Prescribed Curriculum: An Analysis of Student Achievement in Texas School Districts Who Use the Curriculum Model CSCOPE in Grades 5 and 8 Mathematics

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Abstract

What is the effect of using prescribed curriculum in order to increase achievement on state-mandated tests? Does implementation of such curriculum increase readiness for such tests? Would teacher experience contribute to students' success? The purpose of the research project was to determine the relationship, if any, regarding school districts' teachers' average years of service, number of years of implementation of a prescribed mathematics curriculum model called CSCOPE, and student achievement on the STAAR (State of Texas Assessments of Academic Readiness) mathematics scores in Grades 5 and 8. One hundred and sixty-six districts were used in the study with student achievement data collected on the following student subgroups: White, African-American, Hispanic, Limited English Proficiency (LEP), Economically Disadvantaged, Special Education and All Students. Data from the 2012-2013 school year were analyzed using multiple regression to determine if the independent variables were accurate predictors of student scores. Results of the study indicated that among various student subgroups the districts' teachers' average years of teaching experience was a statistically significant predictor of student achievement on the mathematics STAAR in Grades 5 and 8. Neither variable, "years of implementation" or "districts' teachers' average years of teaching experience" resulted as significant predictors of student achievement with LEP grades 5 and 8 or African American grade 8 subgroups.

Introduction: Prescribed Curriculum – Why? or Why Not?

As the pressure of high-stakes testing increases in public education, stakeholders seek new ways to ensure test scores are at the necessary levels to be classified as successful by the system in which they function. One manner in which this level is achieved is through implemented prescribed curriculum. Prescribed curriculum is a recent development towards meeting the needs of school districts throughout the nation. Whether to use such curriculum has become a debate that has intensified among educational stakeholders since the implementation of the No Child Left Behind Act (NCLB) in 2001 (2002).

As a result of national and state mandates, schools' curricula have become assessment driven due in order to meet imposed accountability from legislated sources. This focus on assessment has often been referred to as *teaching to the test*. Longo (2010) reemphasized that school districts must provide teachers with a motivating, inquiry-based curriculum that is fully aligned to state standards and applicable to real-world topics. If the curriculum is developed and delivered in such a manner, Longo stated that it is perfectly acceptable to teach to the test. However, the National Education Association

(NEA) states that assessment should be seen as an instructional tool to use while learning is occurring and an accountability tool to determine if learning has occurred (2003). The assessment should assist teachers in the evaluation of students' understandings regarding topics taught. When assessments are used properly, the information can be utilized to make meaningful decisions regarding teaching strategies and learning outcomes (Zemelman, Daniels, & Hyde, 1998).

With the increase in curriculum development complexity, school administrators may look outside their own abilities to develop a curriculum scope and sequence for use in the classroom. Thus, a school district may adopt a prescribed curriculum for a variety of reasons including lack of time to design and write curriculum, inability of staff to develop their own curriculum model, increased mobility of students within the district, and lack of unification of teaching philosophies and strategies throughout the district. For some, prescribed curriculum standardizes what is taught, so that a student at a low performing, inner city school will gain the same education, at least theoretically, as a student at a high-performing affluent school (Tyrrell, 2010).

Marzano (2003) advocates that a conceptually based curriculum vertically aligned across the grades and horizontally aligned throughout each grade level provides the design components needed for maximizing time and opportunity for student learning. By aligning curriculum, students are able to build upon their knowledge as they progress through the grade levels. Curriculum can be designed triangularly between what is actually learned, what is intended to be learned, and what is taught (Jacobs, 2010; Marzano, 2003). However, the critics of prescribed curriculum believe that providing teachers such a scripted curriculum coupled with inflexible pacing sequence does not leave any room for creativity in the classroom (Harris, Cohen, & Flaherty, 2008; Herman, Dawson, Dee, Greene, Maynard & Redding, 2008). Teachers are also unable to provide differentiation, which is reinforcement for students that have inadequate readiness skills or adequate enrichment for students that are high achieving (Tyrrell, 2010; Heilig, 2011).

