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The Louisiana Believe and Prepare Educator Preparation Reform: Findings from the Pilot and Early Implementation Years

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The Louisiana Believe and Prepare Educator Preparation Reform: Findings from the Pilot and Early Implementation Years

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Believe and Prepare is a teacher preparation reform implemented by the Louisiana Department of Education in collaboration with school systems and teacher preparation programs across the state. It was piloted in the 2014/15 school year and became mandatory in July 2018 for incoming teacher candidates in all 18 institutions of higher education that offer traditional teacher preparation programs. The reform focused on competency-based curricula, extended clinical experiences, and rigorous mentor teacher training. A central requirement of the reform is that teacher candidates must participate in a yearlong residency with a mentor teacher. This replaced the prior shorter-term student teaching requirement, typically six weeks. To explore the extent to which the reform is contributing to expected improvement in outcomes for early career teachers, this study examined the association between the reform and in-service teacher performance ratings, teacher retention, student test scores, teacher competency, and the likelihood of three placement outcomes (being placed in the school where the teacher completed a residency, filling a teaching position in a shortage area, and being placed in a rural school). Teachers who completed a program that had implemented Believe and Prepare were 2 percentage points more likely than teachers who completed a program that had not implemented it to stay in Louisiana for at least one year and 7 percentage points more likely to stay in the same school district for at least three years. Grade 4–8 students whose teachers completed a preparation program that had implemented Believe and Prepare during the pilot years scored 0.04 standard deviation lower on English language arts tests than students whose teachers completed a program that had not implemented it. Other teacher outcomes such as in-service performance ratings, competency as measured by Praxis II scores, school placement, and job assignment were not statistically different between teachers who completed a program that had implemented Believe and Prepare and teachers who completed other programs.

Why this study?

In 2014/15 the Louisiana Department of Education piloted Believe and Prepare as a teacher preparation reform designed to address several challenges identified in a statewide survey of approximately 6,000 new teachers, the programs that prepared them, and the schools and districts that hired and supported them (Louisiana Department of Education, 2014). These challenges included inadequate hands-on experience, difficulties in identifying enough effective teachers to serve as mentors, and a mismatch between the supply and demand of teachers in high-need subject areas and grades.

For additional information, including technical methods, supporting analyses, and supplemental analyses, access the report appendixes at https://ies.ed.gov/ncee/rel/Products/Publication/104928.

To address these challenges, Believe and Prepare pursued three actions during teacher candidates' preservice experience: requiring teacher preparation program providers to implement curricula designed to target certain teacher competencies, providing rigorous mentor teacher training, and strengthening coordination between teacher preparation programs and local school systems (Hannan et al., 2019). A major requirement of Believe and Prepare is that

teacher candidates in undergraduate teacher preparation programs must participate in a yearlong residency under the guidance of a mentor teacher. This replaced the prior shorter-term student teaching requirement, typically six weeks. The yearlong residency was designed to offer teacher candidates extended immersion in classroom teaching in an authentic setting, more opportunities to connect education theories with practice, and substantially more time to learn from mentor teachers. These changes, in turn, were expected to improve the preparedness, performance, and persistence of new teachers. Mentor teachers, selected by school systems, must complete nine days of training and, as of summer 2019, a mentor certification. At the time of the study, Believe and Prepare offered $1,000 stipends to mentors and $2,000 stipends to residents. In rural schools, where teacher shortages are greatest, those stipends were doubled.[1]

In July 2018 the Believe and Prepare requirements became mandatory for incoming teacher candidates in the 18 institutions of higher education in Louisiana that offer traditional undergraduate teacher preparation programs. Each institution had multiple preparation programs and could implement Believe and Prepare in a subset of those programs in any given year. Any program that implemented Believe and Prepare and started enrolling teacher candidates as freshmen in the 2018/19 school year would not have graduated teacher candidates who fulfilled the Believe and Prepare requirements until the 2021/22 school year. As a result, not all programs had graduated teacher candidates who fulfilled the requirements by the 2019/20 school year, the end of the study period.

The Louisiana Department of Education seeks systematic evidence about the extent to which Believe and Prepare may be associated with improvements in outcomes for early career teachers. A previous study examined the type of teacher preparation programs, districts, and schools that participated in the Believe and Prepare pilot; the subjects in which teachers who completed a program during the pilot attained certificates and taught; and the one-year retention rates of those teachers (Wan et al., 2021). Building on the findings of that study, the Regional Educational Laboratory Southwest Teacher Preparation and Professional Development Partnership conducted this descriptive study to better understand the differences in student and teacher outcomes between new teachers who completed a preparation program that had implemented Believe and Prepare (henceforth "Believe and Prepare teachers") and teachers who completed a program that had not implemented it (henceforth "comparison teachers"). The study examined mechanisms through which the program may have achieved these goals, including potential changes to teacher content knowledge and the school placement of early career teachers.

