An Evaluation of Early College High School Models and Traditional High Schools on Early College Readiness in English

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Abstract

In Texas, the Early College High School Initiative (ECHSI) has doubled from the 2013-2014 school year. This reform effort is an attempt to ensure college and career readiness for high school students. Individuals must be deemed college ready to participate in dual-enrollment. The purpose of this study was to determine if there was a significant difference between Early College High School (ECHS) students, ECHS students within a traditional high school, and traditional high school students in South Texas on college readiness as measured by the grade nine and 10 English EOC tests. The research reviewed scores of EOC English I and EOC English II courses for ninth and tenth grade students. English EOC test scores from three different high school models were analyzed using an analysis of covariance (ANOVA) with repeated measures statistical analysis. Results showed the ECHS stand-alone model had a significant difference in English EOC test scores among the three different high school models on college readiness.

Keywords: Early College High School, college readiness, End of course exam.

1. Introduction

Issues of academic achievement and persistence continue to challenge secondary education and higher education. Students who do make it through high school are not necessarily ready for college. Middle school and high school system's push for innovations which will help develop a robust cohort of students to persist and graduate and, potentially, move into higher education. Early college is a design for high schools that is based on the principles of academic rigor combined with the opportunity to save time and money. Early college high schools (ECHS)"blend high school and college in a rigorous yet supportive program" (Jobs for the Future, 2012, p.1).Within the state of Texas an initiative began to implement and provide ECHS opportunities for high school students.

To improve academic preparedness, a critical factor determined lacking across the nation and especially in low-income school districts (Chapa, Galvan-De Leon, Solis & Mundy, 2014), the Texas legislature implemented additional requirements for college readiness. Texas Education Code 51.3062 states "students attending Texas public institutions of higher education must be in compliance with the Texas Success Initiative (TSI) in order to enroll in public institutions of higher education" (THECB, 2012, p.1). Even though early college high schools may provide opportunities for students to accelerate, students may only enroll in college courses if they have met the Texas standards set by the TSI an indication of college readiness. Therefore, high school students who have passed TSI benchmarks may be provided the opportunity to take college courses while still enrolled in high school. Enrollment in such courses may not only increase academic preparation but also add to factors of persistence for continued academic and life-long learning (Baer, Kutner & Sabatini, 2009).

Research by Baer, Kutner and Sabatini (2009) support the need for college readiness in a study that showed 14% of America's least literate adults' reading skills falls below basic level. From this group, 39% were determined to be Hispanic. Closing the achievement gap is an issue that continues to adversely affect students in public schools. Within the state of Texas, where Hispanics constitute the largest minority at just over 30% of the population (Lopez, 2014), there has been a focus on the connection between at-risk students and academic preparedness. In the most southern part of the state, South Texas, "there is a problem with a lack of college readiness for low-income high school students" (Chapa et al., 2014, p. 3). In the study by Chapa et al. (2014) it was determined that graduating students "are not prepared for the [academic] rigor of college" (Chapa et al., 2014, p. 3). Based on the determination of needs, the state of Texas has implemented TSI college and career readiness standards with the goal of preparing high school graduates for college matriculation and completion. The TSI standards, initiated by the state for those who qualify within the benchmarks, may not serve those most at-risk. In South Texas, only 11.9% of the population have received a bachelor degree or higher. Similarly, according to the THECB (2013), only 28.4% of Hispanics students in the state of Texas enroll in a public college or university. The ethnic population of the four counties that constitute what is called South Texas is predominantly Hispanic (92.5%). This statistic of nine out of every ten persons identified as Hispanic is in contrast against the entire state of Texas with a Hispanic population of 38.4 % (U.S. Census Bureau, 2013). With such numbers, there is a need to increase the number of college degrees and college readiness for Hispanic and economically disadvantaged students in South Texas.

1.1 The Conceptual Framework

To guide this study, a conceptual framework describing key features of a traditional high school, ECHS, and the TSI for college readiness provided an overview of the two high school models and the college readiness expectations in the state of Texas. The presumed relationships show how two different high school models are utilized with the goal of students achieving college readiness when they receive a high school diploma. Conceptual models explain how they work and relate to college readiness.