Reports of curriculum constraint are more prevalent in low-income schools, defined as those schools in which more than 50% of the students are eligible for the federal free and reduced lunch program, than in high-income schools, meaning those schools in which fewer than 15% of the students qualify. For mathematics, 19.6% of second-year teachers in low-income schools reported having insufficient freedom in curriculum planning compared to only 6.8% in high-income schools, a statistically significant difference (Kauffman, 2005). According to Johnson, Kardos, Kauffman, Liu & Donaldson (2004), there is a greater emphasis on test preparation at low-income schools contributing to a higher

degree of curriculum prescription. In mathematics, 37.4% of second-year teachers in urban schools reported that they had insufficient curriculum freedom, compared to only 12.5% in non-urban schools.

Prescribed curriculum has made its way statewide into Texas with the advent of CSCOPE (Newman, 2007; Reeves, 2004; Tyrrell, 2010). CSCOPE, a curriculum model written for all core and content subjects by leaders from Regional Education Services Centers in Texas, has become increasingly popular in recent years. Due to its widespread influence, this study questioned whether the CSCOPE model was an appropriate curriculum tool, and how well does it prepare students, particularly in mathematics? Do years of implementation and/or teachers' experience with such curriculum make a difference?

Understanding One Curriculum Model - CSCOPE

According to CSCOPE, as of September 25, 2012, there were 875 active CSCOPE districts in Texas equating to approximately 70% of the districts in the state. Initial CSCOPE development began during the 2005-2006 school year, with the 2006-2007 school year designated as the first year of implementation.

The curriculum and instructional components of CSCOPE are based on best practice models from researchers in the field of education including Robert Marzano, Fenwick English, John Crain, Heidi Hayes Jacobs, Grant Wiggins, Jay McTighe, H. Lynn Erickson, and James Barufaldi (CSCOPE, 2011). CSCOPE also reports gains in student performance when curriculum is implemented with fidelity. Lessons within CSCOPE are designed with the 5E Model, developed in 1989 by the Biological Science Curriculum Study Group (BSCS) and include the following: Engage, Explore, Explain, Elaborate, and Evaluate (Bybee, Taylor, Gardner, Van Scotter, Powell, Westbrook & Landes, 2006). According to the BSCS, this model has been used since the 1980s for varieties of lesson and curriculums and is a significant tool in curriculum; especially science based curricular models (Bybee et al., 2006).

The curriculum model incorporates standards-based, assessment-based, and concept-based curriculum ideas (CSCOPE, 2008). Standards-based and concept-based curriculums are incorporated when the Texas Essential Knowledge and Skills (TEKS) are bundled together to create individual learning units within the curriculum model. These learning units contain specific teaching instructions, activities, and assessments designed to reach all student subgroups through aligned lessons. When lessons are

tightly aligned, there should be an increase in student achievement as evident on outcomes of state-mandated assessments (CSCOPE, 2008).

Sheneman (2008) examined CSCOPE and reports, "an underlying assumption is that students who master the Texas Essential Knowledge and Skills (TEKS) will also be successful on the state examination" (p. 17). The CSCOPE curriculum vertically aligns all the TEKS into a yearlong scope and sequence, assuring that all of the skills required would be covered in an academic year. Vertically aligned curriculum addresses what students should know from the previous school year, supporting standards, and what the student should know for the upcoming school year, readiness standards. This sequence is necessary because the TEKS were not written for classroom use. Instead, the TEKS were written as a list of skills that should be covered (TEA, 2009b). CSCOPE, as a result, aligns the TEKS into workable lesson plans that are meant to be taught in the classroom, unlike the TEKS listing of skills (Schuenemann, 2011).

There have been external and independent reviews of elements of CSCOPE. In a study published in 2009, the Legislative Budget Board (LBB) personnel reviewed district student performance data (as cited in TESCC, 2012). Of the 10 school districts reviewed, at least two were CSCOPE users at the time of the study. The study showed that:

> . . . across all TAKS tests and grades tested, most of the districts in the targeted review performed above the state average in school years 2002-2003 to 2006-2007. The districts generally show a trend of increasing student performance over the period. In addition, the eight districts with either internally developed or externally developed curriculum management systems generally performed above the state average across all core subject areas and made improvement across student group performance. (as cited in TESCC, 2012, p. 5)

Several researchers have conducted both qualitative and quantitative studies on the standardized testing results of districts that have and have not implemented CSCOPE curriculum as well as teacher attitudes about using prescribed curriculum (Merritt, 2011; Schuenemann, 2011; Tyrrell, 2010; Wilson, 2009). In a qualitative study involving four high school English teachers that had three years of experience implementing the CSCOPE curriculum, Tyrrell (2010) found that teachers had a high level of self-efficacy totally removed from the CSCOPE curriculum. Most teachers abandoned the curriculum after implementation because they felt it was not serving their students; therefore, it was hindering the

teacher efficacy. Mainly, prescribed curriculum affected teachers' confidence in their ability to promote students' learning.