These findings contribute to the sparse evidence base on what constitutes effective preservice training for teachers (Goodson et al., 2019), even though clinical preparation (student teaching) is widely regarded as a key component of preservice teacher training (Anderson & Stillman, 2013). Requirements for student teaching vary substantially across states; at the time of implementation, Louisiana's Believe and Prepare was unique among states in requiring a yearlong residency of teacher candidates as a core component of teacher licensure. Quantitative evidence on the efficacy of residencies is limited (Papay et al., 2012; Silva et al., 2015). Leaders at the Louisiana Department of Education and other state agencies can use the findings from this study to understand how teacher residencies and the types of preservice experiences encompassed in Believe and Prepare are associated with student and teacher outcomes.

1. The doubling of stipends in rural schools ended in the 2021/22 school year. In the 2022/23 school year the stipend is $2,000 for mentors and $3,300 for residents, regardless of school locale.

Research questions

This study examined the differences in teacher outcomes (2015/16–2019/20) and student outcomes (2016/17–2019/20) in Louisiana between Believe and Prepare teachers and comparison teachers with similar attributes (such as sex, race/ethnicity, and years of experience). Specifically, the study addressed four research questions:

1. Was implementation of Believe and Prepare associated with higher in-service teacher performance ratings?

2. Was implementation of Believe and Prepare associated with higher teacher retention rates in Louisiana public schools at the school, district, or state level?

3. Was implementation of Believe and Prepare in pilot years associated with higher standardized test scores among students with similar prior scores and characteristics?

4. What might explain the association between Believe and Prepare and teacher and student outcomes?

    a. Did Believe and Prepare teachers have greater competency, as measured by Praxis II scores, than comparison teachers?

    b. Did Believe and Prepare teachers teach in the school where they completed their residency more often than comparison teachers?

    c. Did Believe and Prepare teachers fill teaching positions in shortage areas more often than comparison teachers?

    d. Did Believe and Prepare teachers teach in rural schools more often than comparison teachers?

Box 1 defines key terms used in the report. The data sources, samples, and methods are summarized in box 2 and detailed in appendix A.

Box 1. Key terms

Alternative teacher preparation program. A program that leads to certification as a teacher for college graduates who did not major in education. Candidates for these programs must have a minimum of a bachelor's degree to enroll.

Believe and Prepare teacher. A new teacher who completed a teacher preparation program that had implemented Believe and Prepare.

Comparison teacher. A new teacher who completed a preparation program that had not implemented Believe and Prepare.

Competency-based curriculum. Teacher preparation coursework, designed through a partnership between preparation program faculty and district leaders, that emphasizes essential teaching knowledge and skills and school-based, practice-oriented experience.

Job function. The Louisiana Department of Education category (kindergarten, elementary, secondary, special education, or gifted education) that applies to a teacher's job assignment.

Professional practice. One of the two equally weighted components used by the Compass educator evaluation system in calculating the overall teacher performance rating. The professional practice rating is the average of a teacher's observation ratings.

Residency. A school-based teacher preparation experience in which a Believe and Prepare participant works under the supervision of an experienced mentor teacher in a Louisiana public school, typically for a full school year.

Retention. A teacher remaining in a teaching position for more than one year in the same school, in the same district, or in Louisiana. The study examined one-year and three-year retention.

Student growth. One of the two equally weighted components used by the Compass educator evaluation system in calculating the overall teacher performance rating. The student growth rating is determined by a teacher's value-added rating, average student learning target rating, or a combination of the two.

Teacher shortage area. A subject area and grade that Louisiana identified as having staffing challenges in a particular year.

Traditional undergraduate teacher preparation program. A four-year degree program that includes general education courses, a certification area of focus, professional education, field experiences, and student teaching or residency in a school (Louisiana Department of Education, n.d. b). Each of the 18 institutions of higher education that prepare teachers for teaching in Louisiana offers multiple such programs. At a given point in time, an institution might have had some programs that were implementing Believe and Prepare and other programs that were not.

Box 2. Data sources, sample, treatment status, methods, and limitations

Data sources. The study used a combination of administrative data on teacher candidates, teachers, and students provided by the Louisiana Department of Education and publicly available data, including:

- Program records for all preservice participants in a full-year residency between 2014/15 and 2019/20, including participants' school of residency and year of completion.
- Annual, anonymized data for all teachers employed in Louisiana public schools between 2012/13 and 2019/20, including demographic characteristics, teaching certificates, college degrees, years of experience, and school assignments.
- Measures of teacher competency and performance between 2012/13 and 2019/20, including preservice Praxis II scores and in-service performance ratings.
- Student data between 2012/13 and 2019/20, including school enrollment, state standardized test scores in math and English language arts, demographic characteristics, education needs (such as eligibility for the National School Lunch Program, an indicator of economic disadvantage; special education; limited English proficiency; and gifted education), and student-teacher links.
- Publicly available data on teacher shortage areas reported to the U.S. Department of Education between 2012/13 and 2019/20.[1]

Sample. The study included eight cohorts of teacher candidates who completed a traditional undergraduate teacher preparation program[2] between 2012/13 and 2019/20 and who subsequently were employed in a Louisiana public school by 2020/21. A cohort is defined as a group of teacher candidates who completed a program in the same year. The study sample included 6,131 teacher candidates, which consisted of 1,049 Believe and Prepare teachers and 5,082 comparison teachers. For research question 3 the student sample included 65,709 students in grades 4–8 for math and 73,774 students in grades 4–8 for English language arts, and the teacher sample included 44 Believe and Prepare teachers and 684 comparison teachers for math and 54 Believe and Prepare teachers and 840 comparison teachers for English language arts.

