et al., 2010, p. 435).
- Successful test prep must be something that demonstrates statistically significant differences in achievement for participants and non-participants.

A focus on test-taking strategies leads to shallow content coverage in high school classes because time devoted to prepping for the ACT interferes with meaningful learning experiences (Allensworth et al., 2008).

The preparation should be outside of core classrooms as to not water down vital content (Allensworth et al., 2008; Phelps, 2016). But it should also be free and embedded somewhere in the school day so it does not fall into the realm of “shadow education” (Buchmann et al., 2010, p. 435). Most importantly, it must be something that can be proven to demonstrate statistically significant differences in achievement for participants and non-participants.

Purpose of Research

- The purpose of this study was to determine whether Riverbend North's three-teacher ACT prep model generates statistically significant differences in the ACT scores for its participants.
- It was also the purpose of this study to determine whether Riverbend North's ACT prep course serves underrepresented students at Riverbend North, helping to close multiple ethnic and socioeconomic achievement gaps.
- Ultimately, it was the purpose of this study to determine whether the significant inputs to this program were made worth it by the outputs (Qiu & Wu, 2011).

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Ultimately, it is also the purpose of this study to determine whether the significant inputs to this program are made worth it by the outputs (Qiu & Wu, 2011).

Conceptual Framework

- The economics of schooling is a conceptual framework that “views the schooling process as an input-output model, where the inputs are students, teachers, and school resources and the outputs are student learning achievements” (Qiu & Wu, 2011, p. 65).
- Using this overarching framework, it can be shown through the literature that most schools, in terms of ACT prep, are failing to consider this input-output model.

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Using this overarching framework, it can be shown through the literature that most schools, in terms of ACT prep, are failing to consider this input-output model.

In essence, many schools offer ACT prep because it is in demand, but they fail to measure the outputs (Akerlof & Kranton, 2002; Hanushek, 1986; Qiu & Wu, 2011); thus, many schools continue to run ACT prep programs that are ineffective. Because of this, most test prep programs have a minimal positive effect on ACT scores (Adams, 2011).

Resources are not being properly utilized, and for that reason, the outputs—student scores—are not reaching their potential. Once the input-output model is put into effect, it is possible to see which ACT programs are getting the most bang for their buck. In this case, the educational outputs are measured as standardized test scores (Akerlof & Kranton, 2002; Hanushek, 1986; Qiu & Wu, 2011).

Research Questions

Central Research Question:

- Does the three-teacher model generate a significant statistical difference in ACT scores between students who have taken part in Riverbend North High School's ACT prep course and those who did not?

Quantitative research questions explore the relationships between two variables, and the questions lend themselves to empirical research (Creswell, 2014; Hoy & Adams, 2016). Ultimately, these questions are used to shape the focus and purpose of a quantitative study (Creswell, 2014).

The overarching research question guiding this study is as follows:

Does the three-teacher model generate a significant statistical difference in ACT scores between students who have taken part in Riverbend North High School's ACT prep course and those who did not?

Research Questions

Sub-questions:

- Does the three-teacher model generate a significant statistical difference in ACT scores between African American and Hispanic students who have taken part in Riverbend North High School's ACT prep course and those who did not?
- Does the three-teacher model generate a significant statistical difference in ACT scores between students on free and reduced lunch who have taken part in Riverbend North High School's ACT prep course and those who did not?
- Does the three-teacher model generate a significant statistical difference in ACT scores between females who have taken part in Riverbend North High School's ACT prep course and those who did not?

Quantitative research questions explore the relationships between two variables, and the questions lend themselves to empirical research (Creswell, 2014; Hoy & Adams, 2016). Ultimately, these questions are used to shape the focus and purpose of a quantitative study (Creswell, 2014).

The research sub-questions guiding this study are as follows:

Does the three-teacher model generate a significant statistical difference in ACT scores between African American and Hispanic students who have taken part in Riverbend North High School's ACT prep course and those who did not?

Does the three-teacher model generate a significant statistical difference in ACT scores between students on free and reduced lunch who have taken part in Riverbend North High School's ACT prep course and those who did not?

Does the three-teacher model generate a significant statistical difference in ACT scores between females who have taken part in Riverbend North High School's ACT prep course and those who did not?

Context: Riverbend North vs. Missouri ACT Scores, 2016

Overall, the Riverbend School District's ACT scores dropped after the statewide ACT brought census testing to Missouri ("School Report Card," n.d.), which only emphasizes the need for an effective ACT prep course at the school.

Context: Riverbend North vs. Missouri ACT Scores, 2017

Overall, the Riverbend School District's ACT scores dropped after the statewide ACT brought census testing to Missouri ("School Report Card," n.d.), which only emphasizes the need for an effective ACT prep course at the school.

Context: Riverbend North vs. Missouri ACT Scores, 2018

Overall, the Riverbend School District's ACT scores dropped after the statewide ACT brought census testing to Missouri ("School Report Card," n.d.), which only emphasizes the need for an effective ACT prep course at the school.

Research Design: Participants

- This study examined senior ACT scores for students who have participated in Riverbend North High School's ACT prep program versus those who did not participate in the ACT preparation class.
- In 2015, the state of Missouri began census testing all high school juniors with the ACT (Robertson, 2015).
- This data was used as a baseline (Dianis et al., 2015), contrasted against follow-up results for all seniors at Riverbend North who took the ACT again their senior year.

In 2015, the state of Missouri began census testing all high school juniors with the ACT (Robertson, 2015); thus, this data can be used as a baseline (Dianis et al., 2015), contrasted against follow-up results for all seniors at Riverbend North who took the ACT again their senior year.

Research Design: Data Collection

- Using archival data, including schedules and ACT scores retrieved from the Riverbend School District's data management program, a list of students who took the ACT both their junior year and their senior year was created.
- The key variable was whether the student took ACT prep between their baseline score and their second score.
- Variables such as gender, ethnicity, and free and reduced lunch status were recorded in an effort to assess whether or not achievement gaps were addressed by the ACT prep program.
- Results of previous standardized test scores, such as End of Course Exam scores, were recorded in the data set and analyzed to remove statistical outliers from the study (Field, 2013).

Using archival data, including class schedules and ACT scores that can be retrieved from Power School, the Riverbend School District's data management program, a list of students who took the ACT both their junior year and their senior year will be created.

The key variable in this part of the study will be whether the student enrolled in ACT Prep between their baseline score and their second score. Variables such as gender, ethnicity, and free and reduced lunch status will also be recorded in an effort to assess whether or not achievement gaps are being addressed by the ACT prep program.

Also, the results of previous standardized test scores, such as End of Course Exam scores, which are taken when a student has received instruction on the Missouri Learning Standards for an assessment ("End-of-Course"), will be recorded in the data set to ensure that students of similar ability are being compared and to help remove statistical outliers from the study (Field, 2013).

Research Design: Data Analysis

- This study relied on archival data that yielded information necessary to answer whether there is significant statistical difference in ACT scores for students who have taken part in Riverbend North High School's ACT prep course.
- The archival data also shed light on whether Riverbend North's ACT prep course helped serve underrepresented populations at Riverbend North by closing ethnic, gender, and socioeconomic achievement gaps ("Achievement Gap," 2013).

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The archival data also shed light on whether Riverbend North's ACT prep course helps serve underrepresented populations at Riverbend North by closing ethnic, gender, and socioeconomic achievement gaps ("Achievement Gap," 2013).

Research Design: Design Controls

- The study was experimental, as participants were not randomly assigned (Creswell, 2014). In such studies, validity can be challenged by both internal and external threats, and design controls must be put in place to minimize these threats (Creswell, 2014).
- To ensure validity, the researcher utilized ACT data from the graduating classes of 2016, 2017, and 2018 in an effort to increase the sample size (Creswell, 2014).
- No two ACT exams are identical, as the ACT is always evolving (“ACT Technical Manual Supplement,” 2016). The researcher eliminated instrumentation issues (Creswell, 2014) by ensuring that an ACT—not a practice exam—was utilized as the posttest measure, given under the same timing and security guidelines used during the pretest.

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To ensure validity, the researcher utilized ACT data from the graduating classes of 2016, 2017, and 2018 in an effort to increase the sample size (Creswell, 2014). The researcher also eliminated outliers (Creswell, 2014) in the form of extreme ACT scores and other background information, such as End-of-Course Exam scores in biology, English II, and government.

Finally, while no two ACT exams are identical, as the ACT is always evolving (“ACT Technical Manual Supplement,” 2016), the researcher can eliminate instrumentation issues (Creswell, 2014) by ensuring that an actual ACT—not a practice exam—was utilized as the posttest measure, given under the same timing and security guidelines used during the pretest and set forth by ACT, Inc.

Findings

- The following tables were generated using an analysis of covariance (ANCOVA) in IBM SPSS Statistics.
- When an ANCOVA analysis is conducted, it examines the relationship between the outcome (dependent variable) and the covariate (Field, 2013).

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Findings: ACT English

ANCOVA Results for ACT English Subtest Achievement by ACT Prep Participants

ACT Prep Participants	Mean	F	Sig
All	20.45 ^a	.123	.726
Female	20.45 ^a	.133	.716
Minority	20.36 ^a	.372	.543
Free and Reduced Lunch	20.34 ^a	.437	.510

Note. Covariates appearing in the model are evaluated at the following values: Statewide English = 20.15.

ANCOVA examines the relationship between the outcome (dependent variable) and the covariate (Field, 2013).

Findings: ACT Math

ANCOVA Results for ACT Math Subtest Achievement by ACT Prep Participants

ACT Prep Participants	Mean	F	Sig
All	19.81 ^a	.492	.484
Female	20.01 ^a	.002	.963
Minority	20.23 ^a	.780	.379
Free and Reduced Lunch	19.62 ^a	2.148	.145

Note. Covariates appearing in the model are evaluated at the following values: Statewide Math = 19.86.

ANCOVA examines the relationship between the outcome (dependent variable) and the covariate (Field, 2013).