However, in the content areas of mathematics and science, three studies have shown that schools and districts using CSCOPE have scored higher on standardized tests than schools and districts not implementing CSCOPE (Merritt, 2011; Schuenemann, 2011; Wilson, 2009). Merritt (2011) used 56 school districts that had implemented CSCOPE for three consecutive school years from 2007-2010. Using Fischer's t-test, the researcher found that mathematics TAKS scores were significantly higher for CSCOPE districts in all subgroups except African-Americans. Wilson (2009) also used Fischer's t-test as the analysis method for the 60 campuses that were a part of the study. Of the original 60 campuses initially included, only 20 had implemented CSCOPE for two years, the researcher then used a power analysis to address any statistical concerns finding a statistical difference between districts using CSCOPE curriculum and districts not using CSCOPE curriculum for mathematics and science in Grades 5, 8, and 11. Schuenemann (2011) used ANCOVA to analyze TAKS scores from the 2006 and 2010 mathematics and science administration. Schuememann concluded that economically disadvantaged students in districts that used CSCOPE curriculum had greater improvement than non-CSCOPE districts.

But What About Teacher Experience?

Teacher experience is an important factor for improving student achievement; a comprehensive analysis by Greenwald, Hedges, and Laine (1996) examined data from 60 studies and found a positive relationship between years of a teachers' experience and students' test scores. Hawkins, Stancavage, and Dossey (1998) found that while teachers of fourth- and eighth-grade mathematics span the range of years of mathematics teaching experience, students taught mathematics by teachers with more than five years of teaching experience were more likely to perform better on the National Assessment of Educational Progress (NAEP) mathematics assessment than students taught by teachers with five or fewer years of experience.

Similarly, the University of Texas at Dallas' Texas Schools Project showed that students of experienced teachers attained significantly higher levels of achievement on standardized tests than did students of new teachers, those with one to three years of experience (Hanushek, Rivkin, & Kain, 2005). Using data from the Texas School Microdata Panel to measure teacher quality and experience by the annual growth in each student's scores on the mathematics section of the Texas Assessment of

Academic Skills, the dataset links detailed student, teacher, and school characteristics in Grades 4 and 8 for the school years 1995-2001 in a major Texas urban district. Their results confirm that experienced teachers increase student achievement. Gorman (2005) found that first-year teachers have a much lower performance on average than other teachers. After that, first-year teacher performance improves markedly, peaking in the teacher's fourth year.

On the other hand, Greenberg, Rhodes, Ye, and Stancavage (2004) conducted a study using data from the 2000 math NAEP on several characteristics of teacher qualification which included (a) certification, (b) college or graduate school major, (c) highest degree, and (d) experience. The researchers looked at years of teaching experience, both in mathematics and in other fields. In the study experienced teachers were defined as those with five or more years of experience and found that teacher certification was strongly associated with higher student scores, as was a major or minor in either mathematics or mathematics education. The research did not find significant associations between higher degrees of education or teaching experience and student achievement (Laitsch, 2004).

It is likely that new and experienced teachers respond differently to standards and accountability; experienced teachers face the challenge of adapting their practice to the new realities and new teachers are just beginning their careers. A study of six teachers in Virginia found that, while the experienced teachers felt threatened by the state standards and test, the new teachers appreciated the direction provided by the standards and the opportunities for collaboration with colleagues that it provided. These new teachers felt that they had sufficient pedagogical and content freedom within the guidelines of the standards (Winkler, 2002). In stark contrast to the findings from Virginia, researchers found that recent graduates of the same teacher education program and were new teachers in New York, New Jersey, and Connecticut were deeply troubled by the high-stakes testing environment (Costigan, Crocco, & Zumwalt, 2004). They reported that many new teachers found the high-stakes testing climate to be devastating as an introduction to teaching; mandated curriculum, scripted lessons, and the pressure to improve scores with adequate support for accomplishing this end were the chief factors driving them out of teaching.