Treatment status. The Louisiana Department of Education worked with teacher preparation institutions to verify the programs and years in which the Believe and Prepare requirements applied and whether individual teacher candidates completed a yearlong residency. Believe and Prepare requirements applied to teacher candidates newly enrolled in programs. Thus, programs implementing Believe and Prepare could have had completers in the comparison group. For example, two candidates might have completed the same program in the same year, but one candidate might have entered the program after the Believe and Prepare requirements took effect and would have been subject to them, while the other candidate might have entered the program before the requirements took effect and would not have been subject to them. However, the Louisiana Department of Education indicated that programs were unwilling to run two sets of requirements at the same time in practice and implemented the same requirements for all students in a graduating class, regardless of when they started. Thus, treatment status was not expected to vary among graduates in the same cohort in the same program.

Individual-level administrative records of treatment status were largely consistent with the expectation of little within-program and within-year variation in teacher candidates completing a yearlong residency. The study team found both

treated and untreated teacher candidates in only 1.8 percent of the program-years. For those observations the study team assumed that all candidates were treated when more than 50 percent of individuals in the program-year were Believe and Prepare teachers and that no teacher was treated when 50 percent or less were. This imputation process changed the reported individual treatment status for 0.7 percent (61 out of 7,921) of teacher candidates, with 33 changed from treated to comparison and 28 changed from comparison to treated.

Methodology. Teacher preparation programs began applying Believe and Prepare requirements to incoming students in different years. The analytic strategy used this variation in implementation timing and compared the outcomes of teachers who completed a program that had implemented Believe and Prepare with the outcomes of teachers who completed a program that had not yet implemented it. Because programs that implemented early could systematically differ from programs that implemented late, the study accounted for possible differences in the years before a program first implemented Believe and Prepare (the baseline years) between early and late implementers—including programs that never implemented it during the study period—using outcome data from before Believe and Prepare was introduced. For all research questions the year that teachers completed their program and the program they attended were controlled for.

The main specifications included additional control variables to ensure that the analysis compared Believe and Prepare teachers with similar comparison teachers. However, an association between Believe and Prepare and student and teacher outcomes could be due to changes in the composition of teacher candidates after implementation. To address this potential source of bias, alternative models were also estimated without controls for teacher characteristics. The results from the two specifications were nearly identical.

For research question 1 the study focused on a teacher's overall performance rating as well as its equally weighted subcomponents: student growth and professional practice ratings.[3] All ratings were normalized to be comparable across years. The study also examined the likelihood of a teacher being rated proficient or higher or being rated highly effective. Control variables included teacher sex, race/ethnicity, education level, and job function.

For research question 2 the study examined the association between completing a program that implemented Believe and Prepare and one-year and three-year retention in the same school, in the same district, and in Louisiana. Control variables included the same set of teacher attributes as those used in research question 1.

For research question 3 the study examined students' math and English language arts test scores separately and normalized them to make scores from different years and grades comparable. Because test scores tend to be influenced by students' prior achievement and background characteristics, the study accounted for students' prior test scores in both math and English language arts, sex, race/ethnicity, eligibility for the National School Lunch Program, special education status, whether the student changed schools during the school year, and whether the student ever repeated a grade. The main specification also accounted for teacher characteristics, such as sex, race/ethnicity, education level, years of experience, and ability as measured by Praxis I scores. Experience did not include the year spent in residency, and each year of experience was entered into the regression as a separate indicator variable.[4] The analysis also accounted for the fact that students might have been co-taught by multiple teachers, which is true especially for the English language arts analysis, where students take separate reading and language arts courses.

For research question 4a the outcome measure was teacher candidates' Praxis II scores, which were normalized to be comparable across certification areas, years, and test versions. These scores were aggregated into overall averages; average content test scores; average pedagogy scores; average elementary education scores; average special education scores; and subject-specific scores in math, English language arts, science, and social studies. Control variables included teacher sex and race/ethnicity as well as Praxis I scores in math, reading, and writing to account for variation in ability when a candidate applied to a teacher preparation program.

Research questions 4b–4d examined a set of binary job placement outcomes using the same methodology applied to the other research questions. For research question 4b the outcome was whether a teacher was hired in the school where the teacher had completed the yearlong residency. For research question 4c the outcome was whether a teacher taught in a shortage area. For research question 4d the outcome was whether a teacher taught in a rural school, with locality defined using the National Center for Education Statistics' urban-centric school locale assignment system. For these research questions control variables included teacher sex and race/ethnicity. Years of experience and job function were not included as control variables because these questions examine whether a teacher was either initially assigned or ever assigned to a particular type of school or shortage area.

Limitations. The study has four main limitations. First, because of a lack of student test scores in recent years due to the COVID-19 pandemic, the analysis of the association between Believe and Prepare and student achievement is limited to teachers who completed a preparation program during the first three years of implementation. As a result, the student achievement findings rely on a small sample of teachers who completed a teacher preparation program that had implemented Believe and Prepare. Relatedly, the study was unable to examine other student outcomes that teachers influence, such as absence from school and misbehavior resulting in suspension (for example, see Jackson, 2018), that could be associated with teachers having completed the yearlong residency.