1.1.1 Traditional High School

In Texas, high school students in grades nine through 12 have an option to graduate with either a minimum, recommended, or distinguished achievement diploma (TEA, 2014b). *Figure* 1 displays the state of Texas's recommended high school requirements needed to obtain a high school diploma. A high school diploma is only one of several requirements a high school graduate must meet to apply for acceptance to an institute of higher education.

1.1.2 Early College High School

As stated in Chapa et al. (2014) "Early college is a design for high schools that is based on the principle of academic rigor" (p. 3). Subsequently, college readiness affords that students are prepared for the demands of college. An ECHS also focuses on acceleration by providing "the students with the opportunity to simultaneously attain a high school diploma and college credit hours up to and including a 60-credit associate's degree during a four- or five-year high school program" (Chapa et al., 2014, p.4). As stated, the goal of an ECHS is to ensure college readiness and through dual enrollment, taking college-level courses while still enrolled in high school, such goals could be met (Chapa et al., 2014). Dual enrollment has been used as a primary tool in the preparation of secondary learners for the demands of higher education. High schools part of ECHS must go through a process to offer the opportunity of dual enrollment to students. In order to pursue the prospect of offering college credit, ECHS "partners with local institutions of higher education (IHE) and establishes a joint agreement that specified both the courses that were eligible for dual credit and the respective responsibilities of the high school and IHE partners" (TEA, 2011as cited in Chapa et al., 2014, p.3). The validation of the partnership and acceptance of the responsibilities aim for high school student college readiness.

1.1.3 College Readiness

A high school diploma alone does not ensure college readiness. In 2003 the TSI was updated and defined in an endeavor to further align with recognized standards. According to the THECB (2014), "Texas became the first state to mandate the development and use of college readiness standards. The standards were an effort to create the P-16 continuum and marked the first official partnership between the TEA and THECB" (THECB as cited in Chapa et al., 2014, p. 4).

HB 1244 directed THECB to prescribe the standards for college readiness (Paredes, 2014).Figure 3 provides a timeline for the state of Texas in development and implementation of standards and assessments for college and career readiness.

In 2000, the Center for Educational Policy Research (CEPR) launched a large-scale project. CEPR was charged with the goal to define the specific knowledge and skills that require success in college (Hoffman, Vargas, Venezia & Miller, 2007). While Texas is beginning to reform high schools and replicate the ECHS model, the Texas Legislature mandated a P-16 Initiative. In 2007, the development of the College and Career Readiness Standards are drafted through a collaborative effort of high school and university faculty (THECB, 2014). The need for college readiness was due to a realization that 67% of 21st century jobs require some postsecondary education (THECB, 2014) and "more than one third of students graduating high school unqualified or marginally qualified to go to college"(Edmunds et al., 2012, p.137).

The new TSI assessment was implemented in the fall of 2013. According to Morales-Vale (2014), only 40% of students who were administered the TSI assessment in the fall of 2013 met the threshold of college readiness. Therefore, 60% of these students fall under the threshold of Adult Basic Education (ABE) when they enter college. There are different levels of ABE, and it is the responsibility of the college to place these students in the appropriate placement for classes (Morales-Vale, 2014). High school students may also be considered college ready if they pass the English I and English II End of Course (EOC) tests along with the English III class; therefore, they are exempt from taking the TSI assessment.

Dual Credit. Some reformers believe early college and dual enrollment increases academic engagement and performance (Howley, Howley, Howley, & Duncan, 2013). Dual enrollment allows high school students to enroll in college courses and receive college credit while still in high school. (Berger et al., 2013). Most students who participate in a dual enrollment program earn college credit for free. Texas Education Code, Sec. 28.009 requires all high schools to provide up to twelve hours of college credit opportunities for junior and senior-level students. Approximately 23% of early college high school students earned an associate degree by the time they graduated from high school (Berger et al., 2013).

2. Significance of the Problem

High school matriculation, with a rate at about 70%, continues to be a critical factor in the U. S. (Texas Tribute, 2012 as cited in Chapa et al., 2014). Participation in dual enrollment courses could offer high school students the efficacy to complete high school. However, only about one third of U.S. high school students graduate college ready. Research conducted by Saxon & Slate (2013) noted that "42% percent" of all students "entering a community college take remedial courses" (p. 34). The lack of college readiness has prompted the need to better prepare high school graduates for college.