Methodology of the Current Study

In order to better understand the relationship of teacher experience, prescribed curriculum and student achievement in mathematics, the following question was posed: "What is the relationship between

districts' teacher average years of service, districts' number of years of CSCOPE implementation, and student achievement in mathematics in Grades 5 and 8?" The study also explored the relationship of the variables for the following student subgroups: White, African-American, Hispanic, Limited English Proficiency, Economically Disadvantaged, Special Education and All Students.

This correlational, quantitative study determined what significant differences, if any, exist in mathematics STAAR scores between students in districts with teachers that have more years of total teaching experience and various years of experience with implementing CSCOPE.

Using the student test data from the April 2, 2013, initial administration of the STAAR mathematics assessment, the scores were categorized at the district level so that data could be run to address all variables and subgroups resulting in several multiple regression analyses. Multiple regression allowed comparison for all variable relationships-- one year of mandated use to seven years of mandated use, students in Grade 5, students in Grade 8 and all students to each subgroup: African-American, Hispanic, White, Economically Disadvantaged and Limited English Proficient. Multiple regression was selected as the analysis tool for this study to determine if the independent variables, average years of teaching experience and district years of the CSCOPE curriculum model were predictors in determining the dependent variable of student achievement on standardized assessments in the area of mathematics.

Due to the variability of student demographics makeup across the state of Texas, the selection of districts for comparison purposes was accomplished using TEA's Campus Comparison Report. This report used six demographic indicators to match districts to other like districts for comparisons purposes (TEA, 2012). These demographic indicators were the percentage of African-American students enrolled, the percentage of Hispanic students enrolled, the percentage of White students enrolled, the percentage of Economically Disadvantaged students enrolled, and the percentage of Limited English Proficient (LEP) students enrolled (TEA, 2012). By selecting a Campus Comparison Report by campus name, a list of other demographically similar campuses was produced, and the number of matching students per comparison campuses was listed. The districts used for the study were grouped based on the districts' number of years that CSCOPE has been in use ranging from one to seven years. Districts that were eliminated had numbers less than 50 students in the overall reporting category for students in Grades 5 and 8. This process resulted in 166 overall districts used for the study. Cohen (1988) provides sample size tables for a multitude of statistical tests. According to the tables for studies with multiple variables of this type, 106 participants is an acceptable size. In addition to years of CSCOPE usage,

analyses were run based on student demographics.

Basic assumptions were made for the current study. In order to select district participants for this study, data provided by the Texas Education Agency and Pearson Testing were used. It was assumed that all districts in the study mandated the use of the CSCOPE curriculum, including exemplar lessons provided for each unit in the curriculum. Since every district in Texas is responsible for following state standards, it was assumed that all students were instructed using the TEKS. However, there is no documentation to support that CSCOPE was consistently implemented between all participating school districts. Without visiting every classroom on each campus of all districts, it was not possible to determine if the teachers in the districts implemented the entire CSCOPE curriculum product as prescribed.

The study included 166 of 875 school districts in Texas that use CSCOPE. This sample size was selected because it was large enough to help detect an important effect in the population but not so large that a result in statistical significance would have a small and unimportant effect size (Coladarci, Cobb, Minium, & Clarke, 2008). However, without analyzing the scores from every school district in Texas, generalization of the findings are limited.

Instrumentation

The mathematics STAAR test was the instrument used to determine CSCOPE's effect on standardized test scores. The STAAR tests are designed by TEA and created by Pearson Inc. The purpose of the STAAR test is to assess the students' level of understanding of the state of Texas's Essential Knowledge and Skills or TEKS. These assessments are administered yearly to students who are attending public school and are enrolled in Grades 3 through 8. The results of the tests are provided in the same school year they are taken. Individual reports are provided for each student to show their performance on the test. Texas Education Agency (TEA) provides the Academic Excellence Indicator System (AEIS) report to publicly summarize each school district's performance. The AEIS reports are public information and can be accessed via the TEA website (TEA, 2012).