Second, because data on resident-mentor linkage were not collected until the 2019/20 school year, the study could not investigate how mentor quality may be associated with student and teacher (mentee) outcomes or the extent to which student outcomes in mentors' classrooms were affected by hosting student teachers for extended periods. Emerging research suggests that mentor quality is associated with the in-service performance of the teacher candidates they mentor (Goldhaber, Krieg, & Theobald, 2020). States and districts have some control over which teachers serve as mentors, and there is substantial scope for change in mentor assignments (Goldhaber, Krieg, Naito, & Theobald, 2020).

Third, due to a lack of data on teacher preparation program applicants, the study could not investigate the extent to which Believe and Prepare may have altered the number and composition of candidates who apply to and persist in teacher preparation programs. The added costs in time and foregone earnings to teacher candidates due to the shift from a six-week to a yearlong residency might have dissuaded some students from becoming teachers.

Finally, to attribute any observed difference in outcomes between teachers who completed a teacher preparation program that implemented Believe and Prepare and teachers who completed a teacher preparation programs that did not implement it, the study team assumed that those outcomes would have followed parallel trends over time in the absence of reform. Further, the study team assumed that prereform outcomes were not affected by anticipation of the upcoming reform and that no other contemporaneous policy changes affected the outcomes. Even when these assumptions are found to hold true, the estimated effect of Believe and Prepare could be biased if the effect varied over time or across teacher preparation programs. The study investigated the plausibility of these assumptions and the robustness of the main findings to these potential sources of bias and found no evidence that the parallel trends assumption was violated (see appendix C). Although the findings from alternative analyses differ from the main findings, they are largely within the margin of error. Nevertheless, the findings should be interpreted as descriptive rather than causal.

Notes

1. These data are publicly available at https://tsa.ed.gov/#/home/.

2. Seven providers of alternative educator preparation programs also participated in the Believe and Prepare pilot. However, they were not required to implement a residency experience, which is a central component of Believe and Prepare. Because of this, the study focused on traditional undergraduate preparation programs only and excluded alternative educator preparation programs.

3. See Louisiana Department of Education (2013) for details on Louisiana's teacher evaluation system.

4. As expected, nearly all teachers (99.9 percent) were reported as having one year of experience by the end of their first year of teaching. Because teachers who completed a teacher preparation program in earlier cohorts could remain in the analytic samples in later years, the distribution of years of experience became more heterogeneous in later years. For example, in 2019/20, 15 percent of teachers had one year of experience, 13 percent had two years of experience, 15 percent had three years of experience, 14 percent had four years of experience, and 42 percent had five or more years of experience.

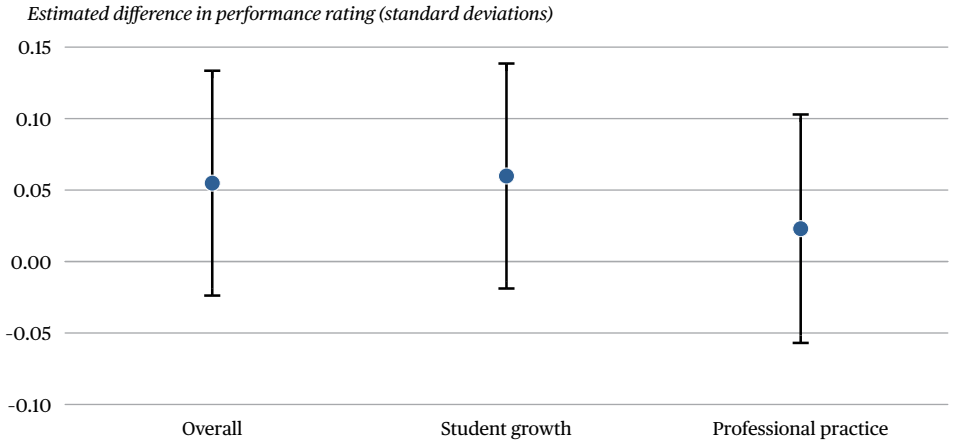
Findings

This section presents the main findings of this study. Detailed findings are in appendix B.

In general, Believe and Prepare teachers received in-service performance ratings that were not statistically significantly different from those of comparison teachers

Believe and Prepare was designed to improve teacher preparation, and a key measure of new teachers' preparedness for teaching is their performance rating. Teachers in Louisiana are rated on a four-point scale (ineffective, emerging, proficient, and highly effective) for their performance. The overall performance rating consists of two equally weighted subcomponents: student growth and professional practice. Ratings for these

Figure 1. Believe and Prepare teachers' in-service performance ratings were not statistically significantly different from those of comparison teachers, 2015/16–2019/20



Note: The analytic sample included 19,477 teacher-year observations. See table B2 in appendix B for the number of teachers by treatment status, year, and outcome. Each dot represents the estimated difference in performance rating (standardized to have a mean of 0 and a standard deviation of 1) between teachers who completed a preparation program that had implemented Believe and Prepare and teachers who completed a program that had not implemented it, using the methods described in box 2. The vertical lines above and below each dot represent the likely range of the estimated difference 95 percent of the time. The ranges of the estimated differences include 0, suggesting that the differences in ratings between the two groups of teachers are not statistically significant at $p < .05$. See table B4 in appendix B for full results.

