Journal of University Teaching & Learning Practice

Volume 18 | Issue 4 Article 8

2021

A deeper look at predicting outcomes for future educators

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A deeper look at predicting outcomes for future educators

Abstract

Because educator licensure is gained by passing licensure examinations in most states, scores on high stakes tests are determining factors as to who will be teaching in America's classrooms. Due to a focus on program graduation rates, state funding cuts, and production of quality teachers, it is vital that teacher preparation programs produce the quality and quantity of teachers needed to fill the educator deficit. The purpose of the study was to analyze various performance variables of pre-service teachers enrolled in a teacher preparation to identify predictors of performance on required licensure examinations. Findings of the study revealed there is a relationship between Praxis I: Reading scores and Praxis II scores, Praxis I: Writing scores and Praxis II scores, Praxis I: Mathematics scores and Praxis II scores, GPA and Praxis II scores, and CBASE scores and Praxis II scores. The strongest relationships that exist between variables and Praxis II scores are initial Praxis I: Reading scores and overall CBASE scores.

Keywords

higher education, teacher preparation, licensure examinations, elementary education

Introduction

A substantial portion of new teachers develop their teaching pedagogy, content knowledge, and skills via teacher preparation programs and alternate route programs. These programs, however, particularly traditional teacher preparation programs, are under a magnifying glass to determine their potential for producing both high-quality and certified teachers (Baines, 2010). Teacher preparation programs' effectiveness is at the forefront of national and state political agendas with expert panels programs utilize Praxis I: Pre-Professional Skills Tests or Praxis CORE for entry examinations into the programs. Mississippi moved from using the PPST to the CORE tests in 2014. Praxis II is designed to measure subject specific content and pedagogical knowledge related to a candidate's specific educational field. Many states require teacher candidates to pass more than one Praxis II examination (Educational Testing Service, 2010; Goldhaber, 2007; Stotsky, 2007). Mississippi requires candidates seeking a teaching license in grades kindergarten through sixth to pass both the Principles of Learning and Teaching Assessment (PLT) and the content area assessment, Curriculum, Instruction, and Assessment (test code 0011/5011) (Educational Testing Service, 2010). This study focused on only the latter of the two Mississippi required assessments, Praxis II: Curriculum, Instruction, and Assessment.

Problem

Over the past fifteen years, there has been a decrease in the passing rates on Praxis series examinations by teacher candidates, particularly with diverse teacher candidates (NCTQ, 2021). This decrease is largely attributed to increasing demands of state testing within education programs, as well as the increasing number of candidates with weak SAT/ACT scores and GPA's seeking to enter education programs (Gitomer, 2007). These decreases in passing rates on Praxis examinations have also raised concern over the extent to which these licensure examinations are eliminating ethnically diverse candidates and possibly very effective teachers from entering the teaching profession (Albers, 2002; Brown, Brown, & Brown, 2008; Gitomer, 2007; McNeal & Lawrence, 2009; NCTQ, 2021).

Because teacher licensure is gained by passing licensure examinations in most states, scores on the high stakes tests are determining factors as to who will be teaching in America's classrooms. Due to a focus on program graduation rates, state funding cuts, and production of quality teachers, it is vital that teacher preparation programs produce the quality and quantity of teachers needed in America's classrooms. In order to produce the quality and number of teachers needed, teacher preparation programs must make sure they are adequately preparing candidates to be effective teachers, as well as to pass licensure examinations (Stotsky, 2007). They must also attract candidates with higher college entrance exam scores and higher academic ability (Gitomer, Latham, & Ziomeck, 1999). Failure of programs to respond to this call prevents many teacher candidates from entering the teaching profession creating a teacher shortage across the country.

Purpose of the Study

The purpose of the study was to analyze various performance variables of pre-service teachers enrolled in a teacher preparation program at a regional university. More specifically, the purpose was to determine the relationship between variables and performance on the Praxis II: Curriculum, Instruction, and Assessment exam.

Review of Literature

Institutional Characteristics

Licensure examinations for the teaching profession have been a prominent issue both for the k-12 setting and for the institutions of higher learning responsible for producing effective and knowledgeable teachers. Several studies have been conducted to try to predict teacher candidates' success on different Praxis II teacher licensure examinations, including analyzing the preparatory institutions themselves as predictors of performance on licensure examinations.