Findings: ACT Reading

ANCOVA Results for ACT Reading Subtest Achievement by ACT Prep Participants

ACT Prep Participants	Mean	F	Sig
All	21.80 ^a	5.523	.020*
Female	20.73 ^a	.170	.681
Minority	20.78 ^a	.063	.802
Free and Reduced Lunch	20.45 ^a	1.195	.276

Note. Covariates appearing in the model are evaluated at the following values: Statewide Reading = 19.08.

** = Statistically significant finding at the 0.05 level.*

ANCOVA examines the relationship between the outcome (dependent variable) and the covariate (Field, 2013).

Findings: ACT Science

ANCOVA Results for ACT Science Subtest Achievement by ACT Prep Participants

ACT Prep Participants	Mean	F	Sig
All	20.21 ^a	2.932	.089
Female	20.67 ^a	.068	.795
Minority	20.33 ^a	1.837	.178
Free and Reduced Lunch	20.74 ^a	.002	.965

Note. Covariates appearing in the model are evaluated at the following values: Statewide Science = 20.43.

ANCOVA examines the relationship between the outcome (dependent variable) and the covariate (Field, 2013).

Findings: ACT Composite

ANCOVA Results for ACT Composite Achievement by ACT Prep Participants

ACT Prep Participants	Mean	F	Sig
All	20.81 ^a	.124	.047*
Female	20.72 ^a	.188	.072
Minority	20.75 ^a	.036	.014*
Free and Reduced Lunch	20.57 ^a	2.837	1.081

Note. Covariates appearing in the model are evaluated at the following values: Statewide Composite = 19.99.

** = Statistically significant finding at the 0.05 level.*

ANCOVA examines the relationship between the outcome (dependent variable) and the covariate (Field, 2013).

Collective Findings Summary: Statistical Significance

- Research Question: Does the three-teacher model generate a significant statistical difference in ACT scores between students who have taken part in Riverbend North High School's ACT prep course and those who did not?
- Findings: The Riverbend North High School's three-teacher ACT prep course generated a statistically significant difference in scores for its overall participants on the reading subtest, but not for minority students, free and reduced lunch students, and females who participated in the course when holding constant for the covariate, which was the statewide ACT (baseline) score.

Collective Findings Summary: Statistical Significance

- Findings: The Riverbend North High School's three-teacher ACT prep course generated a statistically significant difference in composite scores for its overall participants and minority students, but not for females and free and reduced lunch students, and females who participated in the course when holding constant for the covariate, which was the statewide ACT (baseline) score.
- Findings: The Riverbend North High School's three-teacher ACT prep course did not generate a statistically significant difference in math, English, or science scores for its overall participants, minority students, females, or free and reduced lunch students

Collective Findings: Average Pre-Test Scores

Averages for all Students who Took Pre and Post-Tests, 2016-2018

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Averages for all Students who Took Pre and Post-Tests, 2016-2018

Collective Findings: Practical Significance

- Whereas statistical significance is concerned with whether a research result is due to chance or sampling variability, practical significance is concerned with whether the result is useful in the real world (Kirk, 1996).
- Even a small gain in scores can be important to college admissions officers, especially if the increase, however small, pushes a student past a desired point threshold (Liu, 2011).
- Thus, in terms of the ACT, a practically significant difference could be considered an increase or decrease of at least one scale score point, as one point can make the difference in college acceptance or scholarship rewards.

Whereas statistical significance is concerned with whether a research result is due to chance or sampling variability, practical significance is concerned with whether the result is useful in the real world (Kirk, 1996).

It is important to remember that the practical significance of test prep can be powerful. Even a small gain in scores can be important to college admissions officers, especially if the increase, however small, pushes a student past a desired point threshold (Liu, 2011).

Thus, in terms of the ACT, a practically significant difference could be considered an increase or decrease of at least one scale score point.

Collective Findings: Practical Significance

- Participants in Riverbend North's three-teacher ACT prep model had lower average post-test subtest and composite scores than nonparticipants.
- However, participants in Riverbend North's three-teacher ACT prep model had lower average pre-test subtest and composite scores than nonparticipants, so it is realistic to assume the post-test scores of participants would not exceed those of nonparticipants.
- For that reason, it is more important to look at average score growth to measure practical significance.

Collective Findings: Average Score Growth

Collective Findings: Score Growth

	English ACT Points	Math ACT Points	Reading ACT Points	Science ACT Points	Composite ACT Points
Participant Growth	0.63	0.31	2.59	0.35	0.96
Nonparticipant Growth	0.53	0.14	1.05	0.93	0.70
Growth Difference for Participants	0.10	0.17	1.54	-0.58	0.26

Collective Findings Summary: Practical Significance

- Riverbend's ACT prep participants showed a practically significant growth in scores on the reading subtest, showing an average growth of more than 1.5 points over nonparticipants.
- Riverbend's ACT prep participants showed a practically insignificant smaller growth on the science subtest, growing .6 less than nonparticipants.
- While Riverbend's ACT prep participants showed a minor increase in growth on the English and math subtests, and also on their overall composite scores, the growth is neither statistically or practically significant.

Strengths of Study

- Data collection: 3 years of data collected for all students who participated in Riverbend's ACT prep program and who took the ACT after the treatment.
- Design controls: instrumentation issues (Creswell, 2014) eliminated by ensuring that a real ACT was utilized as the posttest measure (not a practice test), given under the same timing and security guidelines used during the pretest.
- Consistency of program: for the three years that data was collected from Riverbend's ACT prep program, the program remained largely unchanged and all participants were taught a consistent curriculum.

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Consistency of program: for the three years that data was collected from Riverbend's ACT prep program, the program remained largely unchanged and all participants were taught a consistent curriculum.

Limitations of Study

- While this study focused on the effectiveness of the three-teacher ACT prep model in raising ACT scores, many of the participants participated in other activities that could impact their scores, such as private tutoring (Rubenstein, 2004), personal studying, free online practice from a growing field of sources (Adams, 2011), or the Riverbend North ACT Academy.
- The ACT Academy is a separate initiative, and while its effectiveness has never been evaluated in the form of a formal program evaluation, students who have participated in the academy have been known to raise their scores. These test prep variables could be seen as limitations, as they can impact the results of the study.

While this study focuses on the effectiveness of the three-teacher ACT prep model in raising ACT scores, many of the participants have participated in other activities that could impact their scores, such as private tutoring (Rubenstein, 2004), personal studying, free online practice from a growing field of sources (Adams, 2011), or the Riverbend North ACT Academy.

The ACT Academy is a separate initiative than the ACT prep course that is the focus of this study, and while its effectiveness has never been evaluated in the form of a formal program evaluation, students who have participated in the academy have been known to raise their scores. These test prep variables could be seen as limitations, as they can impact the results of the study.

Limitations of Study

- There is no way to measure the comparative quality of teachers assigned to the ACT Prep class. This warrants further study to determine if variation in teacher quality exists.

Limitations of Study

- Another potential limitation of this study could be the sample size. Because it is only centered on students who first took the ACT as a junior, enrolled in ACT prep afterward, and took the ACT again before graduating, the sample size is smaller than the entire population of students who have taken the class. Thus, the sample could be an uncertain representation of the effectiveness of the class for all of its participants (Zyphur & Pierides, 2017).
- It is possible that some of the participants in this study took the statewide ACT as a baseline, took the ACT prep course and devoted time and energy to learning the strategies, and then were faced with a type of ACT passage they had never practiced before when taking the test for the second time. It is difficult to prepare for every possible option the test might deliver, especially when new items are being piloted with each test (“ACT Technical Manual Supplement,” 2016).

Another potential limitation of this study could be the sample size. Because it is only centered on students who first took the ACT as a junior, enrolled in ACT prep afterward, and took the ACT again before graduating, the sample size is smaller than the entire population of students who have taken the class. Thus, the sample could be an uncertain representation of the effectiveness of the class for all of its participants (Zyphur & Pierides, 2017).

Finally, the ever-changing content of the ACT could be viewed as a limitation of this study. The test is always evolving, and while the content is typically the same, the manner in which the content is delivered can change significantly. It is possible that some of the participants in this study took the statewide ACT as a baseline, took the ACT prep course and devoted time and energy to learning the strategies, and then were faced with a type of ACT passage they had never practiced before when taking the test for the second time. It is difficult to prepare for every possible option the test might deliver, especially when new items are being piloted with each test (“ACT Technical Manual Supplement,” 2016).

Limitations of Study

- The researcher did not control for factors that influence student achievement, such as attendance and effort put forth by students who participated in Riverbend's ACT prep program.
- Some students enrolled in the class were placed there by a counselor or administrator— not by choice; thus, some students did not attend regularly and did not always put for the effort necessary to show improvement.
- Because they did not select the class themselves, some students considered the class a punitive measure, making their outlook on the class negative.
- For future similar studies, the researcher could control for attendance and and possibly even effort (through the use of a teacher metric) to eliminate data from students who were technically enrolled in the class, but who did not actually participate.

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For future similar studies, the researcher could control for attendance and and possibly even effort (through the use of a teacher metric) to eliminate data from students who were technically enrolled in the class, but who did not actually participate.

Recommendations

- Because test prep should be free and available in the school day so it does not fall into the realm of shadow education (Buchmann et al., 2010), schools should focus voluntary ACT prep sessions embedded during the school day prior to each national exam date.
- Further research should be conducted on the three-teacher ACT prep model, controlling for student attendance and effort.
- Further incarnations of the class should consider the following...

Because test prep should be free and available in the school day so it does not fall into the realm of “shadow education” (Buchmann et al., 2010, p. 435), schools should focus voluntary ACT prep sessions embedded during the school day prior to each national exam date.

Further research should be conducted on the three-teacher ACT prep model, controlling for student attendance and effort.