Reliability for the STAAR tests, according to TEA (2012), measures how well the assessment measures actual learning. TEA used the stratified coefficient alpha for estimating the reliability of the STAAR tests and internal reliability consistency for the STAAR assessments range between 0.83 and 0.93

(TEA, 2012). The stratified coefficient alpha is used when there is a mixture of item type components on the test such as multiple-choice, open-ended, or essay items. This type of calculation treats each differently component as a subtest to the whole (TEA, 2012).

Validity for the STAAR assessments is content based and tied directly to the statewide curriculum known as the Texas Essential Knowledge and Skills (TEKS). Alignment between the STAAR and the TEKS is an ongoing process so that the assessment measures the standards (TEA, 2012). Validity within the contents of a standardized test is a process of collecting evidence to support inferences made from the scoring results (TEA, 2012). TEA has evaluated and measured the validity of the STAAR test through the process of alignment, educator evaluations, test developer inputs, and test expert input to ensure that the standardized assessments test the statewide curriculum standards.

Data Collection and Analysis

The mathematics STAAR scores for participating districts were obtained from Pearson Access available through the Texas Education Agency's website (2013). All other data for this study were collected from the public reports by the Texas Education Agency in the AEIS and historically archived on the Texas Education Agency website for public viewing. Data were representative of all the aforementioned subgroups of interest in the selected districts.

The selection of multiple regression as the analysis tool is attributed to its ability to quantify the impact of various simultaneous influences upon a single dependent variable. A multiple regression analysis was conducted to predict to what level, if any, years of CSCOPE experience and years of total teaching experience is a predictor of student achievement on the STAAR mathematics assessment. According to Field (2009), "Regression Analysis enables us to predict future outcomes based on the predictor variable" (p. 198). The independent variables in this study were defined as the years of CSCOPE curriculum implementation in each district - varying from one year of mandated CSCOPE implementation to seven years of mandated CSCOPE implementation. The second independent variable was the districts' teacher average of total years of service. The dependent variable for this study was student achievement as measured by the 2013 mathematics STAAR results for the first administration in Grades 5 and 8.

Results

The sample size (n) for each analysis is reported in Table 1. Each district used in the study had 50 or more students in the subgroup-reporting category. All districts reporting less than 50 students in the student subgroup were eliminated due to the small populations of students. Overall 166 districts out of 875 met the qualifications established by the researcher for the purposes of this research project.

Table 1 *Sample Size Summary (Number of Participating Districts)*

Student Subgroups	Grade 5 - N	Grade 8 - N
African-American	91	99
Hispanic	158	158
White	159	151
Economically Disadvantaged	166	166
Limited English Proficiency	111	75
Special Education	112	111
Overall	166	166

Note. Districts needed 50 or more students in a subgroup to be used in this study.

The prediction model was statistically significant for years of teaching experience for all students in Grade 5, $F = 9.814$, $p < .001$. The analysis resulted in an R^2 value of .107 and the adjusted R^2 value of .097, indicating the predictor variables, years of CSCOPE implementation, and average years of teaching experience combined to predict 9.7% of the variance in mathematics STAAR scores for all students in Grade 5. The model was also statistically significant ($p < .05$) for African-American students, $R^2 = .086$, adjusted R^2 =.065 predicting 6.5% of the variance, Hispanic students $R^2 = .055$, adjusted R^2 =.043 predicting 4.3% of the variance , White students $R^2 = .075$, adjusted $R^2 = .063$ predicting 6.3% of the variance, Economically Disadvantaged students $R^2 = .059$, adjusted $R^2 = .048$ predicting 4.8% of the variance, Limited English Proficiency students $R^2 = .056$, adjusted $R^2 = .039$ predicting 3.9% of the variance and Special Education students $R^2 = .073$, adjusted $R^2 = .056$ predicting 5.6% of the variance.