Wenglingsky (2000) conducted a study in order to identify connections between teacher education programs and their institutions and prospective teachers' licensure examination scores in the Southeast region of the United States. Similarly, Nweke (2001) conducted a study to determine if a relationship existed between Georgia institutions' accreditation for teacher education programs and teacher candidates' licensure scores. Both researchers found that strong relationships exist between certain characteristics of the teacher education program and students' performance on licensure examinations. Wenglinsky's findings showed that larger, private institutions' teacher candidates have higher scores on licensure examinations and the SAT examination than smaller, public institutions; institutions with greater numbers of traditional students than nontraditional students had higher scores on teacher licensure examinations; and programs with more ethnically diverse faculty members within the teacher education program had higher teacher licensure scores from teacher candidates than did those with mostly white faculty members. Nweke found that teacher candidates from NCATE (National Council for Teacher Education) (now CAEP), accredited institutions performed higher on initial attempts at teacher licensure examinations than teacher candidates from institutions that were not accredited by NCATE.

SAT/ACT

While Wenglinsky (2000) and Nweke (2001) studied characteristics of institutions of higher learning and teacher preparation programs as predictors of performance, other studies were conducted to determine if specific assessments could serve as predictors of success on licensure examinations. Several studies found strong correlations between SAT and ACT scores and performance on various Praxis II examinations (Brown, Brown, & Brown, 2008; Blue, O'Grady, Toro, & Newell, 2002; Gitomer, Latham, & Ziomek, 1999).

Brown, Brown, and Brown (2008) conducted a study to determine if teacher candidates' performance on required assessments before and during a teacher preparation program was indicative of performance on the Praxis II. Variables measured included the independent variables of Scholastic Aptitude Test (SAT) scores, Praxis I scores, and Quality Point Average (QPA), as well as the dependent variable of Praxis II Fundamental Subjects: Content Knowledge scores for each candidate. The study results showed that the best predictor of success on the Praxis II Fundamental Subjects: Content Knowledge assessment was total SAT score. Similarly, Blue, O'Grady, Toro, and Newell (2002) conducted a study to determine if a relationship existed between teacher candidates' GPA, SAT scores, and various Praxis I and Praxis II scores. The Praxis data consisted of seven sources including the following tests: Communication Skills, General Knowledge, Professional Knowledge, Principles of Learning and Teaching: K-6, Education in the Elementary School, Elementary Education: Curriculum, Instruction, and Assessment, and Early Childhood Education. Consistent with Brown, Brown, and Brown's findings, Blue, O'Grady, Toro, and Newell found there were moderate to high correlations between SAT scores and both Praxis I and II scores.

Gitomer, Latham, and Ziomek (1999) found results similar to Brown, Brown, and Brown (2008) and Blue, O'Grady, Toro, and Newell (2002) when they conducted a study to determine

characteristics of teacher candidates and examine the relationship between ACT and SAT scores and different teacher licensure examinations. Their findings revealed that the type of teacher licensure sought is a factor in scores and that those with higher college entrance examination scores, such as scores on the SAT and ACT, typically sought a content area license; those with lower college entrance examinations sought an elementary education license. The study also displayed that content-area teachers (secondary education) have the same or higher academic ability as those in the rest of the college population.

Other studies were conducted to determine the relationship between Praxis I scores and SAT and ACT scores. Saravanbhaven, Jones, and Wilson (2005) conducted a study to determine the relationship between Praxis I (reading, writing, and mathematics) scores and SAT (reading, writing, mathematics) scores among black prospective teacher candidates. The results of the study showed a significant positive correlation between SAT and Praxis I scores in all three areas which are consistent with the findings of Blue, O'Grady, Toro, and Newell (2002).

Specific licensure examinations vary across states and professions. Researchers have engaged in studies regarding relationships between SAT and ACT scores and scores on teacher licensure examinations other than Praxis assessments. Simonsson, Poelzer, and Zeng (2000) wanted to determine predictor variables for success on the Texas licensure examination, the Examination for Certification of Educators in Texas (ExCET). The variables analyzed included practice ExCET scores, actual ExCET scores, Texas Academic Skills Program (TASP) reading, mathematics, and writing scores, ACT scores, overall GPA, and GPA in required professional development courses. The results of the study showed that TASP reading scores, practice ExCET scores, and ACT scores can serve as predictors for success on the ExCET licensure examination.

Another study by Burke (2005) focused on determining possible predictors of performance on the state teacher licensure examinations for New York, the LAST and the ATS-W. The independent variables analyzed included SAT verbal, mathematics, and total scores, high school GPA, college GPA, major courses GPA. Dependent variables included LAST total and category scores, as well as ATS-W total and category scores. Researchers also analyzed the number of times participants attempted to successfully pass the LAST and ATS-W. The results of the study showed that LAST scores strongly correlated with SAT and college GPA; there was an inverse relationship between SAT scores and number of attempts to successfully pass the LAST; ATS-W strongly correlated with SAT scores, college GPA, and major courses GPA. Verbal scores on the SAT strongly correlated with LAST and ATS-W scores.