Recommendations

- **Consider Grouping:** As the class currently exists, all students are lumped together. Create groups by skill, understanding different ACT skill levels require different strategies to improve (ex: Moving from an 18 composite score to a 20 composite score requires different strategies than moving from a 28 to a 30).
- **Student Choice:** Currently, all students rotate through all subjects, but not all students should have to take every subject. For example, if a student needs to improve their scores only in English and reading, they could potentially skip the math and science rotations in favor of repeating the needed sessions or even completing an independent study, involving online enrichment in necessary subjects.

Recommendations

- **Reduce Teacher Inputs:** Because the tests are processed-based and not focused on content, it is not necessary to utilize three separate teachers.
- One teacher could be in charge of math and science (while math is more content-based, science is not). One teacher could teach English and reading. Because science is largely a form of a reading test, it might even make sense for one teacher to teach both the reading and science sections.

Recommendations

- **Improve Teacher Training:** The teachers in this study participated in a training session only one time before launching the program.
- The fact that participants in the program actually had lower overall science scores could be indicative of an outdated strategy being taught. Because the test evolves, teachers need more frequent professional development in essential ACT skills and strategies.

Recommendations

- **Change Overall Philosophy in Student Selection:** In the current model, students with lower scores are put into the class with little buy-in.
- While some students welcome being in the class, many, especially those who have decided they no longer need an ACT score, are often placed in the class. The students do not have buy-in and often have poor attendance in the class.

Recommendations

- **Change Overall Philosophy in Student Selection:** Current student selection methods also negatively impacts students' overall school schedule, as they often do not have room for electives they might prefer.
- This also negatively impacts the teachers, as they are devoting time, energy, and other resources to students who do not need (or want) to be in the class.

Recommendations

- **Change Overall Philosophy in Student Selection:** Being enrolled in the class without buy-in or need feels punitive.
- Changing this policy would allow teachers to focus on students who truly need help, which would improve the culture and climate of the class and put more of a laser focus on those students who truly need to improve their scores.

Recommendations

- **Promote the Program:** Inform parents about what the program can do for their students. This will also help insure that students who need the program are enrolled.

Recommendations

- **ACT Advisory Committee:** Teachers and administrators in charge of the program could serve as an advisory committee that would make recommendations for embedding specific strategies in other classes.
- This would allow key strategies that could be beneficial to all students to be spread throughout the curriculum.

Recommendations

- **Accountability Piece:** There is little accountability for attendance and participation. The overall philosophy of the class is to not burden students with more homework (making enrollment in the class more appealing), but there is currently little accountability for students who miss frequently.
- The Focus on Learning Model (Bennett et al., 2012), on which Riverbend's program is based, utilized homework in the form of taking practice tests outside of class. If students who really need the course are recruited, asking them to do at least some homework should not seem punitive.

Recommendations

- **Accountability Piece:** Making at least part of the class grade based on attendance would be an easy change and would encourage better overall attendance for all students enrolled.

Recommendations

- **Change Class Time:** It would be logical to consider moving this class from 1st period to later in the day. Because this class does not count toward graduation, the temptation to skip class might be made greater by the fact that it is scheduled first thing in the morning.
- By the same token, it might not be wise to schedule the class as the last period of the day for the very same reason. Instead, if the schedule will allow it, moving the class to the middle of the day might promote better attendance.

Recommendations

- **Open the Class to More Students:** Because the current guiding philosophy of the class is to raise the building's ACT average, typically seniors are the focus of the class (as only their scores count in the building's yearly ACT report).
- Shifting the philosophy of the class to focus more on students' needs as opposed to the building's needs could open the class to all grade levels.

Recommendations

- **Open the Class to More Students:** Though seniors tend to focus on the ACT more than other students, as their college placement is imminent, in the history of Riverbend's ACT prep program, many younger students who want ACT prep have been turned away.

Recommendations

- **Open the Class to More Students:** Allowing those students in would meet the individual needs of more students at Riverbend.
- While it might not show immediate improvements to Riverbend's yearly ACT average (as that average is based solely on seniors), it could potentially show a greater improvement to the building's average over time.

Recommendations

- **Allow Students to Repeat Class:** The current model only allows students to take the course once.
- Allowing students to take the course more than once, combined with more student choice in the sessions in which they participate, could potentially allow a student to focus on math and science one semester, then English and reading the next.

Recommendations

- **Flipped Classroom Approach:** much like the Focus on Learning Group did when they modeled the process, consider eliminating taking practice tests during class time.
- Instead, consider making the completion of the test homework, then devote class time to analyzing answers and rich discussion that helps students understand what they did wrong.

Recommendations

- **Flipped Classroom Approach:** Though eliminating homework makes the class more appealing to a broader variety of students, other recommendations focused on targeting the right students (those who genuinely want to work to raise their scores) makes the elimination of homework a less-needed carrot to dangle in front of potential program candidates.

Conclusion

- Test prep can work, but Riverbend's current model is flawed and needs to be revisited for the class to be effective.
- Reducing teacher inputs, adding student choice, changing the class structure by adding homework and devoting class time to learning strategies and analyzing answers (not taking tests), and changing the student selection process are all doable adjustments that could make the class more effective.
- These adjustments could also reduce inputs and put less strain on Riverbend's resources.

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SECTION FIVE

CONTRIBUTION TO SCHOLARSHIP

Target Journal

The target journal for publication is the *Journal of Curriculum and Teaching*, published by Sciedu Press.

Rationale for this Target

The *Journal of Curriculum and Teaching* publishes “research papers in curriculum and instruction, learning and teaching, and related disciplines at global and local levels, such as but not limited to curriculum theory, teaching methodology, program innovation, policy development, professional ethics, and assessment in education. It is published semi-annually in both online and printed versions” (“Journal of Curriculum,” n.d.). This journal’s focus on curriculum, teaching, and assessment would make it a logical choice for the results of this study.

Outline for Proposed Contents

- Abstract
- Keywords
- Introduction
 - Problem Statement
 - Importance of Problem
 - Relevant Scholarship
 - Research Questions
- Method
 - Participants
 - Research Design
- Results
 - Data Analysis
 - Statistics
- Discussion
- Acknowledgements
- References

Plan for Submission

Who: *Journal of Curriculum and Teaching*

When: Spring 2019

How: Submission guidelines: <http://web.sciedupress.com/author-guide.html>

Submission-ready Journal Article

A QUANTITATIVE PROGRAM EVALUATION OF THE IMPACT OF A THREE-TEACHER ACT PREPARATORY MODEL AT A MIDWESTERN SUBURBAN HIGH SCHOOL

Abstract

The purpose of this study was to determine whether an ACT prep program taught by three teachers, each with certification in the ACT subtest topic they taught, generated statistically significant results in ACT scores. The purpose of this study was also to determine whether the three-teacher ACT prep course served underrepresented students, helping to close multiple ethnic and socioeconomic achievement gaps (Darling-Hammond, 2000). Ultimately, the three-teacher model did not demonstrate statistically significant differences in scores for its participants, including underrepresented students. Using the economics of schooling as a conceptual framework that “views the schooling process as an input-output model, where the inputs are students, teachers, and school resources and the outputs are student learning achievements” (Qiu & Wu, 2011, p. 65), it was revealed that the inputs of the three-teacher model were not worth the outputs, when outputs can be considered statistically significant differences in scores.

Keywords: ACT prep, achievement gap, economics of schooling, secondary education, standardized testing, input, output

Problem Statement

The rise of expensive test prep and coaching companies creates an equity issue when considering college admissions (Devine-Eller, 2012; Horn, 2005). Put simply, standardized tests can be biased (Kohn, 2000), and students who are economically disadvantaged are less likely to use test preparation as those from affluent families (Buchmann et al., 2010; Kohn, 2000). According to a study by Baker and LeTendre (as cited in Buchmann et al., 2010), families are using more forms of “shadow education” (p. 435) to help their children succeed.

Achievement Gap

“Shadow education” (Buchmann et al., 2010, p. 435) creates gaps and represents inequity, as socioeconomic status and race are significantly correlated with student outcomes (Darling-Hammond, 2000). Gaps in achievement are not new, but efforts to close gaps are indicative of a significant departure from America’s past views on racial disparities (Noguera, 2008). Still, the unintended consequences of high-stakes testing, including increased dropout rates and diminished student learning, disproportionately impact minorities and narrows the field of college applicants (Horn, 2005; Kohn, 2004).

Racial achievement gaps are often the product of the tendency to rationalize the failure of students from minority groups as normal (Noguera, 2008). Educators become used to seeing minority groups underperform (Noguera, 2008). The normalization of failure makes closing racial achievement gaps difficult (Noguera, 2008). Thus, it is necessary to develop an effective, in-house ACT prep program that grants equal access to all students, regardless of socioeconomic standing.

If Riverbend North High School’s ACT prep course generated consistent, statistically significant results, then these problems may seem minor; however, there is a lack of information about the overall effectiveness of the program. Ultimately, it is not currently known if the output of the program is worth the significant input (Qiu & Wu, 2011), which puts a strain on the rest of the building’s resources.

Integrating ACT Skills in Curriculum

The sense of urgency for the achievement of higher test scores places tremendous strain on both teachers and administrators (Allensworth et al., 2008; Reich & Bally, 2010). Compounding that strain is this reality: it is difficult to integrate ACT test-taking

skills into traditional course instruction (Allensworth et al., 2008). Schools striving for higher test scores are often narrow the curriculum, which restricts more creative and enriching activities engaged in by teachers and students (Berliner, 2011). Because of this, it is important to have an effective ACT prep class that stands alone, relieving core teachers of the burden of dedicating valuable class time to the test (Berliner, 2011).

Literature Gap

While some research reports there are benefits to taking timed tests to prepare for the ACT (Allensworth et al., 2008), and while test familiarity does generate limited results, specifically with the English subtest (Allensworth et al., 2008), there is no definitive evidence on what makes for a highly-effective ACT prep program (Black, 2005; Moss et al., 2012).

To say there is conflicting research on the effectiveness of ACT prep is an understatement. While some research does indicate that ACT prep can make a positive difference in scores (Allensworth et al., 2008; Briggs, 2009; Parrot 2012), much of that research only touches upon which practice methods, such as coaching or taking practice tests, generate results.