Source: Authors' analysis based on data provided by the Louisiana Department of Education.

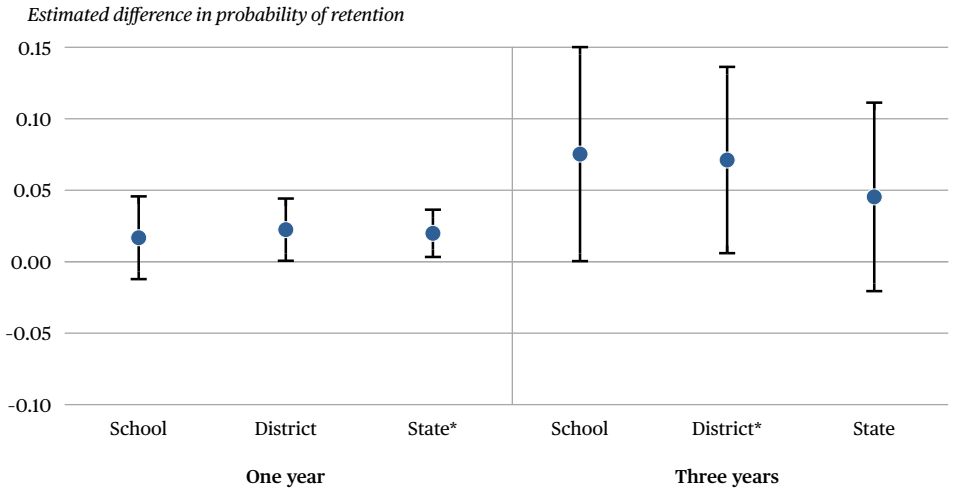
performance measures were not statistically different between Believe and Prepare teachers and comparison teachers with similar demographic characteristics, education level, years of teaching experience, and job functions (figure 1; see also table B4 in appendix B).

In addition to examining average performance ratings, the study investigated the likelihood that a teacher was rated proficient or better or rated highly effective on any of the performance measures. Believe and Prepare teachers were 5 percentage points more likely than comparison teachers to be rated highly effective on student growth, but no other difference was statistically significant (see table B4).

Believe and Prepare teachers were more likely than comparison teachers with similar characteristics to stay in the same district and to stay in Louisiana

Another key measure of new teachers' preparedness is retention. Changes implemented by Believe and Prepare, particularly the yearlong residency, provided more time and opportunities for teacher candidates to learn job expectations before becoming teachers. A better understanding of expectations may in turn reduce turnover after teachers are hired. Relative to comparison teachers with similar demographic characteristics, education level, years of teaching experience, and job functions, Believe and Prepare teachers were 2 percentage points more likely to stay in the state for one year and 7 percentage points more likely to stay in the same district for three years (figure 2; see also table B5 in appendix B). Other differences in retention (for example, the probability of staying in the same school or district for one year) were similar in magnitude but, because they were measured less precisely, are not statistically significant.

Figure 2. Believe and Prepare teachers were more likely than comparison teachers with similar characteristics to stay in the same district for three years in 2016/17 and 2017/18 and to stay in Louisiana for one year in 2016/17 through 2019/20



* Significant at $p < .05$.

Note: The analytic samples for one-year retention included 19,933 teacher-year-school observations for the school-level analysis, 19,810 teacher-year-district observations for the district-level analysis, and 19,222 teacher-year observations for the state-level analysis. The analytic samples for three-year retention included 11,088 teacher-year-school observations for the school-level analysis, 11,022 teacher-year-district observations for the district-level analysis, and 10,831 teacher-year observations for the state-level analysis. See table B2 in appendix B for the number of teachers by treatment status, year, and outcome. Each dot represents the estimated difference in probability of retention between teachers who completed a preparation program that had implemented Believe and Prepare and teachers who completed a program that had not implemented it, using the methods described in box 2. The vertical lines above and below each dot represent the likely range of the estimated difference 95 percent of the time. The ranges that include 0 suggest that the difference in probability of retention between the two groups of teachers are not statistically significant at $p < .05$. See table B5 in appendix B for full results.

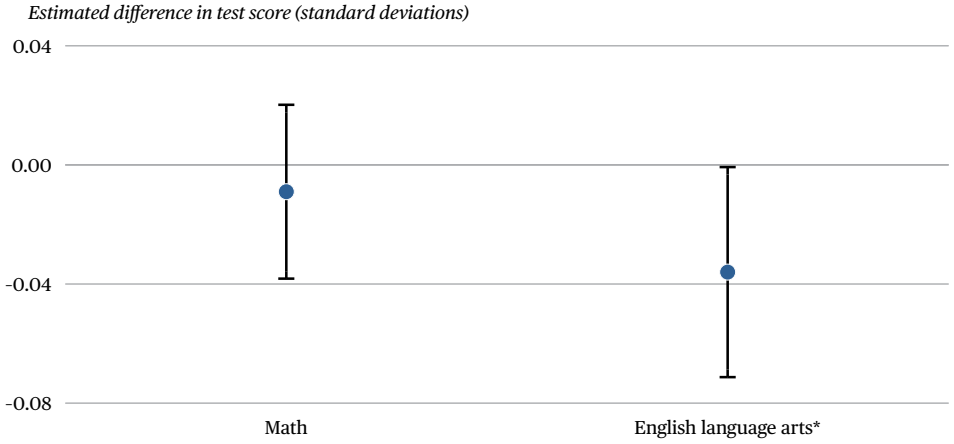
Source: Authors' analysis based on data provided by the Louisiana Department of Education.

