Contribution of Research

All Means All: Correlates for Success on a Social Studies Licensure Exam

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Abstract

Failing the TExES 391 licensure exam creates a barrier to certification for elementary preservice teachers. Students from an educator preparation program in a regional university often fail the social studies domain of the TExES 391. To investigate potential influences on preservice teacher performance, eighty-five social studies domain scores were examined for correlations to academic history, program location, and basic demographic information. Variables that may be useful to identify students for potential intervention are explained. Future research should focus on in-depth exploration of student struggles to facilitate the intentional construction of effective supports.

Keywords: social studies, teacher preparation, barriers, licensure exam

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Prior to becoming a certified teacher in Texas, state law requires individuals to pass comprehensive exams (Texas Education Agency, 2024a). These exams are known as the Texas Examinations of Educator Standards (TExES) and the current content exam for Core Subjects EC-6 teacher certification is the TExES 391 (Texas Education Agency, n.d.a). It consists of five subtests: English language arts and reading, mathematics, science, social studies, and fine arts, health, and physical education (Pearson Education, 2024a). The social studies portion of the exam requires candidates to answer 40 multiple-choice questions within a 50-minute timeframe, with an average allowance of 75 seconds per question. The social studies subtest, also referred to as the social studies domain, contains five competencies. Each competency subsumes broad categories of content knowledge: social science instruction, history, geography and culture, economics, government and citizenship (Pearson Education, 2024b). Within the history competency alone there are 26 descriptive statements encompassing world, United States, and Texas history concepts (Pearson Education, 2024b).

TExES scores are not only consequential for aspiring teachers. Annual state accountability ratings for teacher education programs in Texas include exam pass rate metrics (§229.4, 2024). Reduced and repeatedly low accountability ratings can lead to the revocation of a program's approval to offer the certificate area (§229.4, 2024), and programs with exams positioned as benchmarks can experience attrition in the teacher pipeline when candidates are repeatedly unsuccessful. Rosado et al. (2020) found both the science and social studies domains of the previous exam version to be barriers for preservice teachers. During the 2022-2023 academic year, the first-attempt pass rate for the social studies domain of the TExES 391 was 75%; this was the lowest of the five content sections (Texas Education Agency, n.d.b).

Research on the social studies subtest includes interventions during teacher preparation courses to improve the content knowledge of candidates (Garza-Reyna et al., 2023; Hughes et al., 2016). Due to the comparative weakness of candidate performance on the social studies portion of the exam, it is important to determine which variables are associated with candidate success. Variables correlated with passing the exam may be useful to consider when designing targeted interventions and selecting subpopulations in need of assistance. In this study, we seek to determine which variables are associated with successful social studies domain performance to inform these efforts.

Related Literature

Academic Performance and Exam Success

One measure of academic performance in higher education is grade point average (GPA) and Texas Administrative Code lists a minimum admission GPA of 2.5 for educator program applicants (Texas Education Agency, 2024b). We could not locate research investigating the relationship between candidate grade point average and the TExES 391 social studies domain. However, researchers have studied GPA in relation to teacher licensure exam performance in other states (Blue et al., 2002; Cortes et al., 2022; Maddox & Reglin, 2019; Ndembera et al., 2021), official scores on other TExES exams (Harrell, 2009), and a practice TExES exam (Thompson et al., 2023). Outside of Texas, higher GPAs correspond to higher scores on the Praxis exam for preservice secondary biology teachers (Cortes et al., 2022). Students with higher grade point averages also performed better on the Earth and Space Science Praxis exam than those with lower GPAs (Ndembera et al., 2021). In addition to these studies on STEM licensure exams, Blue et al. (2002) found final GPA significantly correlated with scores on the Praxis I and II exams for elementary preservice teachers in Pennsylvania. Yet these findings on GPA and test performance are not universal. Passing a multi-subject licensure exam was not significantly correlated with the GPA for 144 elementary teachers in Virginia (Maddox & Reglin, 2019).