GPA

A variable other than ACT or SAT scores that has been studied to determine its relationship with performance on licensure examinations is grade point average (GPA). There are mixed findings in regard to GPA and performance on Praxis examinations, as well as other types of licensure examinations for both other states and professions.

Several studies have proved that grade point average (GPA) can serve as a predictor of performance on licensure examinations, such as the Praxis. Blue, O'Grady, Toro, and Newell (2002) conducted a study to determine if a relationship exists between teacher candidates' GPA, SAT scores, and various Praxis I and Praxis II scores. Their findings show a moderate to high correlation between several variables including overall GPA and Praxis scores.

Other studies prove that GPA can serve as predictors of success on licensure examinations other than Praxis II. Burke (2005) found similar study results. Possible predictors of performance on the state teacher licensure examinations for New York, the LAST and the ATS-W were analyzed. The

independent variables analyzed included SAT verbal, mathematics, and total scores, high school GPA, college GPA, major courses GPA. Dependent variables included LAST total and category scores, as well as ATS-W total and category scores. Researchers also analyzed the number of times participants attempted to successfully pass the LAST and ATS-W. Among other relationships found, Burke found that the ATS-W strongly correlated with college GPA and major courses GPA. A previous study conducted by Beeman and Waterhouse (2001) relevant to the nursing licensure examination, the NCLEX-RN, also found that the greatest predictor of success on the NCLEX-RN was student performance, or GPA, in specific nursing courses throughout the nursing program. Harrell (2009) conducted a study at the University of North Texas to examine the licensure scores of candidates on the Texas Examination for Educator Standards (TExES) licensure examination in the area of 8th-12th life science and mathematics certification. The variables were also analyzed per each candidate including content-specific course GPA, content-specific course preparation, and time between the content-specific coursework and candidates' initial attempt on the TExES examination. The results of the study showed that all three of these variables, including GPA, were statistically significant predictors of success on the TExES.

Praxis I

Studies have also been conducted regarding the variable of Praxis I. Brown, Brown, and Brown's (2008) study utilized Praxis I as an independent variable to determine if it, among other variables, could serve as a predictor of performance on Praxis II Fundamental Subjects: Content Knowledge. The results of the study show that Praxis I is not a predictor of performance for this licensure examination.

In a separate study, Blue, O'Grady, Toro, and Newell (2002) conducted a study to determine if a relationship exists between teacher candidates' GPA, SAT scores, and various Praxis I and Praxis II scores. There were moderate to high correlations between the several variables including SAT scores, GPA, and Praxis scores.

A study by Saravanbhaven, Jones, and Wilson (2005) studied Praxis I as a dependent variable whereby the researchers wanted to determine the relationship between Praxis I (reading, writing, and mathematics) scores and SAT (reading, writing, mathematics) scores among black prospective teacher candidates. The results of the study showed a significant positive correlation between SAT and Praxis I scores in all three areas. These findings are consistent to those of Blue, O'Grady, Toro, and Newell (2002) in that that there is a strong relationship between SAT scores and Praxis I scores.

CBASE

The College Basic Academic Skills Examination (CBASE) is another assessment that has been analyzed in various studies. Due to the infrequency of use and being outdated, there is little current research on the CBASE. The most prominent study relevant to the CBASE serving as a predictor variable of performance on a teacher licensure examination was conducted by Osterlind and Merz (1990). Osterlind and Merz wanted to determine whether the CBASE or ACT serves as a better predictor of success on the National Teacher Examination (NTE), as well as to determine whether the CBASE or ACT serves as a better predictor of senior candidates' GPA within a teacher preparation program. The findings of the study showed that the strongest predictor of success on the NTE was the CBASE examination. CBASE scores and GPA also had a stronger correlation than ACT scores. Results showed that ACT was only a minimal predictor of success when correlated as an independent variable or when added to the equation with CBASE scores.

Bitner (1991) conducted a study to determine if CBASE science scores, ACT science scores, and GALT scores can serve as predictors of students' science process skills and lack of physical science

understandings. The results of the study showed that all of the independent variables served as significant predictors of candidates' science process skills and physical science misunderstandings. This finding is significant since it verifies that such standardized tests required for teacher preparation programs are accurate indicators of candidates' science abilities and knowledge. These findings related to content validity are also consistent with those of Paul and Peck (1991). Paul and Peck wanted to determine if candidates' initial performance on the CBASE was indicative of academic achievement, as well as to determine if there is a correlation between CBASE and ACT measurements. The findings of their study show that candidates who passed all CBASE components in the initial attempt had a higher ACT, GPA, and overall CBASE score than those who did not pass one or more sections of the CBASE. Another finding from this study showed that there is also a positive correlation between ACT scores and CBASE scores.