There is a significant gap in the research when it comes to addressing the role of teacher impact on improving ACT results; specifically, there is little to no research on whether or not multiple teachers with experience and certification in content backgrounds that match the subtests of the ACT can make a bigger difference than a traditional one-teacher model (Darling-Hammond, 2000). For that reason, the goal of this study is to focus on whether or not a three-teacher ACT prep model makes a significant statistical difference in ACT prep scores.

Shadow Education and Inequity

Ultimately, embedding ACT prep in regular classrooms makes it difficult for teachers to achieve other objectives (Allensworth et al., 2008; Berliner, 2011) and may actually be detrimental to students (Kohn, 2000). This strain can be at least partially alleviated by effective test prep programs that function on their own (without being embedded in and taking time from other classes).

Offering an effective ACT prep class during the day would also eliminate the need for “shadow education” (p. 435) initiatives, which are defined by Buchmann, Condron, and Roscigno (2010) as training outside the formal school day that can be either enrichment or supplemental. Such initiatives are more frequently used by high income families to increase their children's chances of college admission (Buchmann et al., 2010; Devine-Eller, 2012), thus widening the gap for students of economically struggling families (Allensworth et al., 2008; Banks & Eaton, 2014; Devine-Eller, 2012; Horn, 2005).

The Need for Equitable and Effective ACT Prep

With so many individual students seeking test prep, and with so many high schools scrambling to offer some type of ACT prep class (Moss et al., 2012), it is crucial to understand that currently, there really is not a benchmark for what makes an effective program (Allensworth et al., 2008; Moss et al., 2012), and to make matters worse, many schools are not even attempting to measure the success of their programs via program evaluation. With so many varieties of test prep available, many that have only yielded mixed results (Moss et al., 2012), including expensive and inequitable tutoring from a

variety of test prep centers (Buchmann et al., 2010; Devine-Eller, 2012; Hua, 2010), it is important to identify the most efficient and effective mode of ACT prep available.

In 2008, Riverbend North High School, in the Riverbend School District, set out to create an effective ACT prep class. Riverbend North High School's administrative team wanted to steer away from the established district trend of making ACT prep a "schedule filler." Understanding that teacher preparation can dramatically impact student achievement and can lessen the impact of socioeconomic status and race (Darling-Hammond, 2000), and knowing one teacher could not likely effectively teach skills crucial to success on all subtests of the ACT, it was decided that three experienced, certified teachers (Darling-Hammond, 2000) would be used to teach one class.

A math teacher, a science teacher, and a teacher with a background in English and reading were selected to teach the class as a team. These teachers are given access to prior assessment data, because when test data is not made available to teachers for diagnostic purposes, it does nothing but measure predictable inequities in achievement (Dianis, Jackson, & Noguera, 2015). Using this prior assessment data, students with low scores in need of an ACT intervention were hand-picked for the class with the idea that they would complete three-week rotations with each teacher over the course of one semester, with the last three-week rotation designated for the subject in which they struggled most.

While it seems effective to supply students with three experienced and certified teachers (Darling-Hammond, 2000) who can offer them specialized help with each ACT subtest, it can also be problematic because the rising costs and quality of school inputs are unmatched to improvement in student achievement (Akerlof & Kranton, 2002;

Hanushek, 1986). Studies have viewed these inputs in terms of school expenditures, teacher-student ratios (Akerlof & Kranton, 2002), along with teacher certification, content knowledge, and experience (Darling-Hammond, 2000). Outputs have been measured as test scores (Akerlof & Kranton, 2002). Essentially, resources can change educational returns (Akerlof & Kranton, 2002; Darling-Hammond, 2000; Horn, 2005).

Theoretically, increasing the number of resources (in this case, ACT prep teachers at Riverbend North High School), should raise outputs in the form of test scores (Akerlof & Kranton, 2002), but it is very difficult to adjust the schedule so three teachers can teach the same class during one period. And with the Riverbend School District facing financial problems, having three teachers teach a class of approximately 25-30 students a semester does not make good financial sense. Ultimately, it is not known if the output of Riverbend North's ACT prep program is worth the significant input (Qiu & Wu, 2011).

Relevant Scholarship

While some research reports there are benefits to taking timed tests to prepare for the ACT (Allensworth et al., 2008), and while test familiarity does generate limited results, specifically with the English subtest (Allensworth et al., 2008), there is no definitive evidence on what makes for a highly-effective ACT prep program (Black, 2005; Moss et al., 2012).

While some research does indicate that ACT prep can make a positive difference in scores (Allensworth et al., 2008; Briggs, 2009; Parrot 2012), much of that research only touches upon which practice methods, such as coaching or taking practice tests, generate results.

There is a significant gap in the research when it comes to addressing the role of teacher impact on improving ACT results; specifically, there is little to no research on whether or not multiple teachers with experience and certification in content backgrounds that match the subtests of the ACT can make a bigger difference than a traditional one-teacher model (Darling-Hammond, 2000). For that reason, the goal of this study is to focus on whether or not a three-teacher ACT prep model makes a significant statistical difference in ACT prep scores.

Research Questions

Quantitative research questions explore the relationships between two variables, and the questions lend themselves to empirical research (Creswell, 2014; Hoy & Adams, 2016). Ultimately, these questions are used to shape the focus and purpose of a quantitative study (Creswell, 2014).

The research questions guiding this study are as follows:

- Does the three-teacher model generate a significant statistical difference in ACT scores between students who have taken part in Riverbend North High School's ACT prep course and those who did not?
- Does the three-teacher model generate a significant statistical difference in ACT scores between African American and Hispanic students who have taken part in Riverbend North High School's ACT prep course and those who did not?
- Does the three-teacher model generate a significant statistical difference in ACT scores between students on free and reduced lunch who have taken part in Riverbend North High School's ACT prep course and those who did not?

- Does the three-teacher model generate a significant statistical difference in ACT scores between females who have taken part in Riverbend North High School's ACT prep course and those who did not?

Research Design

Setting

Riverbend is located in Northwest Missouri and has a population of 76,472 ("Census Bureau QuickFacts," 2016). The town is largely blue collar, with a median income of approximately \$43,000, and with only 19.2% of its population having earned a bachelor's degree or higher ("Census Bureau QuickFacts," 2016). For this reason, many of Riverbend's graduates go straight into the workforce, but still, many do attend college and therefore must contend with the ACT.

The Riverbend School District serves 11,336 total students ("School Report Card," n.d.). Riverbend North High School, one of the RSD's three high schools, has an enrollment that typically stays near approximately 750 ("School Report Card," n.d.). Riverbend North serves one of the more economically disadvantaged areas of the town, with a free and reduced lunch rate of 61.8% and a proportional attendance rate of 69.3 ("School Report Card," n.d.). While considered demographically diverse in terms of Riverbend's total population, which is 87.8% Caucasian ("Census Bureau QuickFacts," 2016), Riverbend North High School is still 77% Caucasian ("School Report Card," n.d.). Of Riverbend's three high school, Riverbend North has the largest African American population at 12.6%, with only 5.9% of students reporting Hispanic ("School Report Card," n.d.).

According to 2016 data (“School Report Card,” n.d.), 38.9% of Riverbend North’s 2016 graduating class enrolled in a four-year school. The composite ACT score for Riverbend North’s graduates has fluctuated from 19.7 in 2013 to 18.5 in 2016. Overall, the Riverbend School District’s ACT scores dropped after the statewide ACT brought census testing to Missouri (“School Report Card,” n.d.), which only emphasizes the need for an effective ACT prep course at the school.

Participants

This study examined senior ACT scores for students who have participated in Riverbend North High School’s ACT prep program versus those who did not participate in the ACT preparation class. In 2015, the state of Missouri began census testing all high school juniors with the ACT (Robertson, 2015); thus, this data was used as a baseline (Dianis et al., 2015), contrasted against follow-up results for all seniors at Riverbend North who took the ACT again their senior year.

Data Collection

Using archival data, including class schedules and ACT scores that can be retrieved from Power School, the Riverbend School District’s data management program, a list of students who took the ACT both their junior year and their senior year was created. The key variable in this part of the study was whether the student enrolled in ACT Prep between their baseline score and their second score. Variables such as gender, ethnicity, and free and reduced lunch status were also recorded in an effort to assess whether or not achievement gaps are being addressed by the ACT prep program. Also, the results of previous standardized test scores, such as End of Course Exam scores, which are taken when a student has received instruction on the Missouri Learning

Standards for an assessment (“End-of-Course”), were recorded in the data set to ensure that students of similar ability were being compared and to help remove statistical outliers from the study (Field, 2013).

Data Analysis

This study relied on archival data. This archival data yielded information necessary to answer whether there was a significant statistical difference in ACT scores for students who participated in Riverbend North High School’s ACT prep course. The archival data also shed light on whether Riverbend North’s ACT prep course helps serve underrepresented populations at Riverbend North by closing ethnic, gender, and socioeconomic achievement gaps (“Achievement Gap,” 2013).

Findings

Statistical Significance

The following tables were generated using an analysis of covariance (ANCOVA) in IBM SPSS Statistics. When an ANCOVA analysis is conducted, it examines the relationship between the outcome (dependent variable) and the covariate (Field, 2013). Ultimately, Riverbend North High School’s three-teacher ACT prep course did not generate a statistically significant difference in scores for its participants, including minority students, free and reduced lunch students, and females who participated in the course.

Table 1

ANCOVA Results for ACT English Subtest Achievement by ACT Prep Participants

ACT Prep Participants	Mean	F	Sig
All	20.45 ^a	.123	.726
Female	20.45 ^a	.133	.716
Minority	20.36 ^a	.372	.543
Free and Reduced Lunch	20.34 ^a	.437	.510

Note. Covariates appearing in the model are evaluated at the following values: Statewide English = 20.15.