While literature was limited regarding GPA for the social studies section of the TExES 391, Thompson et al. (2023) investigated possible predictors of performance on a practice TExES 391 science subtest. They extended their analysis beyond GPA to include over ten variables, such as completion of different exam-aligned content courses and introductory biology course grade. The best predictor of success was the biology course grade, which was said to be a class containing almost half of all science domain competencies. The second-best predictive variable in their model was current GPA. A noteworthy detail is that the practice exam was administered during the biology course and the researchers stated the class may be taken at any time during their educator program (Thompson et al., 2023). It is unclear from their study whether taking the biology course at different times during the program would influence scores on the actual TExES exam based on time passing between course completion and testing.

Addressing this concept, Harrell (2009) included time elapsed from the completion of content coursework as a variable in their study about secondary life science and mathematics TExES exams. The relationship between the amount of time elapsed and TExES exam scores was statistically significant; however, it was very weak. Upper-level course content GPA was also significantly correlated with TExES exam score, and more strongly than that of time since course completion (Harrell, 2009). When completing a linear regression model, Harrell (2009) noted that only GPA demonstrated a significant relationship. It may be that grade point average or specific course grades are sufficient to systematically identify students at risk of failure regardless of when prior coursework was completed.

Student Demographics and Exam Performance

National data indicates that preservice teachers of color are more likely to walk away from multi-subject elementary licensure exams if they fail the first attempt; 34% do not test a second time within a three-year period compared to 22% of first-attempt failures overall (Putman & Walsh, 2021). The differential impact of first-attempt failure on elementary preservice teachers of color at the national level necessitates a clear understanding of how this variable may be related to TExES 391 outcomes. Not all studies about TExES exam performance included data for race or ethnicity (Harrell, 2009; Thompson et. al, 2023). Rosado et al. (2020) researched the previous version of the exam, TExES 291, and explored the relationship between passing and student factors such as age, gender, ethnicity, marital status, and native language. Candidates preparing for bilingual or English as a second language (ESL)

supplemental certification comprised the sample for the study. Gender, marital status, and type of certification program (bilingual or ESL supplemental) were found to be the most influential factors for passing the TExES 291 (Rosado et al., 2020). Ethnicity did not demonstrate significant predictive value for passing the exam; however, the authors noted that a significant difference by ethnicity existed for composite exam scores. Although Rosado et al. (2020) concluded both the science and social studies subtests were difficult for candidates, passing all domains of the TExES exam was the dependent variable for their predictive model. Associations between independent variables and scores on specific domains of the TExES 291 were not available for review.

Teacher licensure exams outside of Texas were considered to determine if a pattern in the broader literature might emerge and supplement the limited statistical analyses available on TExES 391 scores and race. Cortes et al. (2022) studied race in relation to secondary biology Praxis scores and found that disparities did not exist among all races. The only significant difference in test performance among races was for students who identified as Black. Additionally, exam scores for males were consistently higher than that of females. These results on gender were similar to those found by Ndembera et al. (2021), who stated that participants identifying as White and male were more likely to perform better than those who were female or identified as a different race. However, Ndembera et al. (2021) found a disparity in achievement for both Hispanic and Black participants compared to their counterparts instead of just one demographic group. These differing results are far from conclusive and further research is needed to clarify the possible association between race and the social studies domain of the TExES 391 exam specifically.

Changing populations in higher education also point to additional variables beyond race or ethnicity that may be influential. Nontraditional students are a growing population enrolling in college (Hittepole, 2019; MacDonald, 2018; NCES, 2021). According to NCES (2021) almost 40% of students attending college are nontraditional. Students are classified as nontraditional if they are 25 years of age or older, do not attend school full-time or hold a full-time job, delay enrollment in higher education post high school graduation, are raising children, earned an alternative credential equivalent to a high school diploma, are a first-generation student, or have veteran status (MacDonald, 2018). Andzik et al. (2022) noted challenges for nontraditional students seeking educator certification such as access to services, expenses for exams, clinical teaching experience distances, and other licensure barriers. MacDonald (2018) delineated struggles for nontraditional students more generally, noting the difficulty of balancing work, life, and school commitments and struggling with academic skills while reacclimating to structured learning environments after time away from school.