The prediction model was statistically significant for years of teaching experience for all students in Grade 8, $F = 6.421$, $p < .05$. The analysis resulted in an R^2 value of .073 and the adjusted R^2 value of .062, indicating the predictor variables, years of CSCOPE implementation and average years of teaching experience combined to predict 6.2% of the variance in mathematics STAAR scores for all students in Grade 8. The model was also statistically significant ($p < .05$) for Hispanic students $R^2 = .025$, adjusted $R^2 = .013$ predicting 1.3% of the variance, White students $R^2 = .046$, adjusted $R^2 = .033$ predicting 3.3% of the variance, Economically Disadvantaged students $R^2 = .052$, adjusted $R^2 = .041$ predicting 4.1% of the variance, Limited English Proficiency students $R^2 = .246$, adjusted $R^2 = .225$ predicting 22.5% of the

variance and Special Education students R^2 = .060, adjusted R^2 = .042 predicting 4.2% of the variance.

Results of the this study determined that among various student subgroups the districts' teachers' average years of teaching experience was a statistically significant predictor of student achievement on the mathematics STAAR in Grades 5 and 8. Years of prescribed curriculum implementation may not be as helpful to students as they undertake state-mandated tests and/or seek to achieve academic skill, as are years of teacher experience in teaching the subject area of mathematics. Interestingly, neither variable, "years of implementation" or "districts' teachers' average years of teaching experience" resulted as significant predictors of student achievement with LEP grades 5 and 8 or African American grade 8 subgroups. LEP and African-American students in Texas in particular may not benefit from packaged, prepared curriculum sequences. Reasons for this phenomenon may be lack of learners' language skill for LEP students, lack of appropriate instructional strategies and culturally relevant teaching, and/or lack of professional development for teachers who teach LEP and African-American students.

Discussion

As accountability moves from local to state and national levels, the measuring stick or standards by which campuses are compared make effective curriculum and teaching even more important than previously believed (Beck & Murphy, 1992; Cooper, 2009). Unfortunately, prescribed school level curriculum guides aligned to state standards provide no guarantee of academic success for students (English & Steffy, 2001; Hirsch, 1996; Marzano, 2003; Wiggins & McTighe, 2005). While some studies indicate that there is a significant relationship between student learning gains and the fidelity of curriculum implementation in the classroom (Taylor et al., 2007), other barriers such as resistance to change, time issues, and/or lack of professional development and collaboration exist that often prevent teachers from implementing the intended curriculum. It is assumed that prescribed curriculum, if implemented with true fidelity, will negate any other barriers to student achievement such as socioeconomic status, gender, race, and/or teacher effect, according to Bayuk and Perez (as cited in Schuenemann, 2011).

However, this study did not provide evidence that the Texas based CSCOPE curriculum model was a statistically significant predictor of student achievement on the STAAR mathematics test. Instead, it found that teacher experience was a statistically significant predictor of student achievement for White,

Hispanic, Economically Disadvantaged, and Special Education students in Grades 5 and 8. This study indicated that experienced teachers serve as the key to the successful implementation of the intended curriculum in the classroom. Students, especially those of underrepresented subgroups are the beneficiaries of these combined efforts.

The two subgroups that did not demonstrate significance with either variable were the Limited English Proficient group and the African-American group. Prescribed curriculum programs, if used, will need to create interventions and differentiation approaches to help LEP and African-American students. Regarding LEP students, teachers must employ instructional strategies that help English learners relate to the content in the curriculum and translate such content to standardized tests (Heilig, 2011). While English learners may be required to meet the same standards as all students, curriculum scope and sequence must take into account the development of such learners in language skill with varying levels of language proficiency. Language development and growth needs to be enhanced by both appropriate and culturally relevant curriculum and teaching strategies, which highlights the necessity for professional development in this area. Even experienced teachers, while proficient in teaching mathematics to many subgroups, could profit from professional development that helps them reach the LEP student. Professional development, peer observations, and even the practice of a professional learning community formed within a school for teachers of LEP students may give experienced mathematics teachers new insights into the English learner's language skills.

According to Nieto (2011), creating a school culture and climate that promotes ELLs' academic success, teachers and school leaders must have positive and well-informed views and attitudes toward these students and their families. Commins and Miramontes (2005) argue that "the responsibility of educator is to maximize the academic achievement of every child who arrives at school, whatever it takes" (p. 123), and they point out that a major challenge for teachers and administrators is to overcome commonly held beliefs that students who are not yet proficient in English are somehow broken, making the teacher responsible for "fixing" them.