Students taught by Believe and Prepare teachers who completed a preparation program during the pilot years did not score significantly differently on standardized tests in math from students taught by comparison teachers with similar characteristics but scored significantly lower in English language arts

The performance of Believe and Prepare teachers can also be measured using student test scores. Using achievement test data in math and English language arts, the study compared the outcomes of grade 4–8 students taught by teachers who completed a preparation program that had piloted Believe and Prepare with those of students taught by similar teachers who completed a preparation program that had not participated in the pilot. Due to the COVID-19 pandemic the most recent year for which test scores were available to the study was 2018/19. As a result, the findings are limited to the sample of students whose teachers were in the cohorts that completed a preparation program in 2015, 2016, or 2017. This included 44 Believe and Prepare teachers and 684 comparison teachers for math and 54 Believe and Prepare teachers and 840 comparison teachers for English language arts.

Among students in grades 4–8 with similar prior achievement in math and English language arts as well as similar background characteristics, those taught by Believe and Prepare teachers who completed a preparation program during the pilot years did not score significantly differently on math tests from students taught by comparison teachers (figure 3; see also table B6 in appendix B). While on average standardized test scores in math were lower for students taught by Believe and Prepare teachers than for students taught by comparison teachers, the differences were not statistically significant. On the other hand, students taught by Believe and Prepare teachers who completed a preparation program during the pilot years scored 0.04 standard deviation lower on English language arts tests than students taught by comparison teachers did; this association, equivalent to one-sixth to one-tenth of a year's learning (Lipsey et al., 2012), was statistically significant in the main

Figure 3. Students taught by Believe and Prepare teachers who completed a preparation program during the pilot years did not score significantly differently on standardized tests in math from students taught by comparison teachers with similar characteristics but scored significantly lower in English language arts, 2016/17–2018/19



* Significant at $p < .05$.

Note: The analytic samples included 65,609 unique students and 74,510 student-year observations for math and 73,774 unique students and 119,516 student-year observations for English language arts. Each dot represents the estimated difference in standardized test scores (standardized by year and grade to have a mean of 0 and standard deviation of 1 within each year and grade) between students whose teachers completed a preparation program that had implemented Believe and Prepare during the pilot years and students whose teachers completed a program that had not implemented it, using the methods described in box 2. The vertical lines above and below each dot represent the likely range of the estimated difference 95 percent of the time. The range of the estimated difference for math includes 0, suggesting that the difference in score between the two groups of students are not statistically significant at $p < .05$. See table B6 in appendix B for full results.

Source: Authors' analysis based on data provided by the Louisiana Department of Education.

statistical model. However, the negative association between Believe and Prepare and student test scores in English language arts does not remain statistically significant under robustness checks[2] (see table C2 in appendix C).

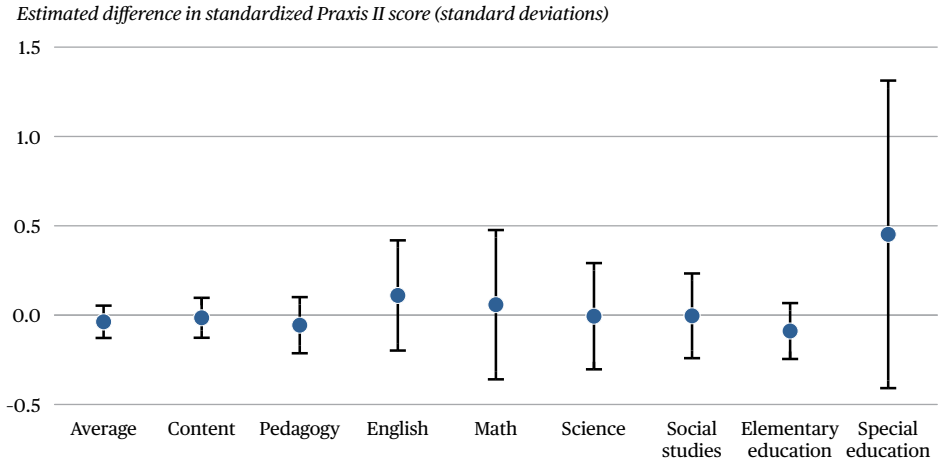
Teacher competency, as measured by Praxis II scores, was not statistically significantly different between Believe and Prepare teachers and comparison teachers with similar characteristics

Believe and Prepare requires teacher preparation programs to implement a competency-based curriculum that helps teacher candidates develop what they must know and be able to do in order to be eligible for certification upon program completion.[3] Although Praxis II is not explicitly aligned with the competencies required under Believe and Prepare, Praxis II scores provide a proximate (and currently the only available) measure of some of these competencies. Teacher candidates typically take Praxis I tests when they apply to enroll in a teacher preparation program, and they typically take Praxis II tests before starting their teaching residency.