Little research examining nontraditional students' success on TExES 391 exists. Andzik et al. (2022) does not discuss specific difficulties related to performance on exams. Rosado et al. (2020) did not find age to be statistically significant as a correlated variable, but marital status was. The high number of nontraditional students enrolling in higher education coupled with the limited research available on their TExES 391 performance demonstrates the need for additional research in this area.

Problem Context and Research Question

At this Texas university, passing the TExES 391 exam serves as a program benchmark that must be successfully completed prior to enrolling in the final semester of clinical teaching. Due to serving several geographic areas in the North Texas region, students complete coursework tied to clinical experiences at one of five locations referred to as centers. This includes one online center designed to accommodate paraprofessionals working toward their educator certification and four centers with students participating in district-paid clinical experiences. As an institution, the university enrolls a significant number of transfer and nontraditional students. Of the 85 preservice teachers included in this study, 80% of them successfully transferred 50 or more credit hours from another institution. The percentage of students in the cohort aged 25 and older was 40%.

This cohort experienced an attrition rate of 33.7% as 33 of the teacher candidates failed to pass the TExES 391 exam prior to their second semester of senior year. Some of these students did not attempt the exam at all, while others waited until the last minute for their first attempt, and still others failed the exam multiple times. Many of the teacher

candidates remained in the program to study for the exam during the subsequent months, but at least ten of them have changed their major to a non-teaching degree at the time of writing this article. This attrition is a major problem for the program and represents a teacher pipeline issue. Given that a large number of students in this program sit for the exam zero or one time prior to exclusion from the final clinical teaching semester, a priority is to assist students in passing the exam on their first attempt. Importantly, the discussion of program priorities and this exploration of exam performance was a collaborative effort between staff in a certification support department and faculty in an academic department to advance the common goal of increasing success for students. Silos often exist in higher education structures and breaking down those barriers can lead to better support for students.

These collaborative efforts targeted the social studies portion of the TExES 391 exam, which was the lowest domain for the examined student group. First-attempt pass rates for the social studies section of the exam lagged behind the other subject areas; in some cases, the pass rate was more than 10% lower. The variables of overall GPA, institutional GPA, transfer GPA, and specific social studies course grades were included in our study intentionally to determine which measure of GPA at our institution might be most appropriate for identifying students unlikely to succeed on the exam. The inclusion of individual course grades mirrors other studies examining content coursework embedded in degree plans (Thompson et al., 2023; Harrell, 2009). Based on prior research, we expect both GPA and course content grades to be correlated with TExES exam score on the social studies subtest of the TExES 391. Our study builds upon previous research by focusing on elementary preservice teachers' actual exam scores on the social studies subtest, which appears to be a gap in the literature regarding the TExES 391 exam. Including race classifications from the Texas Education Agency's data system will help clarify if this variable does or does not correlate to passing the social studies domain.

Additionally, we had access to various data to investigate potential associations beyond GPA or ethnicity such as candidate age. Age is not the only determinant of nontraditional student status (MacDonald, 2018); however, it was the most accessible data available to use as an indicator for that student population. The number of failed or repeated courses was an available variable to study. If previous literature on the academic struggles of nontraditional students holds true for our population, we expect to see a relationship between the number of failed or repeated courses and the student age. Therefore, the overall purpose for the study was to explore potential relationships between preservice teachers' academic history, demographic data, and scaled score outcomes on the social studies section of the TExES 391. The intention was to inform the design of future research and to identify potential student attributes that may be used to target early interventions. Specifically, we are examining the following research question:

What are the potential relationships between preservice teacher variables and scaled score on the first attempt of the social studies portion of the TExES 391 exam?