Pike (1992) wanted to determine if the CBASE and the College Outcome Measures Program (COMP) Objective Test were sufficient measures of the quality of the University of Tennessee's general education program. The results of the study showed that scores on both examinations are correlated to students' ACT scores; there was also a correlation between required course work and CBASE scores. Similarly, Sewall (1993) conducted a study to determine if university/college students can predict their scores on standardized tests, such as the CBASE. One result of the study showed a positive correlation between individual's age and ability to predict test scores. Another finding showed that students with a professional major were better predictors of success on CBASE than those with pre-professional or undeclared majors.

Methodology

Because teacher licensure is gained by passing licensure examinations in most states, scores on the high stakes tests are determining factors as to who will be teaching in America's classrooms. Due to a focus on institutional graduation rates and external demands of the production of quality teachers, it is vital that teacher preparation programs produce the quality and quantity of teachers needed in America's classrooms. In order to produce the quality and number of teachers needed, teacher preparation programs must make sure they are adequately preparing candidates to be effective teachers, as well as to pass licensure examinations (Stotsky, 2007; CAEP, 2021; NCTQ, 2021). They must also attract candidates with higher college entrance examination scores and higher academic ability (Gitomer, Latham, & Ziomeck, 1999). Failure to respond to this call prevents many teacher candidates from entering the teaching profession. More specifically, large numbers of elementary education teacher candidates at nationally accredited universities do not initially pass the Praxis II: Curriculum, Instruction, and Assessment. In addition, before completing this study, little research was conducted on predictor variables on the elementary education licensure examination, Praxis II: Curriculum, Instruction, and Assessment (0011/5011), as well as scarce current research involving the College Basic Academic Skills Test (CBASE) and the Teacher Intern Assessment Instrument (TIAI).

The purpose of the study was to determine the relationship between Praxis I: Reading scores, Praxis I: Writing scores, Praxis I: Mathematics scores, overall GPA, overall CBASE scores, initial TIAI scores, and initial Praxis II: Curriculum, Instruction, and Assessment (0011/5011) scores of pre-service teachers at a regional university in Mississippi. To attain the purpose of the study, the following research questions were addressed:

1. Is there a significant relationship between Praxis I: Reading scores and Praxis II: Curriculum, Instruction, and Assessment scores?
2. Is there a significant relationship between Praxis I: Writing scores and Praxis II: Curriculum, Instruction, and Assessment scores?

3. Is there a significant relationship between Praxis I: Mathematics scores and Praxis II: Curriculum, Instruction, and Assessment scores?
4. Is there a significant relationship between GPA and Praxis II: Curriculum, Instruction, and Assessment scores?
5. Is there a significant relationship between overall CBASE scores and Praxis II: Curriculum, Instruction, and Assessment scores?
6. Is there a significant relationship between overall Teacher Intern Assessment Instrument (TIAI) scores and Praxis II: Curriculum, Instruction, and Assessment scores?
7. Is there a relationship between the combined variables of Praxis I: Reading scores, Praxis I: Writing scores, Praxis I: Mathematics scores, overall CBASE scores, Praxis II: Curriculum, Instruction, and Assessment scores, and performance on the teacher interns' Teacher Intern Assessment Instrument scores?

Design/ Method

This study used existing data from teacher candidates at regional university over a three-year period from fall of 2009 to spring of 2012. Data analyzed included candidates' Praxis I: Reading scores, Praxis I: Writing scores, Praxis I: Mathematics scores, overall GPA, overall CBASE scores, TIAI scores, and overall Praxis II: Curriculum, Instruction, and Assessment examination scores. Praxis I: Reading scores, Praxis I: Writing scores, Praxis I: Mathematics scores, TIAI scores, and overall GPA served as the independent variables for questions one through six, and the Praxis II: Curriculum, Instruction, and Assessment scores served as the dependent variable for questions one through six. For question seven, Praxis I: Reading, Praxis I: Writing, and Praxis I: Mathematics scores, CBASE scores, and Praxis II scores served as the independent variables; TIAI scores served as the dependent variable. The change in the dependent variable in question seven from the first six questions was established in order to determine if any of the standardized variables associated with entering and exiting a teacher preparation program were indicative of actual teaching performance as measured by the TIAI. The researcher utilized a quantitative approach to the study. The design for the study was correlational.

Participants

Research for this project was conducted at a regional university in Mississippi. Approximately 3,115 undergraduate students attend this university. Of those students, approximately 58% of students are Caucasian, and 38% of the students are African American. Native American, Hispanic, Asian, and other international students comprise the remaining 5% of students (Office of Institutional Research and Planning, 2010).