Table 2

ANCOVA Results for ACT Math Subtest Achievement by ACT Prep Participants

ACT Prep Participants	Mean	F	Sig
All	19.81 ^a	.492	.484
Female	20.01 ^a	.002	.963
Minority	20.23 ^a	.780	.379
Free and Reduced Lunch	19.62 ^a	2.148	.145

Note. Covariates appearing in the model are evaluated at the following values: Statewide Math = 19.86.

Table 3

ANCOVA Results for ACT Reading Subtest Achievement by ACT Prep Participants

ACT Prep Participants	Mean	F	Sig
All	21.80 ^a	5.523	.020*
Female	20.72 ^a	.170	.681
Minority	20.78 ^a	.063	.802
Free and Reduced Lunch	20.45 ^a	1.195	.276

Note. Covariates appearing in the model are evaluated at the following values: Statewide Reading = 19.08.

* = Statistically significant finding at the 0.05 level.

Table 4

ANCOVA Results for ACT Science Subtest Achievement by ACT Prep Participants

ACT Prep Participants	Mean	F	Sig
All	20.21 ^a	2.932	.089
Female	20.67 ^a	.068	.795
Minority	20.33 ^a	1.837	.178
Free and Reduced Lunch	20.74 ^a	.002	.965

Note. Covariates appearing in the model are evaluated at the following values: Statewide Science = 20.43.

Table 5

ANCOVA Results for ACT Composite Achievement by ACT Prep Participants

ACT Prep Participants	Mean	F	Sig
All	20.81 ^a	.124	.047*
Female	20.72 ^a	.188	.072
Minority	20.75 ^a	.036	.014*
Free and Reduced Lunch	20.57 ^a	2.837	1.081

Note. Covariates appearing in the model are evaluated at the following values: Statewide Composite = 19.99.

* = Statistically significant finding at the 0.05 level.

Practical Significance

Whereas statistical significance is concerned with whether a research result is due to chance or sampling variability, practical significance is concerned with whether the result is useful in the real world (Kirk, 1996). Even a small gain in scores can be important to college admissions officers, especially if the increase, however small, pushes a student past a desired point threshold (Liu, 2011). In terms of the ACT, a practically significant difference could be considered an increase or decrease of at least one scale

score point, as one point can make a difference in admission decisions and scholarship rewards.

Participants in Riverbend North’s three-teacher ACT prep model had lower average post-test subtest and composite scores than nonparticipants. However, participants in Riverbend North’s three-teacher ACT prep model had lower average pre-test subtest and composite scores than nonparticipants, so it is realistic to assume the post-test scores of participants would not exceed those of nonparticipants. For that reason, it is more important to look at average score growth to measure practical significance.

Table 6

	English ACT Points	Math ACT Points	Reading ACT Points	Science ACT Points	Composite ACT Points
Participant Growth	0.63	0.31	2.59	0.35	0.96
Nonparticipant Growth	0.53	0.14	1.05	0.93	0.70
Growth Difference for Participants	0.10	0.17	1.54	-0.58	0.26

Riverbend’s ACT prep participants showed a practically significant growth in scores on the reading subtest, showing an average growth of more than 1.5 points over nonparticipants. Riverbend’s ACT prep participants showed a practically insignificant smaller growth on the science subtest, growing .6 less than nonparticipants. While Riverbend’s ACT prep participants showed a minor increase in growth on the English and math subtests, and also on their overall composite scores, the growth is neither statistically or practically significant.

Discussion

Limitations

Quantitative research is based on the idea that there is one definable reality and that it can be measured (Merriam & Tisdell, 2016). Furthermore, the paradigm of positivism suggests true knowledge can only be mined from the logical and mathematical treatment of data (Smith, 2014). That said, while quantitative data might not lend itself to the same potential biases as qualitative data, it is not infallible. In the case of this study, it is notable that the researcher served as an ACT prep teacher and thus brings specific biases about modes of ACT preparation into the research study. The researcher has also served as high school administrator and has thus felt the pressure to raise ACT scores in his building.

Merriam and Tisdell (2016) state that quantitative research is predetermined and structured, and less fluid and flexible than qualitative research. While this is certainly true, in the case of this study, there are multiple variables outside of the research structure that could have impacted the study, such as teacher subject matter knowledge (Darling-Hammond, 2000). In the case of this study, all teachers studied the Focus on Learning model, but could still have had varying degrees of content knowledge that could have impacted student achievement (Darling-Hammond, 2000).

Certified teachers have more of a positive effect on student achievement (Darling-Hammond, 2000). In this study, all teachers were certified in the content area that most closely relates to the ACT subtest they helped students to prepare for. For example, a certified math teacher instructed the math portion of the ACT prep course, whereas a

certified English teacher instructed the English and reading portions. Finally, a certified science teacher instructed the science portion of the class.

While this study focused on the effectiveness of the three-teacher ACT prep model in raising ACT scores, many of the participants took part in other activities that could have impacted their scores, such as private tutoring (Rubenstein, 2004), personal studying, free online practice from a growing field of sources (Adams, 2011), or the Riverbend North ACT Academy.

The ACT Academy is a separate initiative than the ACT prep course that is the focus of this study, and while its effectiveness has never been evaluated in the form of a formal program evaluation, students who have participated in the academy have been known to raise their scores. These test prep variables could be seen as limitations, as they could have impacted the results of the study.

Another potential limitation of this study was the sample size. Because it only centered on students who first took the ACT as a junior, enrolled in ACT prep afterward, and took the ACT again before graduating, the sample size was smaller than the entire population of students who have taken the class. Thus, the sample could have been an uncertain representation of the effectiveness of the class for all of its participants (Zyphur & Pierides, 2017).

Finally, the ever-changing content of the ACT could be viewed as a limitation of this study. The test is always evolving, and while the content is typically the same, the manner in which the content is delivered can change significantly. It is possible that some of the participants in this study took the statewide ACT as a baseline, took the ACT prep course and devoted time and energy to learning the strategies, and then were faced

with a type of ACT passage they had never practiced before when taking the test for the second time. It is difficult to prepare for every possible option the test might deliver, especially when new items are being piloted with each test (“ACT Technical Manual Supplement,” 2016).

Assumptions

The ACT prep course at Riverbend North High School is an elective; therefore, it is typically only taken by students who actually want to be in the course, or those who have been encouraged to do so by their families. An assumption of this study, then, is that because students elected to take the course, they genuinely cared about their progress and invested time and attention in the course content, partially because of the tremendous pressure to do well on the ACT (Allensworth et al., 2008; Devine-Eller, 2012).

However, though college-bound teenagers feel tremendous pressure to attain a high score on the ACT (Allensworth et al., 2008; Devine-Eller, 2012), and though the participants elected to take the course, it is entirely possible that some students did not attend regularly or pay close attention to the course work. Though the stakes surrounding the ACT are high (Allensworth et al., 2008; Rubenstein, 2004), ultimately, sometimes the drive and devotion of teenage students can waver.

Recommendations

Student groupings.

Riverbend High School’s current ACT course lumps all students together; this is typically not an issue, based on the fact that students with lower scores are targeted for the class. That said, there are those students with higher scores who need different strategies to improve, as the skills necessary to raise a lower score are different than those

needed to raise scores that are already high. Creating different skill groups could help differentiate the program, making it beneficial to a wider variety of students.

Student choice.

In the current version of Riverbend's ACT prep course, all students rotate through instructional sessions on each ACT subtest. In reality, though, not all students need to improve in every subject; thus, they should not have to take every subject; for example, if a student really needs to improve their scores only in English and reading, they could potentially skip the math and science rotations in favor of repeating the needed sessions or even completing an independent study, involving independent practice and online enrichment in necessary subjects.

Reduce teacher inputs.

Because the tests are processed-based and not focused on content, it is not necessary to utilize three separate teachers. One teacher could be in charge of math and science (while math is more content-based, science is not), and one teacher could teach the English and reading sections. Because science is largely a form of a reading test, it might even make sense for one teacher to teach both the reading and science sections. Reducing the number of teacher inputs (Qiu & Wu, 2011, p. 65) from three to two would reduce the strain on Riverbend's schedule without sacrificing quality. In fact, the need to train only two teachers might even improve quality control.

Improve teacher training.

The teachers in this study participated in a training session only one time before launching the program. The fact that participants in the program actually had lower overall science scores could be indicative of an outdated strategy being taught. Because

the test is always evolving (“ACT Technical Manual Supplement,” 2016), essentially making it a moving target, teachers would need more frequent professional development in essential ACT skills and strategies. Yearly training could ensure this.

Student selection.

In Riverbend’s current ACT prep course, students are selected based on their scores. Students with lower scores are put into the class with little buy-in. While some students welcome being in the class, many, especially those who have decided they no longer need an ACT score (like those who may be directly entering the workforce or military) are often placed in the class.

The students do not have buy-in and often have poor attendance in the class. This also negatively impacts their overall school schedule, as they often do not have room for electives they might prefer. This also negatively impacts the teachers, as they are devoting time, energy, and other resources to students who do not need to be in the class. Being enrolled in the class without buy-in feels punitive. Changing this policy would allow teachers to focus on students who truly need help, which would improve the culture and climate of the class and put more of a laser focus on those students who truly need to improve their scores.

Promote the program.

Promoting the program in the community would inform parents about what the program can do for their students. This will also help insure that students who need the program are enrolled. Promoting the program, especially if changes help improve its results, could also help garner support and new resources.

ACT advisory committee.

Teachers and administrators in charge of the program could serve as an advisory committee that would make recommendations for embedding specific strategies in other classes. This would allow key strategies that could be beneficial to all students to be spread throughout the curriculum.

Accountability piece.

There is little accountability for attendance and participation. The overall philosophy of the class is to not burden students with more homework (making enrollment in the class more appealing), but there is currently little accountability for students who miss frequently.

Also, it would be logical to consider moving this class from 1st period to later in the day. Because this class does not count toward graduation, the temptation to skip class might be made greater by the fact that it is scheduled first thing in the morning. By the same token, it might not be wise to schedule the class as the last period of the day for the very same reason. Instead, if the schedule will allow it, moving the class to the middle of the day might promote better attendance.