Methods

Participants

Participants were taken from the pool of 98 preservice teachers seeking elementary certification who were anticipated to take the TExES 391 exam. Of the 98 individuals, 11 were removed from the analysis because they did not attempt the TExES 391 exam. Without first-attempt scores, it was not possible to include them in correlational tests comparing exam scores to other variables. An additional two individuals were removed from the analysis because they did not complete one or more of the same social studies courses used in the comparison. Of the 85 remaining students, their initial TExES 391 exam attempt was taken during the months preceding their anticipated clinical teaching semester. The ages of individuals ranged from 20 to 46 and 40% of participants were aged 25 or older. Age was determined by finding the difference between date of birth and date of first test administration. Roughly 80% of participants transferred 50 or more credit hours to the 4-year institution. The age and transfer status of participants is closely aligned to the overall cohort, which importantly included our populations of nontraditional and transfer students in the calculations. The cohort is predominantly female, with only two males, and our male students were included in the analysis. The Accountability System for Educator Preparation (§229.1(c), 2023) run by the Texas Education Agency was used to report race/ethnicity categories. As

seen below in Table 1, the participants represent a wide range of locations and demographic designations.

Table 1

Demographic Characteristics by Center

Characteristic	Center 1		Center 2		Center 3		Center 4		Center 5	
	n	%	*n*	%	*n*	%	*n*	%	*n*	%
Gender										
Female	15	100	10	100	33	97	12	100	13	93
Male	0	0	0	0	1	3	0	0	1	7
Age										
20-24	8	53	6	60	25	73	3	25	9	64
25-29	4	27	2	20	4	12	2	17	4	29
30-34	2	13	2	20	4	12	2	17	0	0
35-39	1	7	0	0	0	0	4	33	1	7
40-44	0	0	0	0	1	3	0	0	0	0
45-49	0	0	0	0	0	0	1	8	0	0
Race										
Asian	1	7	0	0	1	3	0	0	0	0
Black	4	27	1	10	1	3	0	0	0	0
Hispanic	6	40	2	20	10	29	7	58	6	43
White	4	27	7	70	22	65	5	42	8	57

Note. N = 85

Data Collection

Data collection was a compilation of archival data that represented students who took the exam in a recent semester. All data was generated from student electronic portfolios and archival data. No student names or student ID numbers were collected. The only demographic data included were age, race, and gender. Due to the near uniformity of gender in the sample, that item was not included when finding Pearson correlations. The center of clinical experience attendance, demographic data, academic

history data, and TExES 391 social studies domain scores were used as additional variables. There are five different centers where students can attend coursework during their senior year. The center is determined based on the geographic location of the clinical teaching site and whether the student is a paraprofessional.

Academic history data included the number of failed or repeated courses, number of transfer hours, transfer GPA, institutional GPA, overall GPA, and specific course grades. Academic history data was pulled from institutional degree plan information for each student. Course grades were collected on a 4-point scale with A=4, B=3, C=2, D=1, and F=0. Courses identified for inclusion were two American history courses and two American government courses from the Texas university core curriculum. A social studies GPA was found for each participant by taking the mean of course grades from the four social studies classes. TExES exam scaled score data was collected to determine if success on the social studies subtest was significantly correlated with one or more of the other variables.

Data Analysis

To identify relationships between the variables, SPSS was used to perform bivariate correlation tests. Due to the small number of data points and holding the social studies score as the primary comparison, correlation tests were enough to identify areas to support the research question. GPA was thought to be a primary source of potential correlation; however, the researchers wanted to evaluate additional variables. Categorical variables such as race and center were coded separately to allow for bivariate analysis. For example, a preservice teacher taking courses at Center 1 was given a score of "1" for the variable of Center 1 and a score of "0" for Center 2, Center 3, Center 4, and Center 5. Once the data was analyzed in SPSS to find Pearson correlations, it was evaluated for .01 and .05 levels of significance. See Table 2 for the culmination of findings for the twenty different variables.