Pre-service elementary education candidates from fall 2009 to spring 2012 at the university served as the target population. A multi-level sampling technique was utilized in the study. The sample extracted from the population consisted of those teacher candidates who met the following criteria: completed Praxis I: Reading, Praxis I: Writing, and Praxis I: Mathematics assessments, CBASE, internship TIAI, and the Praxis II: Curriculum, Instruction, and Assessment (0011 or 5011) examination. Only candidates' initial assessment scores were utilized in the study. Out of the target population meeting the criteria, a sample of 100 candidates' data were used in the study. The researcher used a sample of 100 candidates' data in order for the inferences drawn from the study to be a valid and accurate representation of the target population, as well as to eliminate a great degree of sampling error (Glass & Hopkins, 1996).

Instrumentation

The instruments used in the study included required assessments for elementary education majors at a regional university. Required assessments included the Praxis I: Reading assessment, Praxis I: Writing assessment, Praxis I: Mathematics assessment, CBASE, TIAI, and Praxis II: Curriculum, Instruction, and Assessment examination. Overall scores were analyzed for each assessment.

According to the Educational Testing Service (2012), the Praxis series assessments measure teacher candidates' knowledge and skills in specified areas. Praxis I: Pre-Professional Skills Test (PPST) is designed to measure potential candidates' knowledge and skills in the areas of reading, writing, and mathematics. Most teacher candidates are required to obtain passing scores on the Praxis I reading, writing, and mathematics examinations in order to gain entry into a teacher preparation program.

Praxis II examinations in general are designed to measure subject specific content and pedagogical knowledge related to a candidate's specific educational field. More specifically, the Praxis II: Curriculum, Instruction, and Assessment examination is designed to assess candidates' knowledge and abilities related to curriculum planning, instructional delivery, and assessment of student learning (Educational Testing Service, 2012).

The College Basic Academic Skills Examination (CBASE) is an assessment instrument used to measure individuals' basic skills in mathematics, science, social studies, and language arts, and it is most commonly utilized in the mid-western states. The examination is typically administered to teacher candidates for admission into a teacher preparation program or in addition to the Praxis I examination (Missouri Department of Elementary and Secondary Education, 2008).

The Teacher Intern Assessment Instrument (TIAI) is state-wide assessment developed and used to assess Mississippi pre-service teachers' and teacher interns' abilities to plan, instruct, and assess in an educational setting. Candidates are assessed specifically in the areas of planning and teaching throughout their program preparation and during internship using the TIAI instrument. This assessment is not standardized; instead it is a performance evaluation tool aligned with the Interstate new Teacher Assessment and Support Consortium (InTASC) standards (Cummins, 2012). A collaborate network of EPP faculty in Mississippi meet regularly to review the state-wide assessment, and TIAI data are reported by institutions to both MDE and CAEP for program reviews.

Procedures and Data Analysis

In order to complete this study, the researcher followed various procedures including obtaining IRB approval and written consent forms to obtain access to data from the Dean of the College of Education and Human Sciences, the Division of Teacher Education department chair, and the Director of Field Experiences at the regional university.

To ensure confidentiality and anonymity, all files of teacher candidates who completed their teacher internship were obtained. A code was created where each candidate's name corresponded with a number, and only candidates who had successfully completed each variable were used in the study. The researcher inputted the appropriate scores and information for each variable of 100 participants' data was selected. All candidates' information remained confidential and data retrieved and reported consisted of numeric variables with no links to specific candidates.

Data were analyzed using the Statistical Package for the Social Sciences (SPSS). Due to the central purpose of the study being to determine relationship between variables, a quantitative approach and correlational design were utilized.

For research questions 1-6, the variables of Praxis I: Reading scores, Praxis I: Writing scores, Praxis I: Mathematics scores, CBASE scores, TIAI scores, GPA, and Praxis II: Curriculum, Instruction, and Assessment scores were all considered interval data, and each independent variable was analyzed to determine its relationship to the dependent variable, Praxis II. The Pearson *r* was computed for each of these questions. However, for research question 7, combined variables were used to determine the relationship between those combined variables and candidates' performance on the Teacher Intern Assessment Instrument (TIAI). Therefore, multiple regression analysis was used.

Results

One hundred fifty-one elementary education candidates' data were retrieved from the regional university. Of these one hundred fifty-one candidates, only one hundred six candidates met all criteria of having each test score and an overall grade point average. A sample of 100 candidates' data was used for analysis in the study. For each variable included in the study, descriptive statistics were analyzed and can be seen in Table 1. It is important to note that the following abbreviations were used for the input and output of data: PX R (Praxis I: Reading), PX W (Praxis I: Writing), PX M (Praxis I: Mathematics), and PX II (Praxis II: Curriculum, Instruction, and Assessment). All other variables were not abbreviated.