Praxis II scores were not statistically significantly different between Believe and Prepare teachers and comparison teachers with similar Praxis I scores in math, reading, and writing, as well as similar background characteristics. The timing of when teacher candidates took Praxis II tests suggests that there was no statistically significant association between Praxis II scores and implementation of the competency-based curriculum required under Believe and Prepare (figure 4; see also table B7 in appendix B). However, the Louisiana

2. The coefficient did not remain statistically significant after teachers who attended a program that implemented Believe and Prepare one year but not the next were excluded.
3. More details about these competencies can be found at Louisiana Department of Education (n.d. b).

Figure 4. Praxis II scores were not statistically significantly different between Believe and Prepare teachers and comparison teachers with similar characteristics, 2015/16–2019/20



Note: The analytic samples included 2,077 teachers with scores in any subject (which were used to calculate the average score), 1,807 with content scores, 2,063 with pedagogy scores, 456 with English scores, 408 with math scores, 395 with science scores, 459 with social studies scores, 1,256 with elementary education scores, and 159 with special education scores. See table B2 in appendix B for the number of teachers by treatment status, year, and outcome. Each dot represents the estimated difference in Praxis II score (standardized to have a mean of 0 and standard deviation of 1 within each subject, version, and year) between teachers who completed a preparation program that had implemented Believe and Prepare and teachers who completed a program that had not implemented it, after the covariates described in box 2 were controlled for. The vertical lines above and below each dot represent the likely range of the estimated difference 95 percent of the time. The ranges of the estimated differences in scores include 0, suggesting that the differences in score between the two groups of teachers are not statistically significant at $p < .05$. See table B7 in appendix B for full results.

Source: Authors' analysis based on data provided by the Louisiana Department of Education.

Department of Education suggested that the competency-based curriculum was not implemented until 2017/18 for incoming teacher candidates, and it may not have been fully implemented immediately. As a result, the contrast between Believe and Prepare teachers and comparison teachers is likely weak.

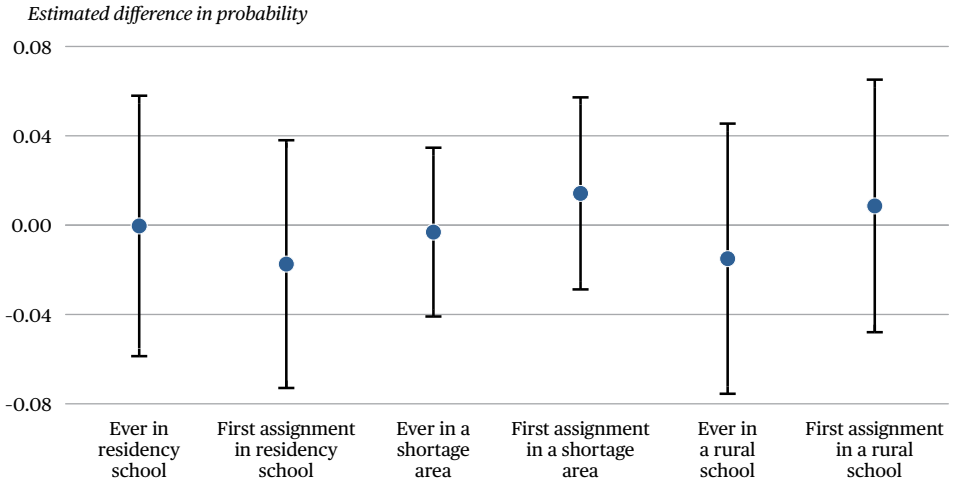
Believe and Prepare was not statistically significantly associated with teachers' likelihood of being placed in the school in which they completed a residency, their likelihood of filling a teaching position in a shortage area, or their likelihood of being placed in a rural school

Believe and Prepare may affect teacher placement through several channels. First, the yearlong residency required by Believe and Prepare may increase teacher candidates' familiarity with the teaching and professional environment of the residency schools, and candidates may be inclined to teach in a setting that they are familiar with. Second, to ensure greater oversight of student teaching, the yearlong residency likely requires closer collaboration between teacher preparation programs and school systems. Closer collaboration could improve the development of teachers who can teach in subject areas and grades where schools and districts have the most need. Finally, the doubling of stipends for teacher candidates and mentors was designed to incentivize the development and hiring of teacher candidates in rural schools.

About 24 percent of Believe and Prepare teachers were initially placed in the school in which they completed their residency compared with 20 percent of comparison teachers. In addition, 26 percent of Believe and Prepare teachers were ever placed in the school in which they completed their residency compared with 23 percent of comparison teachers. However, these differences were not statistically different after teacher demographic characteristics were controlled for (figure 5; see also table B8 in appendix B).