ISSN: 2474-3976 online

Table 2:
Summary of Correlations Between Variables

Variable	*n*	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1. Social studies score	85	-																			
2. Number of failed or repeated classes	85	0.27*	-																		
3. Transfer GPA	85	0.30**	-0.41**	-																	
4. Institutional GPA	85	0.32**	-0.50**	0.40**	-																
5. Overall GPA	85	0.42**	-0.67**	0.76**	0.64**	-															
6. Social studies GPA[a]	85	0.44**	-0.39**	0.58**	0.33**	0.68**	-														
7. HIST 1301 course grade	85	0.47**	-0.22*	0.45**	0.26*	0.45**	0.72**	-													
8. HIST 1302 course grade	85	0.24*	-0.26*	0.52**	0.31**	0.49**	0.71**	0.37**	-												
9. GOVT 2305 course grade	85	0.26*	-0.40**	0.38**	0.10	0.52**	0.69**	0.24*	0.39**	-											
10. GOVT 2306 course grade	85	0.23*	-0.19	0.21	0.22*	0.37**	0.61**	0.33**	0.14	0.25*	-										
11. Student Age	85	-0.25*	0.29**	-0.05	-0.07	-0.18	-0.11	0.02	-0.03	-0.25*	-0.04	-									

ISSN: 2474-3976 online

Table 2:

Summary of Correlations Between Variables

Variable	*n*	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
12. Center #1	85	-0.05	0.18	-0.144	-0.14	-0.18	-0.33**	-0.25*	-0.25*	-0.24*	-0.18	-0.01	-								
13. Center #2	85	0.14	-0.09	0.209	-0.05	0.13	0.19	0.22*	0.19	0.13	-0.03	-0.05	-0.17	-							
14. Center #3	85	0.24*	-0.12	-0.123	0.07	-0.01	0.21*	0.20	0.05	0.14	0.22*	-0.21	-0.38**	-0.30**	-						
15. Center #4	85	-0.32**	0.08	0.04	0.01	0.00	-0.04	-0.12	0.10	0.00	-0.09	0.45**	-0.19	-0.15	-0.33**	-					
16. Center #5	85	-0.09	-0.03	0.091	0.08	0.08	-0.07	-0.09	-0.07	-0.04	0.01	-0.09	-0.21	-0.16	-0.36**	-0.18	-				
17. Hispanic	85	-0.19	0.27*	-0.22*	-0.08	-0.17	-0.19	-0.07	-0.20	-0.26*	0.05	0.07	0.03	-0.13	-0.12	0.18	0.06	-			
18. Black	85	-0.09	0.13	-0.024	-0.33**	-0.17	-0.22*	-0.13	-0.10	-0.10	-0.30**	-0.10	0.35**	0.04	-0.13	-0.11	-0.12	-0.21	-		
19. White	85	0.23*	-0.31**	0.196	0.26*	0.23*	0.27*	0.11	0.22*	0.31**	0.10	-0.06	-0.26*	0.12	0.17	-0.10	0.03	-0.82**	-0.3**	-	
20. Asian	85	0.01	-0.06	0.089	-0.017	0.10	0.09	0.06	0.08	-0.03	0.04	0.14	0.13	-0.06	0.03	-0.06	-0.07	-0.12	-0.04	-0.17	-

*p < 0.05, 2-tailed

**p < 0.01, 2-tailed

a. Social Studies GPA was calculated by finding the average of the four courses: HIST 1301, HIST 1302, GOVT 2305, and GOVT 2306

ISSN: 2474-3976 online

Findings

Academic History

Academic history was examined through a variety of indicators. The number of transfer hours demonstrated a positive relationship with the increasing age of students and was significant but likely reveal little insight. If a student remains in community college for a longer period, they will be older due to the passing of time and will likely accrue a greater number of credit hours. Overall GPA had a stronger relationship to social studies scale score than Transfer GPA or Institutional GPA. Additionally, the social studies GPA was correlated significantly and more strongly than overall GPA. The grade in HIST 1301 was the strongest correlation to social studies exam score out of any variable assessed.