Celebrate success.

By promoting the success of those students who were able to raise their scores, it will encourage more motivated students to take advantage of what the class has to offer. This could create positive momentum for both students and teachers, as it may encourage other teachers to learn about ACT instruction and to contribute to the class.

Open class to more students.

Because the current guiding philosophy of the class is to raise the building's ACT average, typically seniors are the focus of the class (as only their scores count in the building's yearly ACT report). Shifting the philosophy of the class to focus more on students' needs as opposed to the building's needs could open the class to all grade levels.

Though seniors tend to focus on the ACT more than other students, as their college placement is imminent, in the history of Riverbend's ACT prep program, many younger students who wanted ACT prep were turned away. Allowing those students in would meet the individual needs of more students at Riverbend, and while it might not show immediate improvements to Riverbend's yearly ACT average (as that average is based solely on seniors), it could potentially show a greater improvement to the building's average over time.

Allow repeats.

Currently, students at Riverbend can only take the ACT prep course once. Allowing students to take the class more than once if they desire, and if it fits into their schedule, could be beneficial. This, combined with more student choice in the sessions in which they participate, could potentially allow a student to focus on math and science one semester, then English and reading the next.

Flipped classroom.

Much like the Focus on Learning Group did when they modeled the process, Riverbend should consider eliminating taking practice tests during class time. Instead, ACT prep instructors should consider making the completion of the test homework, then

devote class time to analyzing answers and rich discussion that helps students understand what they did wrong.

Though eliminating homework makes the class more appealing to a broader variety of students, other recommendations focused on targeting the right students (those who genuinely want to work to raise their scores) makes the elimination of homework a less-needed carrot to dangle in front of potential program candidates.

Conclusion

Test prep can work (Black, 2005; Moss et al., 2012), but Riverbend's current model is flawed and needs to be revisited for the class to be effective. Reducing teacher inputs, adding student choice, changing the class structure by adding homework and devoting class time to learning strategies and analyzing answers (not taking tests), and changing the student selection process are all doable adjustments that could make the class more effective. These adjustments could also reduce inputs (Qiu & Wu, 2011, p. 65) and put less strain on Riverbend's resources.

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SECTION SIX

SCHOLARLY PRACTITIONER REFLECTION

Admittedly, I started the Statewide Cooperative EdD Program as an obligatory step in maintaining my new position as an assistant principal, since a doctorate or a specialist degree is an expectation for all administrators in the Saint Joseph School District. In the summer of 2015, though, as I began to immerse myself in the readings, what started as a necessary hurdle became a transformative experience. I found myself challenged, affirmed, intrigued, and enveloped by a community of learners. My involvement in the program was no longer an obligatory move; it became more about a true passion to learn and develop as a leader.

The dissertation process became something else. It became almost a quest to me, amidst a storm of uncertainty that involved moving my family and switching jobs, to find in myself a level of grit that I had yet to demonstrate in my professional career. I am not afraid to admit now, as this process winds to a close, that I have, at times, veered away from our found “outs” that helped me escape large and imposing tasks. Ultimately, that kind of dodging shouldn’t be in the character of a true leader, and I knew facing the dissertation process, no matter how imposing it might seem, would help me conquer that tendency to shy away from large challenges.

Outside of the program and dissertation process, I have also learned a great deal about leadership from my building’s former principal—someone I would consider my mentor. My training under her mentorship has been, admittedly, a mixed bag (as this reflection will likely show). I have witnessed highs and lows. I have watched shrewd leadership that fostered a strong and positive culture in my first several years in the

building dissolve into passive, less-effective leadership toward the end of her career, and it unfortunately left my former building (I have since moved to a different district) at a crossroads. Now that I have stepped into the role of principal, I know I will have to rely heavily on what I have learned in this program to help right the ship. It will not be an easy task, but my understanding of diversity, ethics, leadership theory, organizational and policy analysis, and adult learning—all of which have been greatly strengthened by this program—will guide me along the way.

Leadership Theory and Practice

Development as a Leader

Power is not synonymous with leadership; it is more about the ability to influence, and today, leaders tend to wield less power (Northouse, 2016). Before taking on my new position in another district, I worked in the same school for 14 years, and as I worked under my principal and mentor for the same duration, I saw daily examples of this. My mentor and former principal exhibited a deft use of human skills, or the ability to work with people (Northouse, 2016). She relied on a keen sense of emotional intelligence (Goleman, 1996/2011) that made her personable and approachable, and she possessed the instinctual skills of an inspirational leader (Goffee & Jones, 2000/2011), which allowed her to sense what was going on in the building.

She also demonstrated that she was an empathetic leader, capable of considering the feelings of all employees (Goleman, 1996/2011). This was not always a strong point, though, as her concern for individuals sometimes came at the expense of the organization, as it prevented her from having necessary critical conversations. Still, she

was viewed as a servant leader who focused on needs of her followers (Northouse, 2016), and much of my own leadership style has been modeled after her example.

I grew as a leader under my former principal and mentor, first as a teacher leader, then as an instructional coach, and then as a vice principal. But while I learned many important lessons from her leadership style, there are many things I took to heart from the Statewide Cooperative EdD Program and dissertation process that fly directly in the face of some of the things she taught me. As I continue to develop, it is my goal to utilize the successful approaches taken by my mentor, but to use the knowledge gleaned from this program to avoid the potential pitfalls that come with her style of leadership.

Leadership Style

I am committed to the growth of people and to building a sense of community within my organization; in that sense, I am a servant leader (Northouse, 2016). Like my mentor, I possess emotional intelligence that makes me self-aware (Goleman, 1996/2011) and I strive to create an atmosphere of trust in which people are encouraged to participate in organizational planning (Northouse, 2016). I believe one of my greatest strengths, though, is that I capitalize on my unique qualities and I am not afraid to be different (Goffee & Jones, 2000/2011).

Leadership emerges from life stories and experiences (George, Sims, McLean, & Mayer, 2007/2011). My own life experiences have led to me value the ability to admit failure and to use self-depreciating humor (Goleman, 1996/2011). When you can laugh at yourself, you rob others of the opportunity to do so, and as a leader, I know this makes me approachable and less intimidating, especially to newer staff members. I am

completely comfortable showing my weaknesses and admitting my mistakes (Goffee & Jones, 2000/2011).

In terms of servant leadership (Northouse, 2016), there is one area in which I consider myself limited: empathy. While I do consider the feelings of my employees and try to find a common ground with all of them (Goleman, 1996/2011), I try not to let my sense of empathy go so far that it might blind me in terms of what is best for the organization. Unfortunately, in my development as a leader, I have witnessed many cases in which concern for an individual outweighed my organization's goals, which was perceived as favoritism and had a negative impact on culture and climate.

In that sense, my leadership style takes more of a coaching approach (Northouse, 2016). While I am certainly empathetic to a large extent, I believe there is a point at which a leader must focus on achieving the organization's goals. For that to happen, a leader must be able to reflect on the overall organization and must be comfortable with changes necessary to meet those goals (Goleman, 1996/2011). Put simply, leaders who can't reflect and examine an organization's tendencies fail (Heifetz & Laurie, 1997/2011).

Leadership in Practice

As I continue to develop, it is important to diagnose and improve upon flaws in my leadership style. One thing I would certainly like to change is that I am overly achievement-motivated (Goleman, 1996/2011). Essentially, I am highly competitive and I like to keep score. An example of this is my desire to always have higher achievement scores than other schools in my district. While that motivation has generated positive results, I should be more focused on my organization's goal to raise achievement and less focused on just "beating the other guy." While being competitive isn't necessarily a

weakness, my propensity for score-keeping tends to be about personal victories. I am aware that I have reached some of these personal victories through more managerial-type control, when I should focus on achieving my organization's vision by motivating and inspiring (Kotter, 1990/2011).

As a result of what I have learned in the Statewide Cooperative EdD Program and the dissertation process, I know I must take responsibility for communication in my organization (Drucker, 2004/2011), and as a direct result of writing my dissertation and conquering my tendency to sometimes avoid large tasks, instead focusing on smaller things that I can easily check off my list, I know I must strive to see large projects through.

A staff survey given at the end of the last school year in my former building indicated that communication had become poor within our building, and I am partially to blame for that. I tend to be an idea person, and I internalize those ideas and develop my own plans without sharing freely with others, when I should be creating effective action plans (Drucker, 2004/2011) that can be communicated across the organization. Furthermore, I should not always develop those plans on my own; I should actively seek out others with leadership potential to help in the process (Kotter, 1990/2011). And, as stated above, I know I must see the process through, making sure it is handled with fidelity.

According to Northouse (2016), "The traditional authority structure of many organizations does not support decision making at lower levels, and this can lead to the failure of many teams" (p. 364). While my former organization gave limited support to decision making at lower levels, some of that support, frankly, was lip service to make

teachers feel empowered, when in reality, their input was ignored. Frankly, though I am very pleased in my most recent career move, I can say the climate is largely the same in my new district. I would like to change that. By drawing from what I have taken from this program and dissertation process, I know that giving a voice to everyone is the foundation of an organization that wants to learn (Heifetz & Laurie, 1997/2011).

Ethics in Leadership

The behaviors of leaders filter throughout an organization; thus, their ethical standards are a vital part of the organization's culture and climate (Mihelic, Lipicnik, & Tekavcic, 2010). Essentially, leaders are role models for their followers and they set the behavioral boundaries of the organization (Mihelic et al., 2010). Put simply, leaders set and reinforce organizational values, and unethical leadership is destructive (Northouse, 2016).

Unfortunately, I have witnessed firsthand what happens when leaders make unethical decisions. My former school district is still recovering from a scandal that rocked the entire community to its core, generating resentment and a lack of trust. I have also witnessed smaller examples of unethical leadership behaviors in both my former building, specifically related to in-group favoritism (Banaji, Bazerman, & Chugh, 2003/2013). Whether it is a large ethical infraction or a series of smaller ones, unethical leadership creates an uncomfortable gray area in which other unethical decisions can breed. Unethical leadership often creates a domino effect that destroys organizational culture. Ultimately, ethics must be rooted in an organization's identity, beliefs, and values (Bolman and Deal, 2013).