Teacher shortages were widespread in Louisiana public schools between 2012 and 2017. In that period the Louisiana Department of Education identified the following shortage areas: math and English language arts in all

Figure 5. Believe and Prepare was not statistically significantly associated with teachers' likelihood of being placed in the school in which they completed a residency, their likelihood of filling a teaching position in a shortage area, or their likelihood of being placed in a rural school, 2015/16–2019/20



Note: The analytic samples included 2,993 teachers who were ever placed in their residency school, 2,951 teachers who were initially placed in their residency school, 5,181 teachers who were ever assigned to a teaching shortage area, 5,233 teachers who were initially assigned to a teaching shortage area, 5,594 teachers who were ever placed in a rural school, and 5,571 teachers who were initially placed in a rural school. See table B2 in appendix B for the number of teachers by treatment status, year, and outcome. The analytic samples for the analysis of placement in residency school were smaller because 53 percent of comparison teachers did not have information on where they completed their residency. Each dot represents the estimated difference in the probability of being assigned to a particular school or position within a specified timeframe between teachers who completed a preparation program that had implemented Believe and Prepare and teachers who completed a program that had not implemented it, using the methods described in box 2. The vertical lines above and below each dot represent the likely range of the estimated difference 95 percent of the time. The ranges of the estimated differences include 0, suggesting that the differences in probability of job placement between the two groups of teachers are not statistically significant at $p < .05$. See table B8 in appendix B for full results.

Source: Authors' analysis based on data provided by the Louisiana Department of Education.

grades; science, social studies, and world languages in middle and secondary grades; special education; early childhood education; and art and music education. More than 80 percent of all teachers taught in a shortage area. Teacher shortages were less common in 2018/19 but returned to their former levels in 2019/20. The likelihood of filling a teaching position in a shortage area was not statistically different between Believe and Prepare teachers and comparison teachers with similar characteristics (see figure 5 and table B8 in appendix B).

Relative to comparison teachers with similar characteristics, Believe and Prepare teachers were no more or less likely to be placed in a rural school either in their first year of teaching or ever during the study period (see figure 5 and table B8 in appendix B).

Implications

The findings from this study suggest positive retention benefits from Believe and Prepare but also some unexpected negative student achievement findings, albeit only in English language arts and based on small teacher samples. Thus, Louisiana might consider continuing with Believe and Prepare while analyzing whether the student achievement findings are simply related to the early stage of its implementation. Additional information on program costs would also allow for cost-benefit analysis.

The positive findings on teacher retention point to two benefits for Louisiana. First, higher retention could reduce the significant financial costs of hiring new teachers, which cover advertising, interviewing, and onboarding. Barnes et al. (2007) estimated these costs to be about $3,000 per teacher (in 2007, or about $4,160 in 2022 dollars, according to the consumer price index inflation calculator from the U.S. Bureau of Labor

Statistics). The 2019/20 analytic sample comprised about 4,000 teachers who completed a preparation program between 2014/15 and 2017/18 (see table B2 in appendix B). A rough estimate suggests that the 2 percentage point reduction in teacher attrition (roughly equivalent to 80 teachers) would save districts across Louisiana about $333,000 a year in 2022 dollars. The estimated savings are likely conservative because they are based on teachers with four or fewer years of experience and do not include teachers who completed an alternative teacher preparation program.

Second, the reduced teacher turnover associated with implementing Believe and Prepare could contribute to improved student achievement in the long run. Although this study did not assess the indirect effect of Believe and Prepare on student achievement through reduced teacher turnover, studies have found that teacher turnover negatively affects student achievement, independent of any effects on the quality composition of teachers in the labor market (Atteberry et al., 2017; Ronfeldt et al., 2014).

At the same time, the Louisiana Department of Education might also re-evaluate strategies to meet staffing challenges in rural areas. The doubling of both mentor and resident stipends in rural schools, in conjunction with other policies that directly target staffing challenges,[4] should theoretically ease rural teacher shortage. Yet, the study found that the likelihood of a teacher being placed in a rural school did not change significantly. One possible explanation is that Believe and Prepare encouraged closer collaboration between teacher preparation programs and school systems. This working relationship might have encouraged teacher preparation programs to collaborate with school systems that were geographically close to ensure greater oversight of student teaching. Because teacher preparation programs in Louisiana tend to cluster in urban areas (Louisiana Board of Regents, 2019), Believe and Prepare may have unintentionally concentrated an increase in teacher training and teacher supply in urban areas.

The Louisiana Department of Education could use additional years of administrative data as they become available to evaluate the extent to which Believe and Prepare is associated with student achievement scores. The study found the association to be not statistically significant for math and inconsistent across model specifications for English language arts. These findings were based on only 44 math teachers and 54 English language arts teachers, all of whom participated in Believe and Prepare prior to its full implementation.

Continuing the recently started effort to link teacher and student outcome data with data on the effectiveness, characteristics, and training of mentors would likely benefit the Louisiana Department of Education. The lack of such data prevented the study from investigating outcomes associated with mentors and mentor training and from using evidence to identify which teachers might be effective mentors. Because only about 3 percent of teachers serve as mentors each year, school systems would likely benefit from broad flexibility to select mentors based on attributes that are strong predictors of effective mentorship (Goldhaber, Krieg, Naito, & Theobald, 2020). This link between mentors and teachers is important to support future research on this topic given the key role that mentors play in developing teacher candidates (Goldhaber et al., 2022).

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