Higher grades in the social studies courses tended to correlate with a higher score in each category of GPA collected, but this was not uniformly true. There were moderate to strong negative relationships between the number of failed courses and the social studies core GPA, transfer GPA, institutional GPA, and overall GPA. It is expected that a higher number of failed courses would directly impact a student's calculated GPA. Negative relationships were identified between the number of failed or repeated courses and course grades for three of the four social studies courses, possibly indicating that students who struggle in general are more likely to also struggle in these classes.

Traditional v. Nontraditional Students

Center 3 was the only one with a significant positive relationship with social studies scale score. As evidenced by the demographic composition in Table 1, Center 3 serves primarily younger, White, female preservice teachers and represents a stereotypical traditional teacher education program in Texas. Age and Center 3 had a weak to moderate negative correlation; however, there was not a significant relationship between Center 3 and race. Social Studies GPA and GOVT 2306 had a weak, positive correlation for this group of students.

Students were more likely to have a greater number of failed or repeated courses as their age increased, but the association was weak. GOVT 2305 is a course that teaches about the United States government and that course grade had a weak, negative correlation with age. The relationship between age and Center 4 was moderate and one of the stronger correlations identified in this study, suggesting a concentration of older students compared to other centers. Only 25% of Center 4 preservice teachers were of traditional college student age and more than half of them were Hispanic. The fourth center exclusively serves paraprofessionals who are employed in school districts across the program's geographic coverage area. Additionally, Center 4 had a weak negative relationship with social studies scale score. This was the only negative association identified linking a center to social studies scale score. In light of these relationships, nontraditional students, and paraprofessionals in particular may be a population coming to the program in need of support, remediation, or other special considerations.

Race

Center 1 had significant correlations concerning race, but the others did not. A positive correlation with the racial category of Black and a negative correlation with the category of White underscored the unique demographic makeup of Center 1 in comparison to the rest of the program. Center 1 also had distinct, yet weak, negative relationships with several social studies indicators from academic history including Social Studies GPA, HIST 1301 grade, HIST 1302 grade, and GOVT 2305 grade.

Racial groups had varying degrees of weak or nonexistent relationships with HIST 1302, GOVT 2305, and GOVT 2306. No race was significantly correlated to the grade in HIST 1301, which was the variable most strongly correlated to the TExES social studies scaled score. Interestingly, there was a slight pattern in GPA correlations with race. Institutional GPA and Social Studies GPA were both negatively correlated with Black candidates and positively correlated with White students. Classification as Hispanic had a weak and negative correlation with Transfer GPA but no other GPA measures.

There was a weak but significant relationship between the number of failed or repeated courses and two of the racial categories. The correlation between failed courses and race was negative for the classification of White and positive for the Hispanic category. No other racial groups had a statistically significant relationship with the number of failed or repeated courses. The only racial group with a statistically significant positive relationship to social studies scaled score was the category of White. The category of White was weakly and positively associated with multiple variables including Institutional GPA, Social Studies GPA, History 1302 grade, and GOVT 2305 grade. Although weak and somewhat inconsistent, these relationships taken together may indicate a need to more deeply evaluate and reflect upon the experiences and academic readiness of the diverse preservice teachers in our program.

Discussion

Under the present version of the TExES 391 exam, the social studies domain poses a challenge for candidates. The

ISSN: 2474-3976 online

level of rigor in licensure exams is not likely to go away. In fact, requiring all elementary teacher candidates to pass independently scored sections of a content exam are promoted as "hallmarks of a strong testing system," (Putman & Walsh, 2021, p. 10). Preparation programs must find productive ways to effectively support preservice teachers, who face the stress, cost, and potential hurdle in their career caused by these assessments (Killion & Varela, 2021; Gitomer et al., 2011). Through the lens of supporting all students, we discuss key findings below.