As a developing leader, I must provide “ethical guardrails” (Bolman and Deal, 2013, p. 396) that protect my organization. I must strive to serve with respect, justice, and honesty, and I must remain attentive to community and culture (Northouse, 2016). This is, of course, easier said than done. In order to be an authentic and ethical leader, I must think about long-term consequences (Mihelic et al., 2010) and listen to feedback, not just from my inner circle, but from all stakeholders—even if it is something I do not want to hear (George et al., 2007/2011). Ultimately, leaders sometimes struggle to escape the routine management tasks that come with their position, but they serve a greater purpose if they serve as catalysts for caring, faith, and justice (Bolman and Deal, 2013). With this in mind, I understand that a major part of being a catalyst for justice in my organization comes from embracing diversity.

Embracing Diversity as a Leader

As previously mentioned, the once-strong culture of my former organization deteriorated over recent years, but I would be incorrect to place all of the blame on passive leadership. At least part of the problem relates to something every organization faces: turnover. In the case of my former organization, they recently lost staff members who helped bring diversity to our building. I have witnessed the negative impact these losses have had on my former building’s culture, and it has made me more aware than ever that diversity is an important competitive advantage (Bolman & Deal, 2013).

Forward-looking organizations promote diversity daily (Bolman & Deal, 2013). As a developing leader, it is essential that I seek a diverse staff whose skills match the needs of our very diverse student body. In purposefully promoting diversity through an explicit organizational philosophy (Bolman & Deal, 2013), I can remove barriers that

block equitable outcomes (Bensimon, 2004). I know that I am already dealing with a culture in which certain teachers—in fact, some of our best teachers—feel alienated because they have been ignored due to in-group relationships (Banaji et al., 2003/2013). That sense of alienation only gets worse when specific groups are devalued (Bolman & Deal, 2013). In short, it is my responsibility to celebrate and promote diversity, but I must remember one key thing: celebrating diversity is not the same as achieving equity (Bensimon, 2004). I must strive daily to make my school equitable for both students and staff.

Organizational Analysis

Developing Understanding of Organizational Analysis

The study of organizational analysis has been crucial to my development as a leader; it has been both revealing and affirming. Developing a working knowledge of the structural, human resource, political, and symbolic frames (Bolman & Deal, 2013) has given me insight into why my organization has both succeeded and failed. Most importantly, I have grown as a leader by understanding how to use these frames together to diagnose potential areas of improvement within my organization (Bolman & Deal, 2013).

Understanding the nature of dynamic teams has also helped me grow as a leader. According to Levi (2013), "Organizations benefit by having teams that function more effectively, have greater organizational commitment, and show increased acceptance of change" (p. 153). I have come to understand through this program and dissertation process that my own competitive nature can hinder such teamwork (Levi, 2013). Most importantly, through studying the dynamics of teams, I have learned that problems arise

when leaders attempt to avoid conflict through a passive or ambiguous approach (Levi, 2013), which has forced me to reflect on a need for change within my own organization.

Reflecting on My Organization

"The shared values, beliefs, and norms of a team, organization, or nation are known as its culture" (Levi, 2013, p. 263). In turn, Bolman and Deal (2013) define culture as "the superglue that bonds an organization, unites people, and helps an enterprise to accomplish desired ends" (p. 248). While that might be true, if leaders don't consciously manage their organization's cultures, those cultures can manage them (Schein, 2005). Unfortunately, I have watched this happen. In recent years, my former organization's leader became increasingly passive, avoiding conflict wherever possible. In her attempt to seek a comfortable atmosphere over one conducive to making critical decisions, groupthink seized control (Janis, 2005).

Because of this, the culture of my former building went from positive to negative, and I watched individuals take advantage of an uncontrolled culture and behave in surprisingly counterproductive ways, threatening the survival of the organization (Schein, 2005). As a leader, I must manage the culture within my new organization to prevent this destructive behavior, and while I desire good relationships, I must not place the importance of individual relationships above the importance of reaching organizational goals (Levi, 2013).

Bolman and Deal (2013) argue that political alliances form because members have something in common and feel they can get more accomplished together. This happens in both positive and negative cultures, and in negative cultures, these alliances often form with the intent of undermining leadership or the overall goals of an

organization. Sadly, many of these negative alliances permeated the culture of my former organization, and as leader, it is my responsibility within my new organization to create an environment in which people aren't afraid to challenge each other in an effort to avoid groupthink (Janis, 2005). As my organization's new leader, I must avoid the mistake of being overly passive and embrace a more assertive style that is more appropriate for the kind of effective teamwork that my building needs (Levi, 2013).

Organizational Analysis in Practice

Progressive organizations give power to employees, which includes keeping employees informed and encouraging autonomy (Bolman & Deal, 2013). However, one of the most damaging practices of my organization's outgoing leadership was empowering the wrong people. In a school, clearly the most dedicated and strongest teachers should feel empowered. Strangely, I have watched those lacking any kind of dedication—or professionalism—be empowered in recent years, largely because of inappropriate in-group relationships (Banaji et al., 2003/2013).

Organizations benefit from satisfied employees (Bolman & Deal, 2013). However, when the wrong employees are empowered, and the hard-working and loyal ones are not, work satisfaction is badly damaged. In my former building, many of the best and brightest teachers felt alienated and underappreciated because others are shown favoritism; in my new organization, this is not the case, and the positive difference it makes on culture is staggering.

Since teachers' perception of fairness plays a role in promoting student achievement (Burns & DiPaolo, 2013), the favoritism shown in my former building directly impacted our desired outcomes. As a new leader in a different organization, it is

my responsibility to prevent this problem by creating a culture that fosters fairness in an effort to improve the climate and motivate teachers (Burns & DiPaolo, 2013).

Policy Analysis

Developing an Understanding of Policy Analysis

Policy analysis is more than just personal decision making and involves the lives of many people (Bardach & Patashnik, 2016). According to Stone (2011), policy is about trying to achieve something as a community. I find this definition reassuring, as I have never considered myself to be a political person, and I have always considered the idea of policy making and analysis to be squarely in the political arena. The idea, though, that that policy analysis is really just about achieving something as a community (Stone, 2011), seems less intimidating. Like so many other once-daunting concepts, this program and dissertation process has helped me frame the concept of policy analysis; it now seems less abstract and more doable, and it will be an important part of my development as a leader.

Policy Analysis in My Organization

If Stone's (2011) definition is correct, then policy analysis is really what school leaders do every day. We are continually tasked with trying to achieve goals as a school community. The most difficult part of that task is making sure that all departments and teams are on the same page and working toward the same goals. In my experience as a school leader, I have learned that problems often come at you quickly, and unfortunately, leaders often look for a quick fix for the problem just to make it through the day. Really, though, most problems that arise in a school are somehow the result of a policy problem;

thus, viewing the problem through the lens of policy analysis tends to lead to a better solution.

Bardach and Patashnik (2016) define a problem-solving method known as the Eightfold Path, which requires defining the problem, gathering evidence, designing alternatives, selecting criteria, projecting outcomes, confronting tradeoffs, making decisions, and ultimately telling the story of the process. As a developing leader, I know that many problems in my organization are the result of quick fixes, and this method could help me greatly.

Policy Analysis in Practice

One of the problems my former organization faced with policy analysis was that there was not strong follow-through when policies have been enacted. That jaded some stakeholders to the process, and understandably so. As a developing leader in my new organization, I am facing a similar issue, and I will face the task of winning some of those stakeholders back by proving to them that the process will be followed. Along the way, I will need to seek allies to accomplish my policy goals (Stone, 2011). I have also discovered through this program and dissertation process that I must consider the political pitfalls of policy implementation (Bardach & Patashnik, 2016).

While I would not yet consider myself a master of the Eightfold Path (Bardach & Patashnik, 2016), I have already tried adopting aspects of this model to help plan the upcoming year. In the spring, I plan on using what I learned from Bardach and Patashnik (2016) to hold a planning meeting with my new school leadership team to define some of our building's most troubling problems. We will discuss the evidence and design

alternatives, then create a system of shared responsibilities to make sure we follow through with specific action plans.

Content and Context for Learning

Who I am as a Learner

According to Merriam and Biererma (2014), adult learners are typically driven by internal motivation and need to know the reason for learning something. This describes me almost perfectly. I am driven by a sense of personal accomplishment, and admittedly, a sometimes-unhealthy competitive desire to be the best. I am not motivated solely by money or accolades, but I do like knowing that others respect my insight.

That said, I do need a solid justification for learning something. If I am not learning to solve an immediate problem (Merriam and Biererma, 2014), I must have a rational explanation for why the learning is relevant to my life. I am not ashamed to admit that I have tuned out during more than one professional development session because I saw no relevance in what I was being asked to learn. As a developing school leader, I believe I can make this a strength because I am sympathetic to teachers who feel the same way, and for that reason, I seek out their opinions on what they feel they need to learn to be better at their craft. Ultimately, I must remember that learning at the individual level in an organization happens when a person acquires knowledge that changes the way they perceive the world (Gill, 2010).

I also feel driven to learn by a desire to problem solve. When looking at my personalized “Strengths Insight Report” from the StrengthsFinder activity we completed during our first summer of coursework, I see evidence of this. One of my signature themes was restorative, which, according to *StrengthsQuest: Discover and Develop Your*

Strengths in Academics, Career, and Beyond (Clifton, Anderson & Schreiner, 2006), indicates I find joy and even excitement in the challenge of solving problems. In terms of leadership, this can be both a strength and a weakness. It is a strength in the sense that people look to me to help solve problems; however, my desire to solve problems myself often hinders my ability to build that capacity in others.