Candidates' initial Praxis I: Reading scores ranged from 158 to 184 ($M = 173.22$, $SD = 5.65$), Praxis I: Writing scores from 162 to 183 ($M = 172.53$, $SD = 3.80$), and Praxis I: Mathematics scores from 159 to 187 ($M = 172.41$, $SD = 5.30$). Candidates' GPA ranged from 2.50 to 3.90 ($M = 3.05$, $SD = .37$), and overall CBASE scores ranged from 174 to 372 ($M = 232.11$, $SD = 34.20$). Candidates' initial Praxis II: Curriculum Instruction and Assessment scores ranged from 116 to 193 ($M = 161.12$, $SD = 14.52$). Teacher interns' initial TIAI scores ranged from 1.38 to 3.88 ($M = 2.45$, $SD = .57$).

Overall Findings

When analyzing the relationship between initial Praxis I: Reading scores, Praxis I: Writing scores, Praxis I: Mathematics scores, overall GPA, overall CBASE scores, initial TIAI scores, and initial Praxis II: Curriculum, Instruction, and Assessment scores, several relationships were evident. As can be seen in Table 2, there is a relationship between Praxis I: Reading scores and Praxis II scores, Praxis I: Writing scores and Praxis II scores, Praxis I: Mathematics scores and Praxis II scores, GPA and Praxis II scores, and CBASE scores and Praxis II scores. The strongest relationships that exist between variables and Praxis II scores are initial Praxis I: Reading scores and overall CBASE scores. There is no significant relationship between initial TIAI scores and Praxis II scores.

Table 1

Descriptive Data per Variable

	Range	Minimum	Maximum	Mean	Std. Deviation
PX R	26.00	158.00	184.00	173.22	5.65
PX W	21.00	162.00	183.00	172.53	3.80
PX M	28.00	159.00	187.00	172.41	5.30

GPA	1.40	2.50	3.90	3.05	.37
CBASE	198.00	174.00	372.00	232.11	34.20
PX II	77.00	116.00	193.00	161.12	14.52
TIAI	2.50	1.38	3.88	2.45	.57

Table 2

Overall Relationship between Variables and Praxis II: Curriculum, Instruction, and Assessment Scores

		Praxis II
Praxis Reading	Pearson Correlation	.513**
	Sig. (2-tailed)	.000
	N	100
Praxis Writing	Pearson Correlation	.262**
	Sig. (2-tailed)	.008
	N	100
Praxis Mathematics	Pearson Correlation	.426**
	Sig. (2-tailed)	.000
	N	100
GPA	Pearson Correlation	.317**
	Sig. (2-tailed)	.001
	N	100
CBASE	Pearson Correlation	.565**
	Sig. (2-tailed)	.000
	N	100
TIAI	Pearson Correlation	.115
	Sig. (2-tailed)	.256
	N	100

** Correlation is significant

Research Question Analysis

Research Question One

Is there a significant relationship between Praxis I: Reading scores and Praxis II: Curriculum, Instruction, and Assessment scores? To answer this question, Pearson's *r* was computed using a correlation design. When identifying the relationship between independent variable of candidates' initial Praxis I: Reading scores and the dependent variable of candidates' initial Praxis II scores, it was determined there was a significant relationship between Praxis I: Reading scores and initial Praxis II scores (r (98) = .51, $p < .001$).

Research Question Two

Is there a significant relationship between Praxis I: Writing scores and Praxis II: Curriculum, Instruction, and Assessment scores? To answer this question, Pearson's *r* was computed using a correlation design. When identifying the relationship between the independent variable of candidates' initial Praxis I: Writing scores and the dependent variable of initial Praxis II scores, it

was determined there was a significant relationship between Praxis I: Writing scores and initial Praxis II scores (r (98) = .26, p < .01).

Research Question Three

Is there a significant relationship between Praxis I: Mathematics scores and Praxis II: Curriculum, Instruction, and Assessment scores? To answer this question, Pearson's r was computed using a correlation design. When identifying the relationship between candidates' initial Praxis I: Mathematics scores and initial Praxis II scores, it was determined there was a significant relationship between the independent variable of Praxis I: Mathematics scores and the dependent variable, initial Praxis II scores (r (98) = .43, p < .001).