Despite the decades of education reform efforts in the United States, traditional public high schools are not meeting the needs of students of color or the needs of students from low-socioeconomic households (Webb & Gerwin, 2014). To assist with this gap, the federal government, through various grant opportunities, has supported the ECHS initiative. Such support offers both students of color and low-socioeconomic students the opportunity to prepare and start college while still enrolled in high school.

According to the Bureau of Labor Statistics (2014), the average weekly wages in South Texas are $597 as compared to the U.S. average of $1, 027 per week. The poverty level in South Texas is evident and reflected in the classrooms as well. Effects of economic poverty can negatively affect academic persistence as "students who live in poverty tend to have lower achievement and are less likely to complete high school and enroll in and complete postsecondary education" (Bill & Melinda Gates Foundation, 2014, p.1).

Currently, Texas is ranked third highest in high school graduation rates in the country. It is also ranked second in both graduation rates for both Hispanic students at 82% and economically disadvantaged students at 84% (TEA, 2014c). This is one indicator that efforts to close the achievement gap for students of color and students of low socio-economic are promising. A study conducted by Saxon and Slate (2013) indicates that there has been a decrease in the number of students participating in developmental courses in Texas community college. The study noted some factors affecting developmental education enrollment. These factors include high school reform efforts, assessments for incoming students, and graduation requirements. The state of Texas has provided students with a variety of services and matriculation options. Therefore, students who graduate college ready may avoid taking developmental courses in IHE and, potentially, reduce overall college costs.

Research conducted by ACT (2014) shows that "students who take rigorous curricula are more prepared to graduate from high school ready for college and career" (p. 9). The ECHS concept incorporates college readiness strategies in various areas, including rigorous curriculum and instructional approaches. And, with the partnership confirmed between a local college or university and the public school, a level of standards in curriculum and instruction are ensured. Chapa et al. (2014) found a difference between students in an ECHS high school English class in compared to high school students in an English class at a traditional high school without ECHS interventions. As that the study focused on students in South Texas, a region with high levels of low socio-economic populations as well as a majority of students identified as Hispanic, there are possibilities for ECHS to increase learning and achievement. Both factors indicators for persistence to college.

Students intending to participate in dual-enrollment in Texas public high schools must take a pre-test to determine college readiness. As that the dual-enrollment courses are considered college level courses, Texas Success Initiative (TSI) requirements are enforced (THECB, 2016). As per the Texas Higher Education Coordinating Board (2014), the 2014-2015 minimum scores to qualify for dual credit are seen in Table 1. Another advantage for ECHS graduates, in addition to a higher level of learning, is providing public school students with up to two years of college credits free-of charge (Miller & Corritore, 2012). ECHS students have the opportunity to earn college credit through dual enrollment allowing them to save time and money once in college. If dual enrollment courses are planned according to college degree plans, students can graduate from high school with up to two years of college courses and can begin taking junior level courses upon entry into higher education.

College readiness also provides students better opportunities after high school. Students who graduate high school academically ready are more likely to enroll in 4-year institutions (ACT, 2014). A college degree is a gateway to economic opportunities for college graduates and an opportunity for contributions back to the community economically and personally. The economic welfare of the U.S. is "dependent on the skills and knowledge of its workforce" (ALAS, 2011).

3. Methods and Procedures

The principal objective for this study was to determine differences between Early College High School (ECHS) students, ECHS students within a traditional high school, and traditional high school students in South Texas on college readiness as measured by EOC test scores in English I and English II.

3.1 Research Design

For the research study, a quantitative method was employed. Ex-post facto research was utilized for data review to best test three research questions and determine any potential cause-and-effect or correlational relationships. In particular, "this quantitative ex-post facto study utilized a pre-experimental Alternative Treatment Post-Test-Only with Nonequivalent Groups Design" (Creswell, 2014; Chapa et al., 2014, p. 4).

3.2 Research Questions

To determine impact of ECHS initiatives, and potential effectiveness (or not) on a population of public high school students, the following questions were asked:

1. Is there a difference between English I and English II students on reading as measured by the EOC test scores at a ECHS stand alone at a school with predominantly Hispanic students in South Texas?
2. Is there a difference between English I and English II students on reading as measured by the EOC test scores at an ECHS within a traditional school at a school with predominantly Hispanic students in South Texas?
3. Is there a difference between English I and English II students on reading as measured by the EOC test scores in a traditional high school at a school with predominantly Hispanic students in South Texas?