Understanding how best to improve achievement in African American mathematics students may require better communication skills by teachers of mathematics, building background knowledge in mathematics, and teaching a relevant, engaging curriculum. Researchers have observed that effective communicative teachers possess cultural awareness (Ladson-Billings 1995; Zeichner et al. 1998) and are usually aware of their own personal biases and prejudices (Ilmer et al. 1997). Culturally relevant teaching acknowledges the cultural heritage of the students by including their approaches to learning

and by bridging prior experiences and school experiences. Teaching and learning that is culturally responsive is designed to teach through and to the students' strengths by using a variety of instructional strategies connected to different learning styles and sensory opportunities. Math instruction that is responsive to the culture of the students would also need to incorporate the real life and everyday needs of the diverse groups (Gay, 2000).

In conjunction with culturally relevant teaching African-American students, especially males respond well to positive role models in the academic environment. The recruitment of African-American administrators, teachers and mentors will significantly improve student self-efficacy (Hileman, Clark & Hicks, 2012). These mentors, teachers and administrators must believe and be able to demonstrate explicit and sincere affirmation of the academic abilities of African-American students, particularly males. Hileman, Clark and & Hicks also believe that African-American students need a bias and stereotype threat-free classroom and school community to be successful (2012). This can be established through systematic embedded staff development for district administrators, principals, teachers, and support staff.

Until education solves the dilemma of persistent academic achievement gaps, a focused, continual refinement process in curricular design will continue. This curricular refinement is necessary in order to seek better ways to meet the needs of underrepresented subgroups, especially when they are being assessed with standardized exams. In addition, schools should also recognize the importance of teacher experience in meeting assessment goals. The experienced teachers can give the schools stability and serve as mentors to new teachers. They can also give new teachers the additional training and support not typically received from the district. Building relationships and serving as mentors allow experienced teachers to help ease the growing pains of inexperienced teachers. The importance of experience may be clearer in the teaching profession than any other, especially in mathematics, as teachers seem to improve more quickly and consistently than reading teachers (Strauss, 2010).

The results of this study indicated that the years of implementation of CSCOPE was not a statistically significant predictor of student achievement on the mathematics STAAR test in Grades 5 or 8. Rather it showed that teaching experience was a statistically significant predictor for certain subgroups. While other studies have shown that an aligned and viable curriculum is one of the most effective ways of increasing students' achievement (English, 2000; Marzano, 2003), the results of the current study do not support CSCOPE's claim that it is a viable curriculum aligned to the state of Texas's academic standards (CSCOPE, 2009) which produces high student success in all subgroups. Instead, the

results of the current study indicate that districts must plan for a combination of tools to help increase student achievement, including but not limited to a viable, aligned curriculum, retention of experienced teachers, and increased professional development to support curriculum implementation and teachers' instructional practices in their classroom.

Limitations and Recommendations for Future Research

This study focused on one curriculum model in one state in one subject area. A study conducted on a larger scale to represent more curriculum models in various states and with various subjects is recommended.

A quantitative approach was used to gather data for the current study. It is recommended that a qualitative or mixed-methods study be conducted in order to study teacher fidelity of implementation of prescribed curriculum in relation to student achievement, the effects of professional development, and/or the use of instructional strategies over a period of time. For example, teachers could be interviewed about their use of curriculum modules and real-time observation or videotaping in classrooms could help determine the level of fidelity. Professional development and instructional strategy sessions could be observed and followed up with interviews, surveys, and observations of teachers in action.

Further investigation into the relationship between a teacher's years of experience and subgroup achievement success is warranted, especially with LEP and African American students since neither independent variable was statistically significant in predicting student achievement with either subgroup. Understanding the language development of LEP students and its relationship to curriculum and instructional strategies could be an important focus for this population of students. This study represents a beginning point in addressing the gap in the research, as well as providing an opportunity to amplify this research to include a qualitative piece where teachers are interviewed about their instructional strategies for students with varying levels of English proficiency. It is hoped that the results of this study will be a springboard for other studies.

In conclusion, the current study sheds light on the popular assumption that a prescribed curriculum is the total answer to test achievement and accountability goals that a school district may

set. Rather, it takes a "village" of best practice tools – viable curriculum models, effective communicative teachers, instructional strategies that engage all learners and strong support from relevant professional development to begin to address how best to educate a diverse population of students.

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