Research Question Four

Is there a significant relationship between GPA and Praxis II: Curriculum, Instruction, and Assessment scores? To answer this question, Pearson's r was computed using a correlation design. When identifying the relationship between the independent variable of candidates' overall GPA and the dependent variable of initial Praxis II scores, it was determined there was a significant relationship between GPA and initial Praxis II scores (r (98) = .32, p < .001).

Research Question Five

Is there a significant relationship between overall CBASE scores and Praxis II: Curriculum, Instruction, and Assessment scores? To answer this question, Pearson's r was computed using a correlation design. When identifying the relationship between the independent variable of candidates' overall CBASE scores and the dependent variable of initial Praxis II scores, it was determined there was a significant relationship between overall CBASE scores and initial Praxis II scores (r (98) = .57, p < .001).

Research Question Six

Is there a significant relationship between initial Teacher Intern Assessment Instrument (TIAI) scores and Praxis II: Curriculum, Instruction, and Assessment scores? To answer this question, Pearson's r was computed using a correlation design. When identifying the relationship between the independent variable of candidates' initial TIAI scores and the dependent variable of initial Praxis II scores, no significant relationship was observed (r (98) = .12, ns).

Research Question Seven

Is there a relationship between the combined variables of initial Praxis I: Reading scores, Praxis I: Writing scores, Praxis I: Mathematics scores, overall CBASE scores, Praxis II: Curriculum, Instruction, and Assessment scores, and performance on teacher interns' initial Teacher Intern Assessment Instrument scores? As noted in Table 3, the combined scores of Praxis I: Reading scores, Praxis I: Writing scores, Praxis I: Mathematics scores, overall CBASE scores, Praxis II: Curriculum, Instruction, and Assessment scores did not explain a significant proportion of variance in TIAI scores, R^2 = .05, F (5, 94) = .88, *ns*. The adjusted R-squared compensates for inflation of the R-squared statistic that accompanies each new independent variable. Therefore, our observed R-Squared was reduced from the negligible .05 to essentially 0 (-.006). Also, any value of F equal to or smaller than 1.0 is considered non-significant. The F value of this study was .88 and was therefore non-significant.

Furthermore, as evident in Table 4, there is no significant correlation between any of the independent variables of initial Praxis I: Reading scores, Praxis I: Writing scores, Praxis I: Mathematics scores, overall CBASE scores, Praxis II: Curriculum, Instruction, and Assessment scores, and the TIAI. Due to there being no relationship between the individual independent variables, it was likely that

there would still be no relationship when combining these variables to predict TIAI scores. This was proven in the R^2 and adjusted R^2.

Table 3

Multiple Regression Output

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	F	Sig.
1	.211[a]	.045	-.006	.57221	.880	.498[a]
a. Predictors: (Constant), PX II, PX W, PX M, PX R, CBASE						

Table 4

Individual Correlations of Independent Variables and TIAI

Variable	Mean	Std. Deviation	Correlation with TIAI	Significance	
TIAI	2.4473	.57047			
PX R	173.2200	5.64896	.097	.169	
PX W	172.5300	3.79914	.145	.076	
PX M	172.4100	5.29741	.196	.025	
CBASE	232.1100	34.20051	.126	.105	
PX II	161.1200	14.52151	.115		.128

In addition to the major research questions guiding the study, the relationship between variables used in the study were also analyzed. As indicated in Table 5, there were several variables that had a strong statistical significance when determining the relationship between them. A majority of the variables showed a degree of a statistically significant relationship. The strongest relationship existed between Praxis I: Reading scores and overall CBASE scores, followed very closely by the relationship between overall CBASE scores and initial Praxis II: Curriculum, Instruction, and Assessment scores. Other very strong relationships existed between initial Praxis I: Reading scores and overall CBASE scores and initial Praxis II: Curriculum, Instruction, and Assessment scores, as well as between Praxis I: Mathematics scores and overall CBASE scores.

Another notable finding pertained to the variables that had no relationship. Candidates' initial performance as evaluated using the Teacher Intern Assessment Instrument during internship showed no statistical relationship to any of the individual variables in the study. There was also no statistically significant relationship between GPA and Praxis I: Writing scores.