3.3 Population and Sample

As the intent for the study was to review effectiveness of ECHS initiatives on high school students in at-risk populations, the study included a population of students in ninth and tenth grade in Region 1 in South Texas bordering on the U.S. country line with Mexico. Demographics within the district population are indicative of low socioeconomic status (i.e. at-risk) with just under 90% of students with Free and Reduced Lunch status. The population of the education region includes English language learners and reports the Hispanic student body at 98.9%. Specific to answering the research questions posed for the study, of the ninth and tenth grade students the data were reviewed for students enrolled in an ECHS stand along high school, ECHS school within a school, and a traditional high school.

The sample included data from two consecutive years. Students without an EOC test or without a grade eight STAAR test were removed from the sample. Table 2 indicates the demographics for the participating high schools (TEA, 2014a).

4. Results

To provide measures for the study, the STAAR End of Course (EOC) exam, mandated for all Texas high school students (TEA, 2016), was utilized. The ANOVA test was used to determine if any significant difference was present from one year to another between public high school students in South Texas concerning college readiness on the English EOC within three categories: Early College High School (ECHS) students; ECHS within traditional school students; and traditional students. The English I and English II EOC test scores were used to determine if students would be college ready

For this study data from one school district in South Texas that has various types of ECHS models were reviewed. Data from the STAAR 2013 EOC for English I and 2014 EOC for English II were entered into the Statistical Package for the Social Sciences (SPSS) 21 (Green & Salkind, 2011). The first step was to change the English I and English II EOC test scores to z-scores as each test was scored on a different scale. The English I and II EOC are standardized tests and normality was assumed. The z-scores were then changed to percent rank scores for comparison. The English I and English II EOC percent rank scores, for each type of school model, were compared using a general linear model for analysis of repeated measures.

Table 3 contains the descriptive statistics for each dependent variable: grade nine English I percent rank scores and grade 10 English II percent rank scores for EOC tests by types of school models. The English I and English II EOC were administered at the three different types of high school models. The high school models were coded as ECHS stand alone=timeec, ECHS within a school=time win, and traditional=time trad.

Provided are the statistical findings for the first research question:

Is there a difference between English I and English II students on reading as measured by the English EOC test scores at an ECHS stand alone at a school with predominantly Hispanic students in South Texas?

A one-way repeated measures ANOVA was conducted using the ECHS stand alone model with the factors being the different years in high school English: grade nine English I and grade 10 English II. The dependent variables were the EOC test scores. There were 109 ECHS stand alone students who participated in the study. The means and standard deviations for the English I and English II EOC test scores at the ECHS stand alone are presented in Table 4. The descriptive statistics include ECHS stand alone grade nine English I EOC percent rank (M=0.59, SD=0.24) and grade 10 English II EOC percent rank (M=0.68, SD=0.23). The results for the repeated measures ANOVA indicated that there was a significant difference, Wilks's Λ = 0.78, F(1, 108) = 30.22, *p* = .00*,* partial η^2 = 0.22. There was a large effect size, the type of school explained 22% of the variance of English scores. The grade 10 English II EOC percent rank scores (M=0.68, SD=0.23) were significantly higher than the grade nine English I EOC percent rank scores (M=0.59, SD=0.24).

For the second research question, results from the testing are provided:

Is there a difference between English I and English II students on reading as measured by the English EOC test scores at an ECHS within a school at a school with predominantly Hispanic students South Texas?

A one-way repeated measures ANOVA was conducted using the ECHS within a school model with the factors being the different years in high school English: grade nine English I and grade 10 English II. The dependent variables were the EOC test scores. The descriptive statistics for an ECHS within a school are presented in Table 4. There were a total of 118 students in the ECHS within a school. The mean and standard deviation are grade nine English I EOC percent rank (M=0.72, SD=0.21) and grade 10 English II percent rank (M=0.69, SD=0.22). The grade 10 English II EOC rank scores appeared to be less than the grade nine English I EOC rank scores. The results from the ANOVA revealed that there was no significant difference between English I and English II students on reading as measured by the English EOC test scores. Wilks's Λ = .98, F(91, 117) = 2.75, *p* = .10, partial η^2 = .02. The effect size was small.