Social Studies Coursework & GPA

One must learn and retain information from a variety of coursework to ensure success on the state exam. The social studies subtest is more than reading and writing and relies on content from coursework and methods courses but may not be retained between coursework and exams (Hughes et al., 2016; Sanchez, 2010). No surprise, according to much research, GPA appears to have a strong relationship to passing (Blue et al., 2002; Cortes et al., 2022; Harrell, 2009; Ndembera et al., 2021), but most interesting in our study was to examine the social studies coursework GPA (Jones et al., 2011; Killion & Varlea, 2021). Maddox and Reglin (2019) studied GPA in relation to a multi-subject exam for 144 elementary teachers in Virginia and found it was not significantly correlated with success. Our study affirmed that grade point averages have the potential to identify weaker students who may need intervention prior to attempting the TExES 391 exam.

Notably, we need to examine students' GPA on a deeper level, specifically with respect to content area coursework to determine potential retention issues related to success on the exam. In fact, the correlation of HIST 1301 grade was the strongest grade correlation with social studies performance (stronger than social studies GPA and overall GPA). With this evidence, an educator preparation program should consider interventions closer to the exam to support this subtest, as many students take this particular class during their first year of college. Surprisingly, the grades for HIST 1302, GOVT 2305, and GOVT 2306 had a weaker association with social studies exam scores than overall GPA. Further investigation is needed to uncover the reasons for these weaker correlations.

The number of failed or repeated courses was negatively associated with social studies scale score, all measures of GPA tested, and course grades for three of the four social studies courses. The number of failed or repeated courses may be an indication of academically weak students who can be identified for early intervention and greater support in the program. If indeed the program has content methods or consistent content coursework for social studies, strategies such as those employed by Sanchez (2010), Hughes et al. (2016), and Garza-Reyes et al. (2023) need to be considered with more intentionality to aid in success with this piece of the TExES 391 exam.

Sanchez (2010) found that doing inquiry-based lessons in the methods courses, after a pre-test, allowed students to recognize what they did not know and add it to their content knowledge. Students reported recognizing the need to learn the content not simply to pass the exam, but rather to have a base of knowledge for teaching. Participants noted this from both a pedagogical view and learner view. Preservice teachers need time with social studies content in a methods course to reactivate prior knowledge, engage in the material in a meaningful way, and transfer the concepts to long-term memory. In our program, we have not had a methods course for this to occur. However, there is a course being added to our program to create engagement with social studies content through an inquiry-based approach to support our students.

Hughes et al. (2016) used both a representative TExES 391 exam and a civics test as pre-test data to determine baseline content knowledge in a social studies methods course. Actual TExES exam scores were used as post-test data to measure the impact of the coursework. It was found that pre- and post-test measures were not significantly influenced by the methods course, leading the researchers to believe that content knowledge must be addressed prior to methods courses if pedagogical instruction is to be effective. The instructional strategies used in the methods course were not explicitly described, making it difficult to discern what was done to advance student learning outcomes during the semester. However, Hughes et al. (2016) and their study serve as an example of how preparation programs can monitor the effectiveness of their intended supports by using pre-test measures and TExES exam outcomes. Rather than assuming new materials or strategies would automatically work, they evaluated the impact of their efforts. As researchers at teacher preparation programs continue to investigate the social studies domain of the TExES 391 exam and provide support to students, it will be important to follow-up on whether interventions result in intended outcomes.

Garza-Reyna et al. (2023) also used a pre- and post-test to measure student growth from their intervention, which involved using outside resources from National Geographic, collaborating with faculty from another college to provide a special section of a World Geography course, and four extra study sessions outside of class designed to prepare candidates for the social studies domain of the TExES 391. Student scores from the pre-test to the post-test increased on measures of content knowledge, both were designed to be similar to actual

ISSN: 2474-3976 online

TExES questions. A questionnaire collected data about how comfortable candidates were with the idea of teaching social studies concepts, and this too showed improvement for students. Efforts went beyond implementing changes within a methods course. Imparting content knowledge and facilitating the use of that content knowledge were collaborative endeavors involving experts in more than one area. Students at university-based teacher preparation programs may benefit considerably from this holistic approach to the integration of content, pedagogy, instructional resources, and faculty expertise (Garza-Reyna et al., 2023).