Table 5

Relationship Between Variables

		PX R	PX W	PX M	CBASE	PX II	TIAI
GPA	Pearson Correlation	.303**	.162	.318**	.300**	.317**	.165
	Sig. (2-tailed)	.002	.108	.001	.002	.001	
	N	100	100	100	100	100	100
PX R	Pearson Correlation		.487**	.389**	.567**	.513**	.097
	Sig. (2-tailed)		.000	.000	.000	.000	
	N		100	100	100	100	100
PX W	Pearson Correlation			.409**	.483**	.262**	.145

	Sig. (2-tailed)		.000	.000	.008	
	N		100	100	100	100
PX M	Pearson Correlation			.552**	.426**	.196
	Sig. (2-tailed)	.		.000	.000	
	N			100	100	100
CBASE	Pearson Correlation				.565**	.126
	Sig. (2-tailed)				.000	
	N				100	100
PX II	Pearson Correlation					.115
	Sig. (2-tailed)					
	N					100

Conclusions

The findings of this study led to several conclusions regarding variables that could serve as predictors of performance on Praxis II: Curriculum, Instruction, and Assessment, as well as regarding variables that might predict interns' actual performance in their cooperating teachers' classrooms. The strongest predictor of performance on the required Mississippi state licensure examination, Praxis II: Curriculum, Instruction, and Assessment, were overall CBASE scores and Praxis I: Reading scores. By identifying candidates who do not initially pass the Praxis I: Reading examination and/or who do not perform well on the CBASE, these candidates could receive remediation and council to provide remediation and support in order to possibly enhance their initial performance on Praxis II. Therefore, this type of early recognition of candidates who might possibly benefit from remediation could potentially increase student performance on the licensure examinations and overall graduation rates at the university, as well as other institutions in Mississippi and the United States who incorporate these same variables within their programs.

Other predictors of performance on Praxis II: Curriculum, Instruction, and Assessment include initial Praxis I: Mathematics scores and GPA. Praxis I: Writing scores were also a predictor, but these scores were the weakest predictor of initial Praxis II scores. These variables could also aid teacher preparation programs in allowing faculty and teacher candidates to identify those potentially at risk of not initially passing Praxis II.

None of the variables studied, including any of the Praxis I or II scores, GPA, or CBASE scores, had any significant relationship to candidates' initial performance on the Teacher Intern Assessment Instrument (TIAI). This does not necessarily invalidate the TIAI as a measure of teaching performance; however, it is noteworthy that performance on required coursework and required entry and exit licensure examinations are not indicative of teaching performance as measured by the TIAI. The TIAI instrument seems to measure a different skillset than those measured by the other variables.

Discussion

More than ever before, teacher preparation programs are being highly scrutinized and evaluated to determine if they are producing enough quality, well-prepared teachers for teaching in America's classrooms. Accrediting agencies, as well as state and federal governments, are pressing these programs to produce both the quality and quantity of teachers needed in order for U. S. children to compete globally with other countries. In Mississippi, various measures are being taken to increase standards for entry into teacher preparation programs in addition to standards for exiting the programs to gain licensure. Therefore, it is vital that these programs are identifying candidates who

might benefit from remediation courses or workshops to increase their chances of successfully completing our programs and becoming effective, quality teachers.

The goal of teacher preparation programs is to produce quality teachers prepared to enter the teaching profession (Council for the Accreditation of Educator Preparation, 2021). However, despite vast efforts to do so, teacher licensure examinations are the final determinant as to whether teachers can enter the field, which can drastically reduce the number of teachers graduating from these programs each year (Albers, 2002; Brown, Brown, & Brown, 2008; Gitomer, 2007; McNeal &Lawrence, 2009). Teacher preparation programs can benefit from this study through the increased awareness of possible indicator variables of success or failure on the Praxis II: Curriculum, Instruction, and Assessment examination for elementary education candidates. Forty-eight states, as well as Washington D.C. and the U.S. Virgin Islands, currently utilize the Praxis series examinations in some form, whether Praxis I or Praxis II (Educational Testing Service, 2012). This study could yield pertinent information to teacher preparation programs across the nation of similar demographics by possibly identifying variables that are indicative of exceptional or poor performance on state licensure examinations, particularly the Praxis II: Curriculum, Instruction, and Assessment examination (0011/5011).

Several states, particularly those in the mid-west region of the United States such as Missouri and Nebraska, utilize the CBASE examination as either a single or combined determinant of who will enter their teacher preparation programs (Assessment Resource Center, 2009). This study could yield valuable data to those states utilizing the CBASE, as well as others, by possibly pinpointing a current measure of teacher entry or by signaling a future adopted measure of identifying performance on Praxis II, such as the CBASE.

Mississippi institutions utilized the Praxis I: Pre-Professional Skills tests, the Praxis II: Curriculum, Instruction, and Assessment examination, as well as the Teacher Intern Assessment Instrument at some point during the teacher preparation program (Cummins, 2012). By analyzing these variables, Mississippi institutions would benefit from this research by having the data to isolate specific indicators for performance on Praxis II. This research would provide the basis for possible targeted intervention plans which would assist candidates in succeeding on the Praxis II: Curriculum, Instruction, and Assessment examination, as well as provide all states with valuable data to address the national call for utilizing research to evaluate their programs' practices and effectiveness.

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