For the third and final research question, results are listed in the subsequent paragraph:

Is there a difference between English I and English II students on reading as measured by the English EOC test scores at a traditional high school at a school with predominantly Hispanic students in South Texas?

A one-way repeated measures ANOVA was conducted using the traditional high school model with the factors being the different years in high school English: grade nine English I and grade 10 English II. The dependent variables were the EOC test scores. The descriptive statistics for the traditional high school are presented in Table 4. There were a total number of 324 high school students. The grade nine English I EOC percent rank (M=.50, SD=.29) and grade 10 English II EOC percent rank (M=.49, SD=.29) were almost identical. Wilks's Λ = .998, F(1, 323) = .63, *p*= .63. No significant difference was found between English I and English II students on reading as measured by the English EOC test scores ata traditional high school.

5. Discussion

For the study, the sample used consisted of predominantly Hispanic high school students from a school district in South Texas. English I and English II End of Course (EOC) test scores were applied to establish if students within the population sampled would be determined college ready. In Texas public schools, students can be classified "college ready" according to scores received on the English EOC tests administered in public high schools. The results of the ANOVA revealed that students in a traditional school model and students at an Early College High School (ECHS) within a school model did not show significant difference in English EOC scores from one year to another. Specifically, the results were not significant between the ninth grade and the tenth grade years at those specific institutions. Therefore, students attempting to become eligible for dual-enrollment with college level classes at the high school may not qualify.

However, the ANOVA did determine that students performed significantly better in grade 10 English II EOC vs. grade nine English I EOC in testing with an ECHS stand-alone model. Moreover, there was a high effect size and 23% of the variance in the score was explained by the type of school. Therefore, an additional year of English instruction resulted in an increase in test scores on the English II EOC in an ECHS stand alone model. This research showed that students in English II in an ECHS stand alone have a greater opportunity to be classified college ready according to the English II EOC test results. Additionally, the study determined that an ECHS stand alone may outperform both traditional and ECHS within a school models.

It was also determined that English test scores appeared to improve from one year to another. Under the NCLB Act, "states have been required to improve student achievement levels at a faster pace and with strategies that have been deemed as researched-based," which has led to national and state reform initiatives as well as to the implementation of ECHS (Garcia, 2012, p. 57). According to Educate Texas (2014), during the 2013-2014 school year, Texas had 57 high schools designated as ECHS. The ECHS model continues to serve as a reform initiative across the country.

In the study conducted by Edmunds (2010), it was determined that ECHS students had better attendance, lower suspensions, and higher levels of engagement in comparison to those student who did not attend the ECHS. The study also revealed that there was a gap between in English I, as well as Algebra I, completion rates. The ECHS minority group completed 79.4% while the minority group completed only 57.3% of classes (Edmunds, 2010). The finding demonstrated that students who attended an ECHS had better benefits as well as outperformed those who did not attend an ECHS.

6. Conclusion

The research data strongly suggested that school districts utilize ECHS stand-alone model to decrease the achievement gap and support college readiness. Other research conducted by Edmunds et al. (2012) and Berger et al. (2014) also supports the implementation of ECHS for student academic success and college preparation. The ECHS stand-alone model was also beneficial for students of color. The research conducted included 98% of Hispanic students who were successful in English I and English II. Additionally, the sample used in the study included students in a low-socioeconomic education region in the state of Texas. Identified as a factor for academically at-risk students, socioeconomic status as a barrier to college and/or college readiness could be mitigated through interventions provided through ECHS models.

The academic success in English leads to students being college ready. Additionally, with high achievement in English, qualification for dual-enrollment College courses while in high school could increase rates of enrollment in higher education as well as savings on time in college and money spent on college. Therefore, the implementation of an ECHS stand-alone model is highly recommended for student academic success and college readiness.