More than Demographics

As a wider teacher pipeline problem, licensure exams and the barrier they create to the teaching profession have been framed as a racial equity issue by some researchers based on unequal group performances and disproportionate impacts of rising test standards (Petchauer et al., 2015; Petchauer et al., 2018). White students were the only group found to have a positive, significant correlation to social studies scaled score. Being White was negatively associated with having failed courses whereas being Hispanic/Latino was positively associated with the number of failed courses. This suggests that not all subpopulations are arriving at preparation programs with similar academic histories. Similarly, being a student of color was negatively correlated with measures of GPA and there was a positive correlation between identifying as White and GPA. Student groups may experience the exams differently based on factors related to grade point average, which could potentially serve as an academic measure that teacher preparation programs use to inform resource allocation. Grades in particular courses, such as HIST 1301, could also be useful when identifying candidates who are at risk of failure.

Age was negatively associated with success on the social studies exam. Nontraditional students were also more likely to have a greater number of failed courses in their academic history and failed courses were negatively linked to social studies scores. These correlations may be reflective of the struggles experienced by nontraditional students both generally (MacDonald, 2018) and within teacher preparation programs (Andzik et al., 2022). Center 4 was found to be positively correlated with age and to exhibit the only negative correlation between center and social studies score, which is important because Center 4 serves paraprofessionals exclusively. This highlights a population of nontraditional students at our program. Research expanding upon this study could investigate the supports most effective in raising social studies exam scores with nontraditional students in general and paraprofessionals in particular.

As older students who are employed full-time, these students are more likely to have a significant number of commitments competing for their time, difficulty with academic readiness skills, previous academic failures, and anxiety (MacDonald, 2018). MacDonald (2018) recommends that institutions of higher education provide support to nontraditional students through early interventions, supportive relationships with course instructors, and differentiation. Our study did not address anxiety because we did not collect psychometric data from candidates. Research exploring testing realities for nontraditional preservice teachers could expand upon our work by including measures of anxiety, supports designed to alleviate anxiety, and the impact of those emotional support efforts on social studies domain scores.

Conclusion

Candidates in this teacher preparation program struggle to pass the social studies domain of the TExES 391 exam. Taking time to investigate potential correlations between student variables and exam scores has led to more questions than answers; however, it has strengthened the idea that we can be more strategic and intentional in interventions by using data to drive decision-making. With research we can learn which students may benefit from additional support. Social studies is an area on the exam where we can focus to make a difference in our preparation program, other programs can identify their weaker areas using a similar research approach to make local decisions. A specific course for social studies methods is in development for this university and will be implemented soon. These actions are aligned to recommendations from the National Council on Teacher quality, which include the use of program data broken down by demographics for decision-making and the examination of coursework, not just test prep strategies (Putman & Walsh, 2021).

We are not claiming that one area is the same weakness for all programs, but rather encourage consideration for taking time for a deeper review of issues and striving to make small steps toward helping *all* our preservice teachers be successful on their first attempt. If it is the purpose of a preparation program to prepare teachers, we must also build in time to ensure exam readiness to avoid barriers keeping them from the classroom. We cannot rely on our students to simply study outside of classes, retain information from their freshmen year, or allow age and race to predetermine their success on state exams. All stakeholders should continue to work collaboratively to find trends in program data to aid candidates. Specifically, our students with lower academic performance, paraprofessionals, nontraditional students, and subpopulations require more intentional exam strategies and interventions, do yours?

ISSN: 2474-3976 online

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ISSN: 2474-3976 online