Another signature theme from my “Strengths Insight Report” was intellection. Essentially, I crave information (Clifton et al., 2006). This is not always a positive—I believe this often comes from my competitive nature described above. As a leader, a competitive nature can be a double-edged sword. It can drive me at times, but it can also place me in a silo.

Leading Where Adults Learn

We should always be looking for ways to improve (Gill, 2010). For that reason, professional development for teachers should be meaningful and should provide true opportunities for growth and improvement. However, leading adults in learning can be tricky. Teachers, as non-traditional students, are more self-directed learners (Knowles, 2005; Gill, 2010) and need less direct instruction. In fact, in my experience, they tend to rebel against it. Teachers, even those who prefer lecture as a mode of delivery in their own classrooms, do not want to be lectured to. Adult learners must also understand the “why” of what they are learning (Knowles, 2005), especially when they are busy and their time is limited. This statement has never been as true as it is with teachers. Teachers’ time is valuable, and they want to be provided with learning opportunities that will efficiently address their needs. Additionally, Knowles (2005) states an adult

learner's prior knowledge and experience is important to discovering solutions to future problems.

An adult's accumulated life experiences are a potential learning resource (Merriam & Bierema, 2014). I must honor and recognize that concept when serving as a leader of adult learning in my building. My two-year experience as an instructional coach, in which designing professional development for teachers was one of my primary responsibilities, helped prime me for leading adults in learning, especially when it comes to honoring their previous experiences. I learned—often the hard way—that teachers will not listen unless you acknowledge their own body of experience, even if their experience does not always directly relate to what they are learning.

The downside of honoring life experiences of an adult learner is that their experiences can make them close minded about learning something new (Merriam & Bierema, 2014). Beyond that, there already tends to be a close minded attitude toward professional development. This stems from a perception that most professional development for teachers is trying to fix a problem rather than give teachers another effective tool to use. It is also true that much professional development is focused on activities when it should be focused on results (Gill, 2010).

Teachers do not want to hear that they have been doing something wrong (even if they have); instead, they want validation of their hard work before being given new information. This sometimes comes dangerously close to ego-stroking, but I feel as if I have learned to understand the difference between the two. Ego-stroking is not authentic; it is more of a way to manipulate people and I try to stay away from it. Validation is different. It is simply a way for me to acknowledge the previous experiences and hard

work of the teachers in my building, which makes them more receptive to listening to new ideas since they do not feel as if they are being corrected.

Developing as a Leader and Change Agent

As a change agent, I am still trying to find my way. There are many things I am eager to change in my new role; however, I know that changing too much too fast can be detrimental to the culture of my building. For that reason, I am trying to pace myself accordingly, but I do understand that I must make changes to how adults learn in my building.

Unfortunately, professional development often centers on fun team-building activities instead of true learning. Perhaps, as Gill (2010) states, this is because it's easier to focus on activities rather than real results. Much of our professional development currently centers around affirming current practices instead of encouraging teachers to explore new practices in an effort to develop and evolve. While it is important to acknowledge the experience of adult learners (Knowles, 2005), not everything should be an affirmation. Ultimately, people must be encouraged to grow.

I must be the change agent that steers adult learning in my new building in the right direction, but I know I must be patient. The staff has become accustomed to our current format, and because change can be a political and cultural mine field, I must make change in small increments, and most importantly, I have to lead the staff to want change. I must also continue to seek their input on what they want to learn, and I must provide them with the “why” for their learning.

Conclusion

My professional experience has taken me on a journey that has allowed me to see other leadership styles in action. Specifically, in my previous job, I saw a leadership style that allowed for apathy, stagnation, and frustration. It was difficult to watch, but as I move forward into my new position, I must hold that experience close. I saw a detailed recipe for what does not work (even if it often appeared to work in the short term), and I must avoid those same pitfalls if I am to become an effective leader.

As a self-motivated learner (Merriam and Biererma, 2014), I must stay cognizant of the fact that my own desire to learn and push forward sometimes alienates others, and as I continue to grow, I must make sure that I push myself to share my ideas and learning with others, as to avoid the silo I sometimes am guilty of placing myself in.

As a change agent, I must be cautious about the rate at which I implement change. I must learn from the mistakes of previous leaders I served under, but I must also take the lessons of this doctoral program—and the insights of my professors and fellow students—to help shape my own leadership style. Regardless of the challenges that face all leaders, I am excited for what lies ahead.

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Appendix A

Executive Summary

A QUANTITATIVE PROGRAM EVALUATION OF THE IMPACT OF A THREE-TEACHER ACT PREPARATORY MODEL AT A MIDWESTERN SUBURBAN HIGH SCHOOL

<p style="text-align: center;"><u>Statement of the Problem</u></p> <p>There is a gap in information about the effectiveness of Riverbend North's ACT Prep Program. It is not known if the output of the program is worth the significant input (Qiu & Wu, 2011), which puts a strain on the rest of the building's resources.</p>	
<p style="text-align: center;"><u>Purpose of the Study</u></p> <p>The purpose of this study is to determine whether Riverbend North's three-teacher model generates significant differences in the ACT scores of its participants.</p> <p>This study's purpose was also to determine if Riverbend North's ACT prep course closed ethnic, socioeconomic, and gender achievement gaps (Darling-Hammond, 2000).</p>	<p style="text-align: center;"><u>Conceptual Framework</u></p> <p>Economics of Schooling, as defined by Hanushek (1986), Akerlof and Kranton (2002), and Qui and Wu (2011)</p> <p style="text-align: center;"><u>Key Variables</u></p> <ul style="list-style-type: none">• ACT & standardized tests (Akerlof & Kranton, 2002)• Access and equity (Kohn, 2000; Noguera, 2008)
<p style="text-align: center;"><u>Design of the Study</u></p> <p><i>Quantitative Data Analysis</i> – The scores of Riverbend North's ACT Prep Program's students will be compared to non-participants, using archival statewide ACT data as a baseline for all students.</p> <p>The results of previous standardized test scores, such as End of Course Exam scores, will be recorded in the data set to ensure that students of similar ability are being compared and to help remove statistical outliers from the</p>	
<p style="text-align: center;"><u>Research Sub-questions</u></p> <ol style="list-style-type: none">1. Does the three-teacher model generate a significant statistical difference in ACT scores between African American and Hispanic students who have taken part in Riverbend North High School's ACT prep course and those who did not?2. Does the three-teacher model generate a significant statistical difference in ACT scores between students eligible for free and reduced lunch who have taken part in Riverbend North High School's ACT prep course and those who did not?	
<p style="text-align: center;"><u>Limitations</u></p> <ul style="list-style-type: none">• Researcher served as an ACT prep teacher and brings biases about preparation into the study• The researcher has also served as high school administrator and has thus felt the pressure to raise ACT scores in his building .• Test prep variations, such as private coaching (Rubenstein, 2004).	<p style="text-align: center;"><u>Delimitations</u></p> <ul style="list-style-type: none">• Baseline data from statewide ACT for all participants• All teachers in study certified with similar training and experience (Darling-Hammond, 2000).• Statistical outliers eliminated from data set via ESD Method
<p style="text-align: center;"><u>Significance of the Study</u></p> <p>Determining if the three-teacher ACT prep model utilized by Riverbend North High School generates a statistical difference in improving ACT scores could make a substantial contribution to the efforts of the Riverbend School District (and other districts) to improve ACT scores across all high schools. If, in fact, the program does generate a statistically significant improvement in ACT scores, then the program could be implemented in other high schools.</p>	

<u>Findings</u>	<u>Discussion</u>
<p>Research Question: Does the three-teacher model generate a significant statistical difference in ACT scores between students who have taken part in Riverbend North High School's ACT prep course and those who did not?</p> <p>Findings: The Riverbend North High School's three-teacher ACT prep course generated a statistically significant difference in scores for its overall participants on the reading subtest, but not for minority students, free and reduced lunch students, and females who participated in the course when holding constant for the covariate, which was the statewide ACT (baseline) score.</p> <p>Findings: The Riverbend North High School's three-teacher ACT prep course generated a statistically significant difference in composite scores for its overall participants and minority students, but not for females and free and reduced lunch students, and females who participated in the course when holding constant for the covariate, which was the statewide ACT (baseline) score.</p> <p>Findings: The Riverbend North High School's three-teacher ACT prep course did not generate a statistically significant difference in math, English, or science scores for its overall participants, minority students, females, or free and reduced lunch students</p>	<p>For future similar studies, the researcher could control for attendance and and possibly even effort (through the use of a teacher metric) to eliminate data from students who were technically enrolled in the class, but who did not actually participate.</p> <p>Because test prep should be free and available in the school day so it does not fall into the realm of shadow education (Buchmann et al., 2010), schools should focus voluntary ACT prep sessions embedded during the school day prior to each national exam date.</p> <p>Further research should be conducted on the three-teacher ACT prep model, controlling for student attendance and effort.</p> <p>Based on the results of this study, the researcher recommends making the following changes to the semester-long ACT prep course taught by multiple instructors, as the inputs do not merit the outputs (Qiu & Wu, 2011).</p> <ul style="list-style-type: none"> • Group students by skill. • Allow students to choose which subtests for which they want to prepare. • Reduce teacher inputs by allowing two teachers to teacher the class instead of three. • Improve teacher training. • Improve student selection by not forcing all students with low scores to take the class. • Promote the program. • Form an ACT advisory committee to implement ACT skills in all classes. • Add more accountability for students. • Celebrate success. • Open the class to all students, not just seniors. • Allow students to repeat the class if they wish (and if there is room). • Use less class time for test-taking. Focus class time on analysis and learning strategies.

VITA

The author of this study, Chris Early, earned his bachelor's degree in Secondary Education, with an emphasis in English, from Missouri Western State University in 1998. Chris began his career as an English teacher, then transitioned to an instructional coach before becoming an administrator. He completed his Master of Science degree in Educational Leadership through Northwest Missouri State University, and he is currently completing his Doctorate in Educational Leadership and Policy Analysis from the University of Missouri. Chris is currently a middle school principal in Northwest Missouri.