Figures and Tables

Minimum Diploma (22 credits)	Recommended Diploma (26 credits)	Distinguished Achievement Diploma
English/Language Arts (ELA) – 4 credits	ELA – 4 credits	ELA-4 credits
Math - 3 credits	Math – 4 credits	Math – 4 credits
Science – 2 credits	Science – 4 credits	Science – 4 credits
Social Studies – 2.5 credits	Social Studies – 3.5 credits	Social Studies – 3.5 credits
Economics - .5 credit	Economics - .5 credit	Economics - .5 credit
Advanced Elective – 1 credit	Language other than English- 2 credits	Language other than English- 3 credits
Physical Education (P.E.) – 1 credit	P.E. – 1 credit	P.E. – 1 credit
Speech - .5 credit	Speech - .5 credit	Speech - .5 credit
Fine Arts – 1 credit	Fine Arts – 1 credit	Fine Arts – 1 credit
Elective-7.5 credits	Elective – 5.5 credits	Elective – 4.5 credits

*Figure 1.***Texas Graduation Plans for current high school students (TEA, 2014b, p. 1).**

College Ready	Aligned secondary-postsecondary program of study that leads to college credit or associates degree, college readiness activities
Powerful Teaching and Learning	High quality, rigorous and relevant, ongoing assessment
Purposeful Design	Small size, on college campus, flexible use of time
Professionalism	Ongoing professional development, staff collaboration, collective responsibility
Leadership	Shared leadership and vision
Personalization	Academic and affective supports, supportive relationships

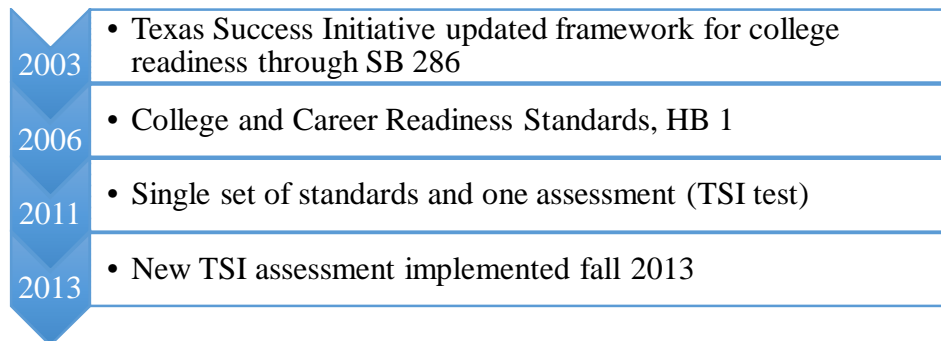*Figure 2.***Principles of an ECHS program (Edmunds et al. 2012, p.140)**

2003 • Texas Success Initiative updated framework for college readiness through SB 286

2006 • College and Career Readiness Standards, HB 1

2011 • Single set of standards and one assessment (TSI test)

2013 • New TSI assessment implemented fall 2013

*Figure 3.***Texas Success Initiative over the last decade (Paredes, 2014)**

Table 1: *Texas College Readiness Indicator: Minimum Test Scores for Reading*

Test	Reading
ACT	19
SAT	500
STAAR EOC	English II-4000 combined Reading and Writing score
TSI	331

Table 2: *Demographics*

Type of School designs	Enrollment ECHS	Enrollment Traditional	% Hispanic	% Free and Reduced Lunch
ECHS	422	N/A	98.3	82.2
ECHS/Traditional	200	1,806	99.1	90.7
Traditional	N/A	1,798	99.4	85.0

Note: The data was retrieved from TEA 2012-2013 School Report Card

Table 3: *Descriptive Statistics for Percent Rank Scores*

Variable	M	SD	N
ECHS stand alone			
Grade 9	0.59	0.24	109
Grade10	0.68	0.23	109
ECHS within a school			
Grade 9	0.72	0.21	118
Grade 10	0.69	0.22	118
Traditional H.S.			
Grade 9	0.50	0.29	324
Grade 10	0.49	0.29	324

Table 4: *Descriptive Statistics for Percent Rank Scores*

Variable	M	SD	N
Traditional H.S.			
Grade 9	0.50	0.29	324
Grade 10	0.49	0.29	324
ECHS within a school			
Grade 9	0.72	0.21	118
Grade 10	0.69	0.22	118
ECHS stand alone			
Grade 9	0.59	0.24	109
Grade10	0.68	0.23	109

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